Sample Project Report (2022-2023)

Department of Geography

KAZI NAZRUL UNIVERSITY

PROJECT REPORT

BASED ON

FIRE HAZARDS

Presented by : MADHABI DUTTA

Reg no: KNU20104000605 Session : 2020-2023

Under the supervision : **SWARUP AKHULI**

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REF. NO :- DBM/GEO(H)/PROJ/2

DATE :- 22/05/2023

TO WHOM IT MAY CONCERN

This is to certify that the project title is fire-hazard. This project is submitted by Madhabi Sutta registration no. KNU 20104000605., A student of BSC 6th semester, supervision and guidance. geography (hons) Deshabandhu Mahavidyalaya, Chittaranjan, Paschim Bardhaman.

This project was an authentic work done by him/her under my supervision and guidance.

Supervisor

22/05/2023

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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teacher **SWARUP AKHULI,** assistant professor in Geography for his able guidance and support in completing my project. Who give me the golden opportunity to do this wonderful project on **FIRE HAZARDS**. I came to know about so many new things, I am relay thankful to them.

Date:

Madhabi Dutta

6th semester geography

CONTENT PAGE

INTRODUCTION:

Fire hazards are workplace hazards that either involve the presence of a flame, increase the probability that an uncontrolled fire will occur, or increase the severity of a fire should one occur.

Any actions, materials, or conditions that might increase the size or severity of a fire or that might cause a fire to start are called fire hazards. The hazards might be a fuel that in easy to ignite or a heat source links a defective appliance.

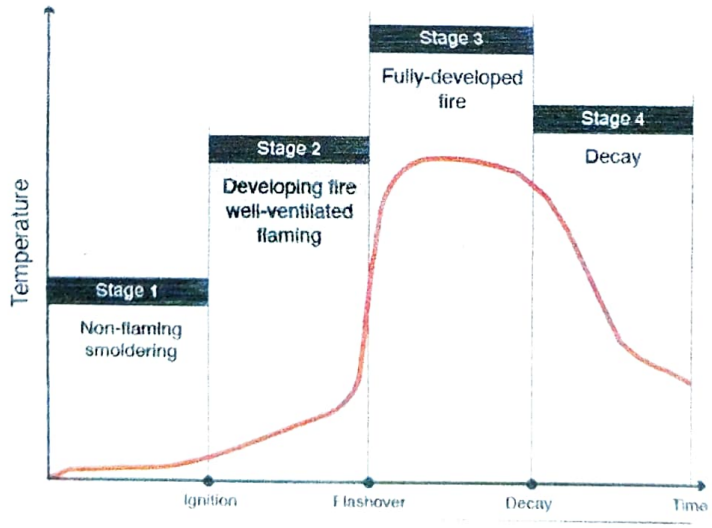
STAGES OF FIRE:

Fires can be devastating and happen when you least expect them. Generally, the earlier you can suppress a fire, the better. This is because fires grow in intensity, temperature, and size if they have the resources they need to burn- oxygen, heat, fuel, and in some cases, a chain reaction.

1. Ignition
2. Growth
3. Fully Developed
4. Decay

The incipient stage is when it's crucial to fight a fire because it is easiest to suppress it at this point, and it will cause the least damage. It's difficult to manually fight and extinguish a fire when it is in this stage because of the time it takes to identify the fire, locate a handheld extinguisher, and perform the proper steps to spray the fire. That's why Firetrace's detection tubing detects and suppresses fires automatically during this early stage. Fire suppression systems allow you to suppress the fire right after ignition without needing a person to be present.

Once a fire reaches this stage, it becomes harder to control. If a fire detector recognizes a fire at this point, you have little time to put it out before it reaches flashover.



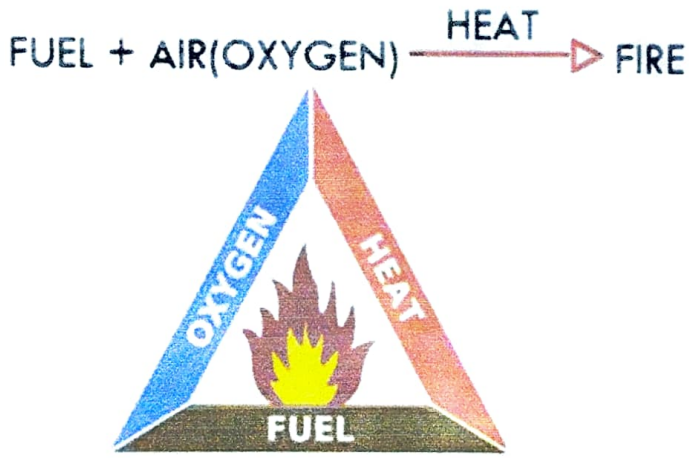
A fully developed fire is the hardest to suppress because, at this point, the fire is at maximum temperatures and causing the most heat damage. If you've failed to suppress it before this point, then your odds of stopping the fire are much smaller.

The decay of a fire is the phase when the fire decreases in intensity until it is either a smolder or non-existent. If there was no suppression, this is likely when there is nothing left for the fire to burn.

Characteristics of Fire:

The basic of fire is explained below for awareness among staff.Fire occurs as a result of a chemical reaction that requires three essential elements namely:

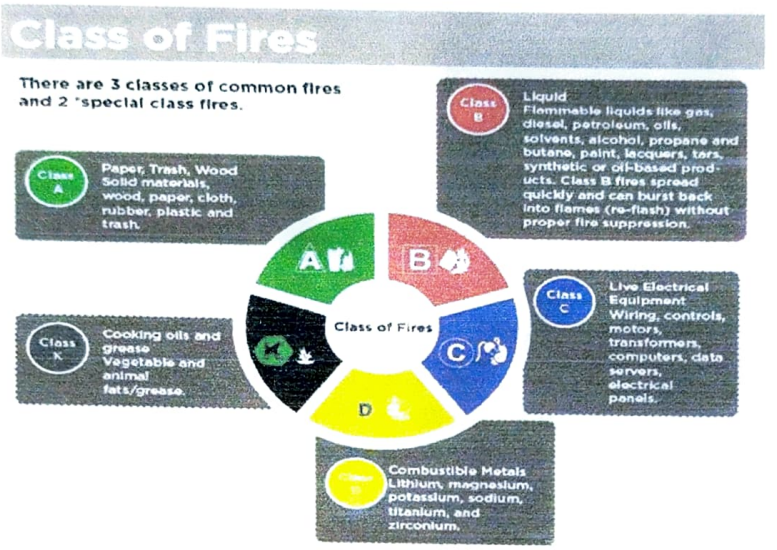
1. Fuel
2. Oxygen (Air)
3. Heat



The fire triangle is a simple model for understanding the necessary ingredients for most fires. The triangle illustrates the three elements a fire needs to ignite: heat, fuel, and an oxidizing agent (usually oxygen).By eliminating any one of the element, fire can be extinguished.

CLASSIFICATION OF FIRE:

Class A: Ordinary solid combustibles such as paper, wood, cloth and some plastics. Class B: Flammable liquids such as alcohol, ether, oil, gasoline and grease, which are best extinguished by smothering.



Class A Fires: "Ordinary" Fires:

Class A fires are the most common of the 5 different classes of fires. They occur when common combustible materials like wood, paper, fabric, trash, and light plastics catch fire. These accidental fires are ubiquitous across a variety of industries, so it's recommended to have adequate protection against "ordinary" fires in addition to other condition-specific fires. Despite being "ordinary", don't rule this class of fire as low-risk. If there's an abundance of fuel present, these fires can intensify quickly. It's best to put out a Class A fire quickly before it spreads using water or monoammonium phosphate.

Class B Fires: Liquids & Gases:

Class B fires involve flammable liquids and gases, especially fuels like petroleum or petroleum-based products such as gasoline, paint, and kerosene. Other gases that are highly flammable are propane and butane, which are common causes of Class B fires. The best way to deal with these types of fires is by smothering them or removing oxygen using foam or CO2 fire suppression equipment.

Be aware that Class B fires do not include grease fires or cooking fires, which belong to their own class, Class K.

Class C Fires: Electrical Fires:

Electrical fires fall under Class C and are common in facilities that make heavy use of electrical equipment, but they can occur in a wide range of industries. For example, data centers might be an obvious risk area for Class C fires. They must have safeguards in place to deal with electrical fires.

Construction sites are another common Class C fire risk: electrical power tools or appliances used for cooking can cause sparks to ignite combustible materials and intensify rapidly. Old buildings with bad wiring or space heaters present more concerns.

Electrical fires require non-conductive materials to extinguish the flame, so water alone is not a good solution. Facilities with sensitive equipment may prefer clean agent suppression because it won't leave residue or damage electrical equipment.

Class D Fires: Metallic Fires

Class D fires are not as common as the other classes, but they do require special attention because they can be especially difficult to extinguish. Metallic fires involve flammable materials like titanium, aluminum, magnesium, and potassium — all commonly occurring in laboratories.

Class D fires cannot be addressed with water, as this can exacerbate the fire and be potentially dangerous. Dry powder agents are the best solution for smothering the flames and limiting damage to property or people.

Class K Fires: Grease Fires or Cooking Fires

Class K fires involve flammable liquids, similar to Class B fires, but are specifically related to food service and the restaurant industry. These common fires start from the combustion of liquid cooking materials including grease, oils, and vegetable and animal fats. Because they can spread quickly and be difficult to manage, Class K fires are some of the most dangerous. Water can make the situation worse, but smothering the flames or using a wet agent fire extinguisher is effective.

Now that we understand how each fire starts, we can prepare for how to fight them or better yet, prevent them from happening in the first place.

CAUSES:

Fires can be devastating and cause significant damage to property and human life. Unfortunately, fires can happen anywhere and at any time, and it is essential to know the most common causes to prevent them from happening.

In this blog post, we will explore the top 10 most common causes and consequences of fires. We will explore the science behind how these causes lead to fires and provide tips on preventing them. Additionally, we will discuss the aftermath of fires, including the financial, emotional, and physical consequences. By understanding the causes and consequences of fires, we can protect ourselves, our loved ones, and our property from the devastating effects of fires.

The importance of fire safety in the workplace cannot be overstated, as fires can have devastating consequences for businesses, employees, and visitors. Here are some statistics that illustrate the scope of the problem:

- According to the National Fire Protection Association (NFPA), U.S. fire departments responded to an average of 3,340 fires in office properties per year between 2014 and 2018.
- According to the National Safety Council, workplace fires caused an estimated $2.4 billion in property damage in 2019.
- In 2019, there were 82 civilian deaths and 1,000 civilian injuries due to workplace fires, according to the NFPA.
- Electrical malfunctions, heating equipment, cooking equipment, intentional fires, and smoking materials are the leading causes of workplace fires, according to the NFPA.

These statistics underscore the importance of fire safety in the workplace. A comprehensive fire safety plan that includes prevention, detection, and response measures is crucial for mitigating the risks of workplace fires. By implementing fire safety protocols, conducting regular inspections and maintenance, and providing ongoing training to employees, businesses can significantly reduce the likelihood of workplace fires and minimize their impact if they do occur.

Consequences of Fire:-

The consequences of fire can devastate the natural environment, human life, and property. Some of the most significant consequences of fire include:

1. Property Damage:

Fires can cause significant damage to property, including buildings, vehicles, and personal belongings. The damage can be particularly severe in the workplace because of valuable equipment, inventory, and important documents. For instance, a fire in a manufacturing facility can destroy expensive machinery, raw materials, and finished products.

2. Business Interruption:

Business interruption is another significant consequence of the fire. Even if the fire does not cause any property damage, the workplace may need to be closed for a period of time to be cleaned and repaired, which can result in lost revenue and customers. During this downtime, employees may be unable to work, resulting in a loss of productivity and income for both the employees and the business.

3. Injuries and Fatalities:

Workplace fires can also result in injuries and fatalities, with devastating consequences. Burns and smoke inhalation are two of the most common causes of injuries in workplace fires. Victims may require extensive medical treatment, including surgery, skin grafts, and long-term rehabilitation, depending on the severity of the burns. Smoke inhalation can also cause serious respiratory problems, such as asthma or lung damage, which can have long-term health consequences.

4. Emotional Trauma:

Witnessing a fire or experiencing the loss of a coworker in a fire can be emotionally traumatizing, leading to anxiety, depression, and post-traumatic stress disorder (PTSD). Employees who experience a workplace fire may feel shaken and vulnerable and struggle to cope with the event's aftermath. Even if not physically injured, they may experience significant emotional distress, affecting their ability to work and carry out their daily activities.

5. Litigation:

Litigation is another potential consequence of workplace fires. If someone is injured or killed in a fire at the workplace, the employer may be held liable and face legal action. This can be costly and time-consuming, damaging the employer's reputation. The legal fees, settlements, and other expenses associated with litigation can add up quickly and have a significant impact on the financial stability of the business.

6. Loss of Productivity:

A loss of productivity is another significant consequence of fires. After a fire, employees may need to spend time cleaning up and repairing the damage caused by the fire, which can take away from their regular work duties. Additionally, there may be insurance claims to file and paperwork to complete, which can be time-consuming and further disrupt the workday. The longer the disruption lasts, the greater the impact on productivity, which can have financial consequences for the business.

7. Increased Insurance Premiums

Increased insurance premiums are another potential consequence of workplace fires. After a fire, a business may see an increase in its insurance premiums. This is because insurance companies view businesses that have experienced a fire as higher risk and more likely to file a claim in the future. As a result, insurers may increase the premiums for the business's property and liability insurance policies. These higher premiums can significantly impact the business's bottom line.

8. Damage to Brand Reputation:

Damage to brand reputation is another significant consequence of workplace fires, particularly if the incident receives media coverage. A fire at a business can attract significant media attention, damaging the company's brand reputation. Customers may perceive the business as unsafe or unreliable, leading to a loss of trust and decreased revenue.

Additionally, negative publicity can spread quickly through social media, further damaging the business's reputation. The impact on brand reputation can be particularly devastating for small businesses, which may have fewer resources to recover from the damage caused by the fire.

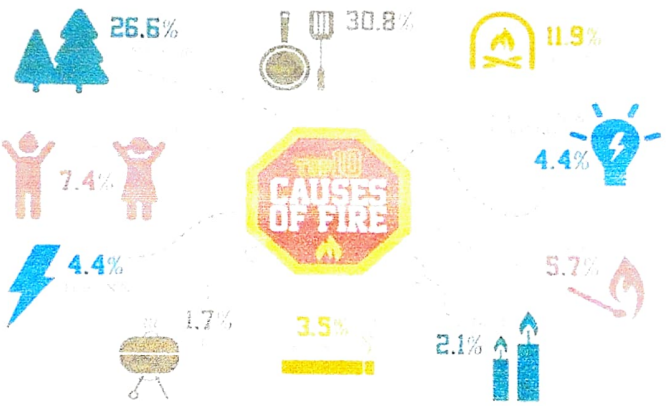
9. Occupational Health and Safety Issues:

Occupational health and safety issues are another potential consequence of workplace fires. Fires can release hazardous materials like smoke, chemicals, and other toxic substances. This can pose a serious risk to the health and safety of employees, particularly those who work close to the fire or are responsible for cleaning up the aftermath. In addition, firefighters and other first responders who respond to the fire may also be at risk for exposure to these hazardous materials.

10. Financial Loss:

Financial loss is another significant consequence of workplace fires. Repairing or replacing damaged equipment, materials, and property can add up quickly and significantly impact a business's finances.

In addition, the business may experience a loss of revenue due to the interruption of normal operations or the need to close temporarily. This can be particularly difficult for small businesses that may not have the financial resources to absorb the costs of a workplace fire. Furthermore, if the business cannot recover from the financial losses caused by the fire, it may have to close permanently.



IMPACT OF FIRE:

Fatal heat levels are not the only danger of fire. During a home fire, there's an increased level of carbon monoxide and carbon dioxide as well as damaging levels of chemical and thermal irritants. These irritants can permanently damage a person's or animal's respiratory system and cause death.

(a) Natural Impact:

Fires are adverse events with tangible costs to property and human life. Quantification of these costs provide a metric for understanding the social and economic

impact of fire, which can be useful for assessing and influencing fire prevention and protection. In addition, fires also inflict adverse consequences on the natural environment. These include contamination of the air via the fire plume and its subsequent diffusion, with deposition of particulate and other materials likely to contaminate soil and water, contamination of soil and water from fire suppression runoff, which might contain toxic or hazardous materials, and direct exposure to soil and water from hazardous materials whose containers / containment systems may fail due to fire. While a great deal of research has been published on the quantification of the environmental impact of fire, the information has not previously been consolidated in a manner that facilitates identification of the research focus The impacts of concern and the gaps remain.

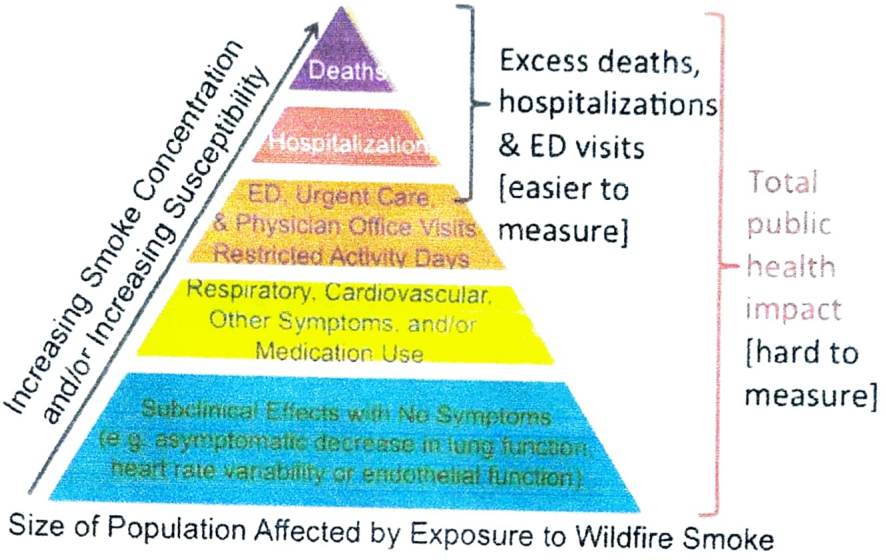
To address this concern, a survey of the literature was conducted on the environmental impacts of fire, how they might vary by fire source (e.g., building fire, wildland fire), and the various assessment approaches utilized. As part of the effort, a definition of environmental impact assessment was selected to bound the effort, a taxonomy to describe the broad range of environmental impact from fires was developed, a list of toxic products resulting from a fire was compiled, exposure pathways for toxic products associated with the fire and fire suppression were identified, and discussion regarding the quantification of environmental costs of fire is provided.

(b) Impact of human life:

The effects of smoke from wildfires can range from eye and respiratory tract irritation to more serious disorders, including reduced lung function, bronchitis, exacerbation of asthma and heart failure, and premature death. Children, pregnant women,

and the elderly are especially vulnerable to smoke exposure. Emissions from wildfires are known to cause increased visits to hospitals and clinics by those exposed to smoke.

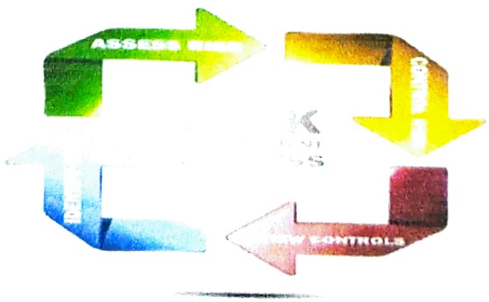
It is important to more fully understand the human health effects associated with short- and long-term exposures to smoke from wildfires as well as prescribed fires, referred together as wild land fires. Research is being conducted to advance understanding of the health effects from different types of fires as well as combustion phases



Fire Management:

The management of fire risks is a fundamental responsibility for every employer. For many employers it is possibly their primary occupational safety and health requirement. A serious fire could result in the deaths of many innocent people as well as destroy a business. Effective fire management is a staged process. The stages are logical and small steps can effectively reduce the risks. Close cooperation between workers, employers and governments is essential for successful prevention and control of fire at the workplace.

1. Measures to minimize fire risks;
2. Preparing for fire emergencies;
3. Training.



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Examined
9/06/2023

KAZI NUZRUL UNIVERSITY

PROJECT REPORT

BASED ON

CYCLONE

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REF. NO: - DBM/GEO (H)/PROJ-CYE/23 DATE:- 22/05/2023

TO WHOM IT MAY CONCERN

This is to certify that the project entitled "**Cyclone and Its Impact on Bally Village, Sundarbans**" is submitted by Sourav Chakraborty, registration no. KNU20104000796 a student of BSC 6th semester, Geography (Hons.) Deshabandhu Mahavidyalaya, Chittaranjan, Paschim Bardhaman.

This project was an authentic work done by him/her under my supervision and guidance.

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Preface

This project is prepared based on the concept of Cyclone which is collected from different reliable sources and the data collected from the study area. The purpose of this work is to gain knowledge about overall concept of Cyclone and its impact on the study area basically on the lifestyle of the inhabitant of that region.

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teacher Palash kumar Mondal, assistant professor in Geography for his able guidance and support in completing my project. Who give me the golden opportunity to do this wonderful project on ***Cyclone and Its Impact on Bally Village, Sundarbans***. I came to know about so many new things, I am relay thankful to them.

Date:

Soumar Chakraborty

6th semester geography

CHAPTER - 1

CYCLONE

1.0. CONCEPT AND INTRODUCTION:

The word Cyclone is derived from the Greek word ***Cyclos*** meaning the coils of a snake. It was coined by **Henry Peddington** because the tropical storms in the Bay of Bengal and the Arabian Sea appear like coiled serpents of the sea. A cyclone is a natural hazard which is huge strong wind system blows around the centre of intense low pressure area. Cyclones are the local name of the Indian Ocean and the South Pacific Ocean, but in the Northwest Pacific Ocean they are known as typhoons, and in the Northeast Pacific Ocean and North Atlantic, they are known as hurricanes. Since the cyclones form in the tropical region, they are also known as tropical storms, tropical revolving storms or tropical cyclones. In the northern hemisphere, cyclone winds blow anticlockwise and they reverse in the southern hemisphere. Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Cyclones are usually accompanied by violent storms and bad weather. The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere.

1.1. REGIONS OF THE CYCLONE:

Cyclones begin in tropical sea regions during the summer and tend to move initially westward, then eastward towards higher latitude. The regions of the world where tropical cyclones usually originate can be summarized as follows (Fig.1):

1. Tropical North Atlantic Ocean.
   - ❖ East of the Lesser Antilles and the Caribbean, east of 70° W during the months of July to October
   - ❖ North of the West Indies in June to October
   - ❖ Western Caribbean during the months of June and late September to early November
   - ❖ Gulf of Mexico during the months of June to November
2. Western North Pacific Ocean, including the Philippines, during the months of May to November, but storms sometimes occurs in all months.

3. North Pacific off the West Coast of Central America, during the months of June to October.
4. Bay of Bengal and Arabian Sea, from May to June and October to November.
5. South Pacific Ocean, West of 140° W, from December to April.
6. South Indian Ocean, from December to April.
    - ❖ Northwestern Coast of Australia during the months of November to April West of 90° W from November to May.
    - ❖ Tropical cyclones form over oceans of the world except in the South Atlantic Ocean and in the South Eastern Pacific.

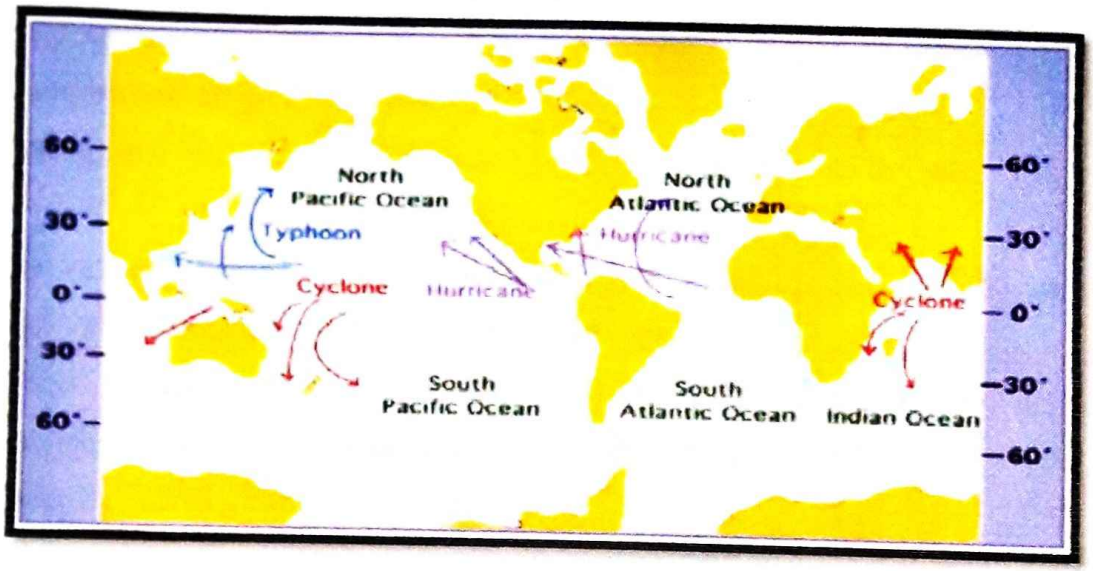


Fig.1: Formation areas and typical tracks of tropical cyclones worldwide

Source: http://www.ntlib.nt.gov.au

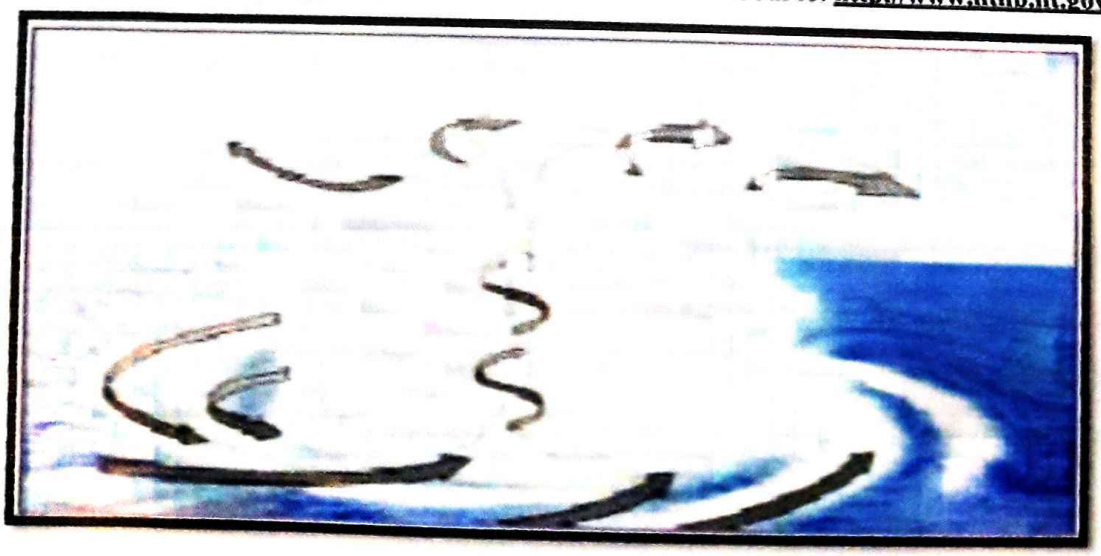


Fig.2: Origin of Cyclone

1.2. ORIGIN OF CYCLONE:

Cyclones develop over warm seas near the equator. Air heated by the sun rises very swiftly, which creates areas of very low pressure. As the warm air rises, it becomes loaded with moisture which condenses into massive thunder clouds. Surrounding air rushes in to fill the void that is left. But because of the constant turning of the earth on its axis, the air is bent inwards and then spiral upwards. The swirling winds rotate faster and faster, forming a huge circle which can be up to 500-1000 km across. At the centre of the storm is a calm, cloudless area called the eye - where there is no rain and the winds are fairly light (Fig.2). The development of cycle of tropical cyclones can be divided into three stages:

A. Formation and initial development :

Four atmospheric and oceanic conditions are necessary for the development of a cyclonic storm:

- A warm sea temperature in excess of 26 degrees centigrade to a depth 60 meter which provides abundant water vapors in the air by evaporation.
- High relative humidity of the atmosphere to a height of above 7000 m facilitates condensation of water vapors into water droplets and clouds; releases heat energy thereby inducing a drop in pressure.
- Atmospheric instability encourages formation of massive vertical cumulus cloud convection with condensation of rising air over ocean.
- A location of at least 4-5 latitude degrees from the equator allows the influence of the forces due to the earth's rotation to take effect wind circulation around low-pressure centers.

B. Full maturity:

If the ocean and atmosphere environment continues to be favorable the cyclone may continue to intensify as it moves pole-ward. The cloud system becomes more circular in shape and develops a distinct eye. This is the shape which signifies the cyclone is at its most severe and dangerous stage. Approximately half of the cyclones of this form progress to full maturity.

C. Decay:

A tropical cyclone begins to dissipate when the central pressure becomes filled up. The storm eye becomes distorted. High wind becomes weak. Severe weather becomes moderate. When the cyclone hits land, storm wind and storm surge may occur near the coastline, and heavy rain and flood may occur along the storm track in land. Intense rain may last for weeks.

1.3. TYPES OF CYCLONE

- Tropical cyclone.
- Polar cyclone.
- Meso-cyclone.
- Extra-tropical cyclone.

- **Tropical Cyclone :-**

A tropical cyclone is a spinning system that forms mostly from clouds and thunderstorms and originates in subtropical or tropical areas. This cyclone forms as the wind channels flow into a low-pressure disturbance. When flowing air condenses into clouds, surface water with a high temperature evaporates and releases energy. Tropical cyclones usually form between 5 and 30 degrees latitude. The surface water must be at least or about 80° F in all forms of cyclones. Tropical cyclones may be found in the Southwest Indian Ocean, Eastern Pacific, North Atlantic (including the Caribbean), North Indian Ocean, and Southern Pacific, among other places.

- **Polar cyclone :-**

Polar cyclones (also known as Arctic Cyclones or Polar Vortices) are large areas of low pressure. They should not be confused with polar lows since people happen to use the same term for polar cyclones. Polar cyclones are usually 1,000 to 2,000 kilometers wide in which the air is moving in a spiral counterclockwise fashion in the northern hemisphere. The reason for the rotation is the same as tropical cyclones, the Coriolis effect. They also exist in places such as Greenland, the Eurasian Arctic area, and northern Canada, with about 15 cyclones per winter.

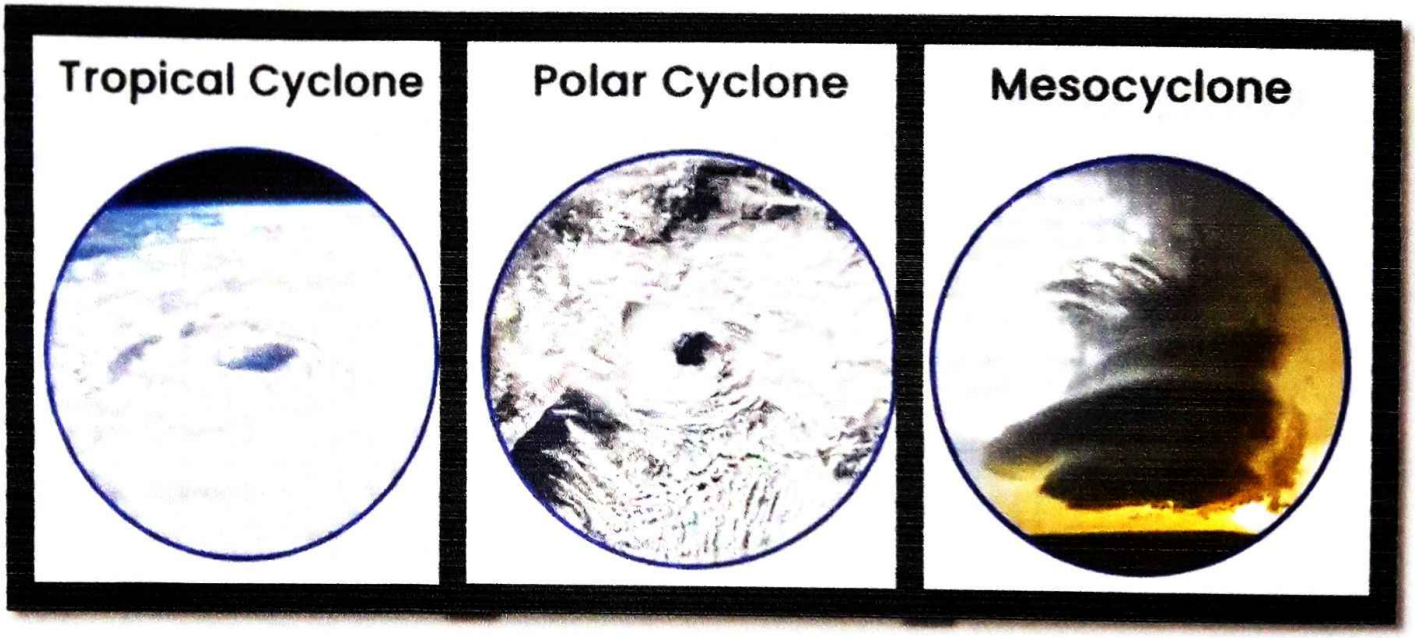
- **Meso cyclone : -**

1. A mesocyclone is a vortex of air, approximately 2 to 10 miles in diameter, within a convective storm. In a mesocyclone, air rises and rotates around a vertical axis, usually

in the same direction as low pressure systems. They are most often associated with a localized low-pressure region within a severe thunderstorm.

- **Extra tropical cyclone** :-

2. Extra tropical cyclones, sometimes called mid-latitude cyclones or wave cyclones, are low-pressure areas which, along with the anticyclones of high-pressure areas, drive the weather over much of the Earth. Extra tropical cyclones are capable of producing anything from cloudiness and mild showers to severe gales, thunderstorms, blizzards, and tornadoes. These types of cyclones are defined as large scale (synoptic) low pressure weather systems that occur in the middle latitudes of the Earth. In contrast with tropical cyclones, extra tropical cyclones produce rapid changes in temperature and dew point along broad lines, called weather fronts, about the center of the cyclone.



1.4. Types of Tropical Cyclones:

- ✓ Tropical Depression: A tropical cyclone with maximum sustained winds of 38 mph or less.
- ✓ Tropical Storm: A tropical cyclone with maximum sustained winds of 39-73 mph.
- ✓ Hurricane: A tropical cyclone with maximum winds greater than 74 mph.

- ✓ Major Hurricane: A tropical cyclone with maximum winds greater than 111 mph. The hurricanes would be categories 3, 4 and 5 of the Saffir-Simpson scale

1.5 IMPACT OF CYCLONE

- o It can damage houses, buildings, and infrastructure.
- o It can disrupt transportation, power, and communication services.
- o It can cause flooding and landslides.
- o It can lead to water contamination and increase the spread of disease.
- o It can cause displacement of people.
- o It can impact livelihoods and disrupt supply chains.
- o It can have a significant impact on the national economy.

1.6 HAZARDS ASSOCIATED WITH CYCLONES

There are three hazards associated with a cyclone, which cause destruction.

a) **Storm surge**:

A storm surge is an abnormal rise of sea level near the coast caused by a severe tropical cyclone; as a result, sea water inundates low lying areas of coastal regions drowning human beings and livestock, eroding agricultural land, beaches and embankments, destroying vegetation and reducing soil fertility.

b) **Strong wind**:

The most destructive force of a cyclone comes from fierce winds. These winds are strong enough to easily topple fences, sheds, trees, power poles and communication systems, while hurling helpless people through the air. Many people are killed when the cyclone winds cause buildings and houses to collapse and completely blow away resulting in loss of life and property.

c) **Flood**:

Heavy and prolonged rains due to cyclones may cause floods and submergence of low lying areas causing loss of life and property. Floods and coastal inundation due to storm

surges pollute drinking water sources causing outbreak of epidemics. Long after a cyclone has passed, road and rail transport can still be blocked by floodwaters. Water often becomes contaminated from dead animals or rotten food, and people are threatened with diseases like diarrhea and other infections.

CHAPTER -II

2.0 CYCLONE IN THE STUDY AREA (SUNDARBAN)

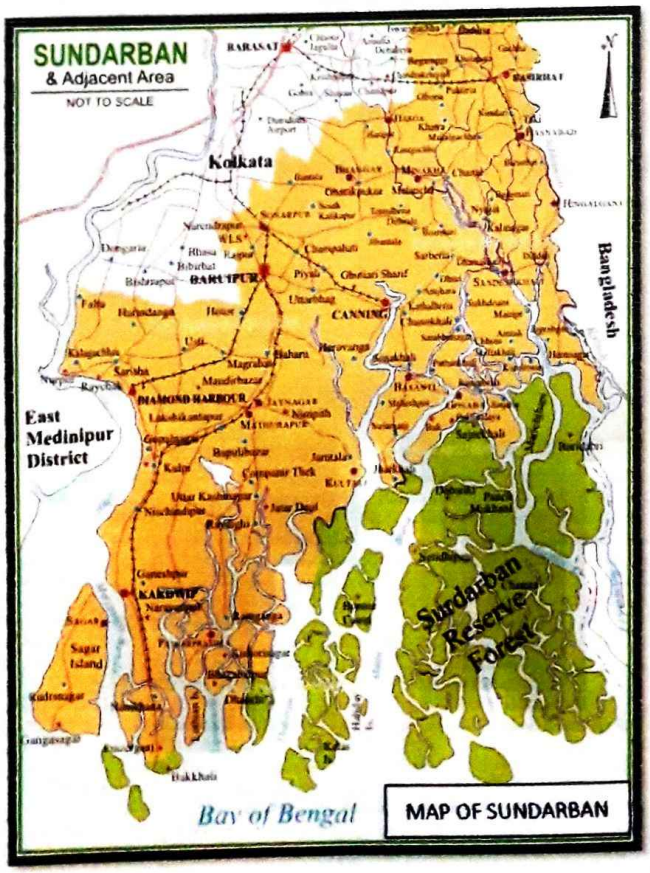
Sundarbans is a low line flat alluvial land mainly famous for mangroves. It Is a UNESCO world heritage site located at the south. Eastern tip of the 24 parganas district. Due to impact of climate change forestry, fishing, agriculture, wildlife of different animals is changed. People in the sundarbans reside in 53 islands. The area outside the protected national park has been mostly used for agriculture.

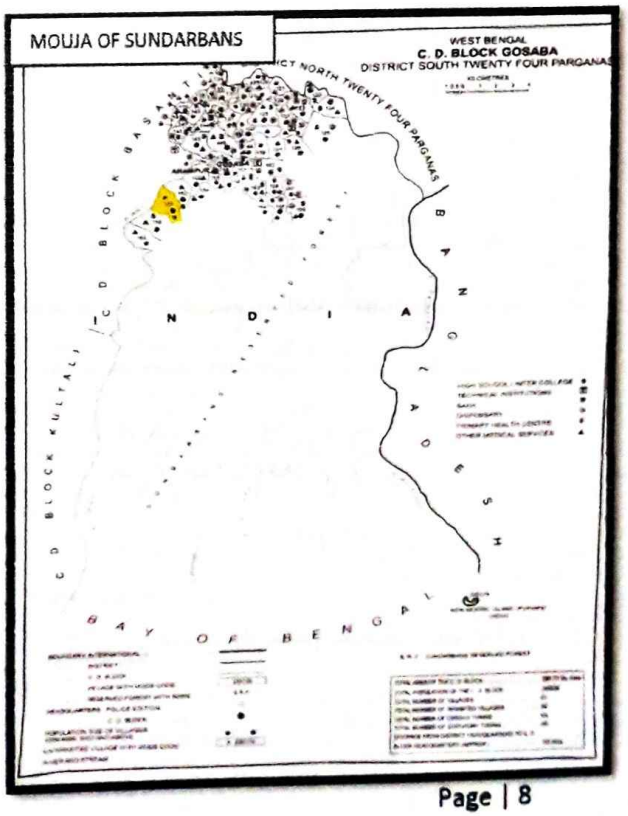
The present study is mainly based on the rural life style and socio – economic condition of the people leaving in delta region. To identify their problems and their conditions, house hold survey is done. Collected data are analyzed and it has been observed that people are self dependent and leaving with in nature by using its potentials.

STUDY AREA:

The village bally (J.L.N.5.) is situated within the extension of 22^0 09' north latitude and 88^0 76' east longitude under bally – II, gram ponchayet of gosaba cd block, south 24 parganas district.

It is situated 9.8 km away from gosaba cd block or tahsil. The total area of the village is 944.49 hectors. The village is situated left bank of Bidya River which has 6723 miter length of variable zone. The village bally (J.L NO. 5) is surrounded by bijaynagar (J.L NO. 9) in the north. Amlamethi (J.L NO.1) in the south, basanti C.D block in the west and sojnekhali wild life sanctuary in the east.





2.1 . HISTORY OF THE CYCLONE IN STUDY AREA:

Sidr (2007):

Tropical Cyclone Sidr was continuing its northward progress over the Bay of Bengal on November 14, 2007. It was moving north toward the Mouths of the Ganges at a speed of 13 kilometers per hour (8 miles per hour), and winds in the storm system were raging at 220 km/hr (140 mph) near the storm's center, making it a Category 4 strength tropical cyclone.

- **Aila**(2009) :-

The landfall of the severe tropical storm Aila corresponded with spring high tide on 25 May 2009 at Indian Sundarban and brought about widespread inundation of its interior areas. Gosaba, one of the most densely populated blocks of the region (28,585 ha, 863 persons/km^2), was one of the most affected.

- **Bulbul** (2019):-

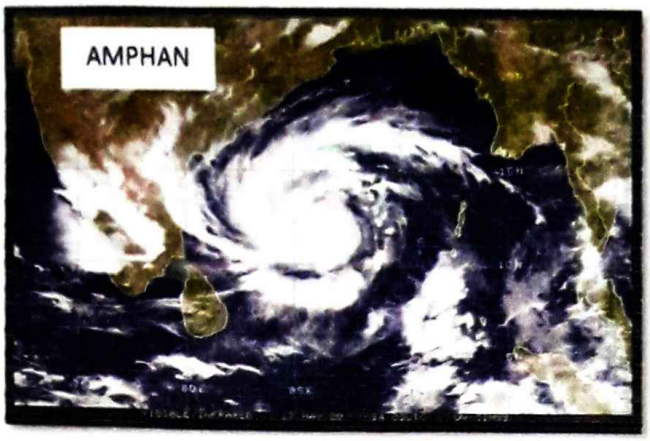
Severe tropical storm matmo and very severe cyclonic storm bulbul (jtwc designation: 23w) were a pair of very damaging tropical cyclones that tracked in the western pacific ocean and the north Indian ocean in October and November 2019, on November 9, the cyclone made its final landfall in the eastern Indian state of west Bengal, and around that time the storm turned to the northeast. the system degenerated into a remnant low two days later, over northeastern India.

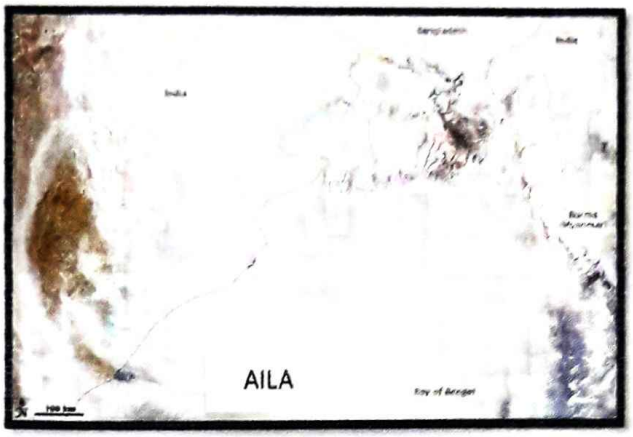
- **Amphan (2020)** :-

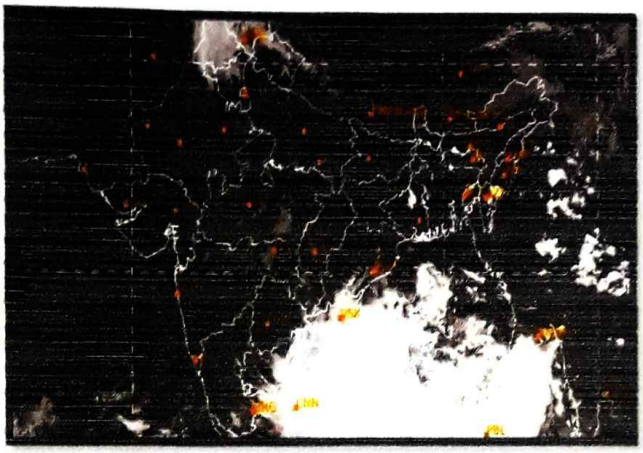
Super Cyclonic Storm Amphan was an extremely powerful and catastrophic tropical cyclone that caused widespread damage in Eastern India, specifically in West Bengal and Odisha, and in Bangladesh, in May 2020.

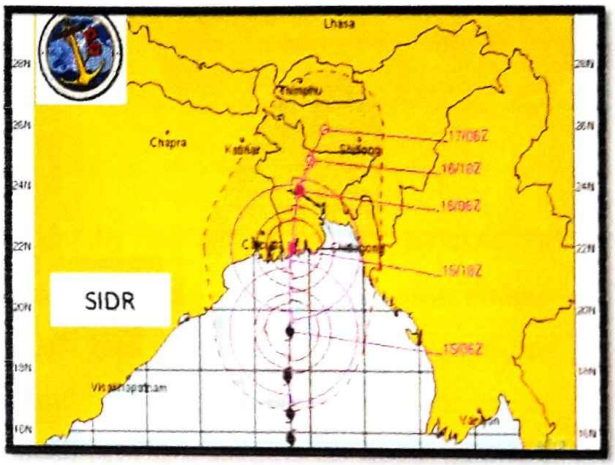
- **Yaas (2021)**: -

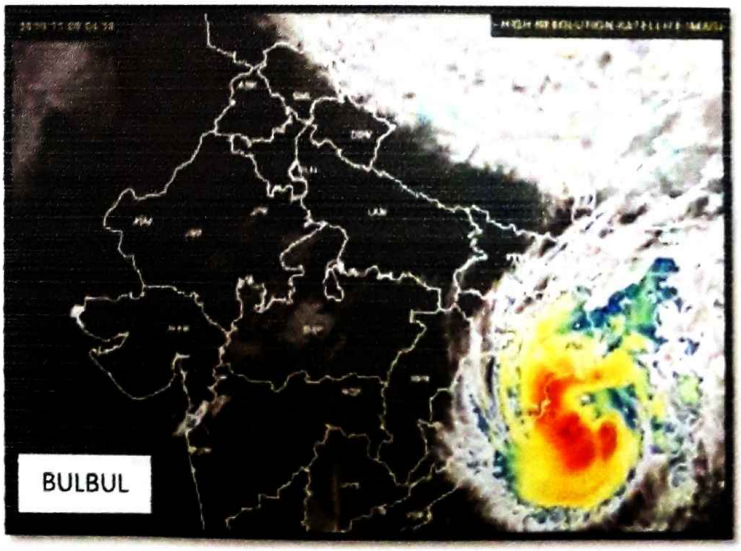
Very Severe Cyclonic Storm Yaas was a relatively strong and very damaging tropical cyclone that made landfall in Odisha and brought significant impacts to West Bengal during late May 2021.


AMPHAN


AILA




Lhasa
Chhimphu
Chapra
Kishkar
Shidong
17/06Z
16/18Z
16/06Z
15/18Z
15/06Z
SIDR


BULBUL

2.2 IMPACT OF CYCLONE IN THE STUDY AREA:

1. Coastal people in Sundarbans suffer significantly from the effects of tropical cyclones and their aftermath effects, such as embankment breaching, flood inundation, saline water infiltration, and water logging in agricultural land.
2. Due to cyclonic activity and frequent flood occurrence maximum houses are of kaccha type. As the height of the area is very low only 3-4 meter above sea level, it is prone to digester of flood and cyclone, people had to go flood centers or relief camp for sustenance.
3. The cyclone damaged and broken trees restrict the movement of wildlife caused scarcity of fodder due to loss of regeneration in the forest floor. As the existing ponds in the Sundarbans have been infested with the salt water, safe drinking water for the animals is not available.

CONCLUSION

The study shows how remote sensing can be gainfully utilized to reliably estimate the magnitude of inundation in storm events like Aila and subsequent recovery of an area, through generation of large quantity of data in a relatively sholt span of time. It helps in pre-, syn- and post disaster management of cyclones in both long and short terms. It also reduces the tedious job of primary data collection and its associated difficulties. The trend of cyclones landfalling in West Bengal shows a decreasing tendency for the last few decades (I MD, 2012; Fig. 1 0). However, following natural cycles and due to global greenhouse wamling, the probability of such events is expected to increase in near future (Webster et al., 2005). Under such eventualities, remote sensing can play a pivotal role in identification of the vulnerable and affected areas quickly and in monitoring the recovely process, provided a set of standard operational procedure for use of remote sensing is developed for different regions.

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1. https://www.researchgate.net/publication/318761058_Impact_of_super_cyclone_on_Sundarban_
2. https://en.wikipedia.org/wiki/Cyclone
3. House hold survey.

DISASTER PREPAREDNESS PLAN

FOR

CYCLONE AND FLOOD AT BALLY VILLAGE

OF

GOSABA BLOCK, SOUTH 24 PARGANAS

SL NO	TASKS	MODE OF CONDUCT	NODAL AGENCY	SUPPORTING AGENCY
1	Information related cyclone and flood hazard and their issues measures (do's and don'ts) also preparation of community leased deserves plans shall be promote in this area. 1st. Property shall be given to school, market, restaurant area, resettlement colonies etc. 2nd Purity shall be given to community living outer the hazards prone zones of sundarbans.	1. Announcement by govt. 2. Media 3. Newspaper 4. Group discussion	1. District administration	1. Non govt. 2. NGO. 3. School and college volunteers.
2	Information of community based digester management committee and task force	Through community level meeting.	District administration (IMD, CWC,NEOC,SEOC,DEOC, SDO ,BDO,DM)	Local volunteers
3	Capacity building of community members.	Through mega deals, preparing of community plans, training and workshop on disaster specific topic.	District administration	Local NGO, sent zones ambulance
4	Training to the task forces and community members. • First aid. • Counseling.	Training and workshop	Health department, police and NDRF	Gosaba sonar bangle well fairs society
5	Post disaster problems.	Seminar and community meeting and announcement etc.	Health department	Local health department and NGO's.
6	Orientations/training of govt and non govt officers and various persons.	Organizing state level discussion, and role in their disaster management.	Disaster management authority	Local health department and NGO's, Gosaba sonar bangle well fairs society

DESHABANDHU MAHAVIDYALAYA, CHITTARANJAN * Dept. of Geography * ESTD.-1973

Examinee

9/6/2023

Sample Project Report (2022-2023)

Department of Commerce

DESHABANDHU MAHAVIDYALAYA, CHITTARANJAN

A Project Work

On

Computer Application in Business

Submitted By

SNEHA PAUL

Department of Commerce (Hons.)

Semester - IV

Registration No. - 104211230040

Session: 2021-2022

DESHABANDHU MAHAVIDYALAYA, CHITTARANJAN

To Whom It May Concern

This is to certify that **Miss. Sneha Paul**, a student of B.Com. (Hons.) in Commerce of semester IV, bearing **Registration No. 104211230040, Year 2021-22** of Deshabandhu Mahavidyalaya, Chittaranjan has done her project work as a part of the '**Computer Application in Business**' curriculum bearing the paper code: **BCOMHC403**, under my supervision.

I wish her success in life.

Date: 15/6/23

Deshabandhu Mahavidyalaya
Department of Commerce
Chittaranjan

.....

Supervisor

Coordinator
Department of Commerce
Deshabandhu Mahavidyalaya

CONTENTS

THE END.....

MAIL MERGE

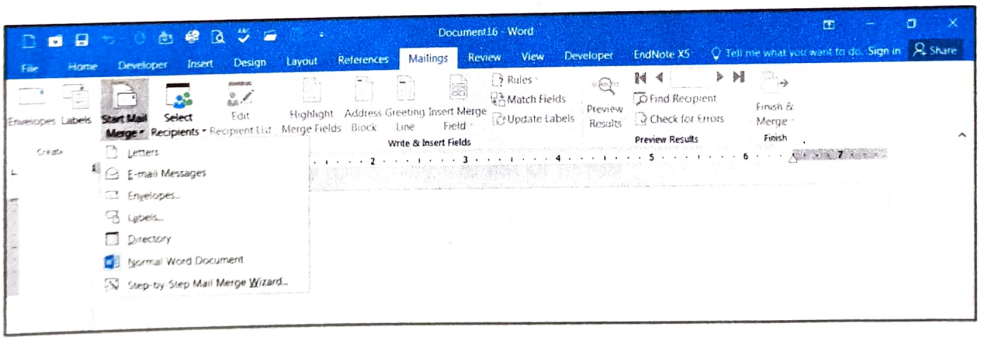
Mail merge is a tool which allows you to create form letters, mailing labels and envelopes by linking a main document to a data source. It is the process of combining a list of data with a template.

The mail merge process involves the following:

- **The Main Document** – contains the text and graphics that are the same for each version of the merged document.
- **Data Source** – a file that contains the information to be merged into a document. For example, the names and addresses of the recipients of a letter.

Mail Merge – Form Letters

1) Open **Word** and create a new blank document
2) Type the letter with all needed text and formatting, leaving room for the data from the data source (example: name, address, etc.)
3) Click the **Mailings** tab
4) Click **Start Mail Merge**
5) Click **Step-by-Step Mail Merge Wizard**



The **Mail Merge task pane** appears on the right of your screen. Note there are 6 steps.

Step 1 – Select Document Type

1) Click **Letters** for the document type
2) Click **Next: Starting document**

Step 2 – Select Starting Document

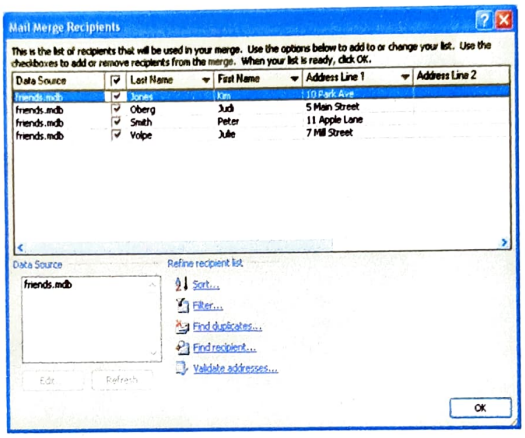
1) Click **Use the current document** under **Select starting document**
2) Click **Next: Select recipients**

Step 3 – Select Recipients

The recipients can come from either an existing Excel file, an Access table or you can create a new list in Word.

If Using an Existing List:

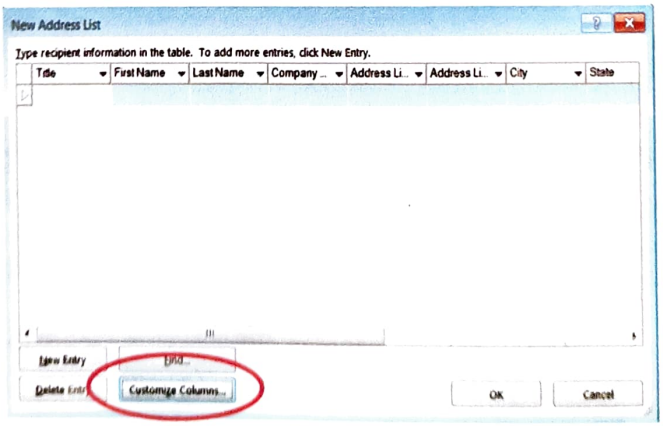
1) Click **Use an existing list** under **Select recipients**
2) Click **Browse**
3) Select the file
4) Click **Open**
5) Select the worksheet tab name that contains the data
6) Click **OK (Mail Merge Recipients** opens showing the file data)
7) Click **OK**



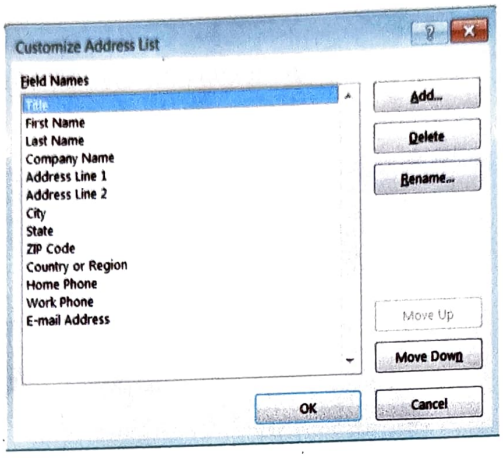
8) Click **Next: Write your letter**

If Creating a New List:

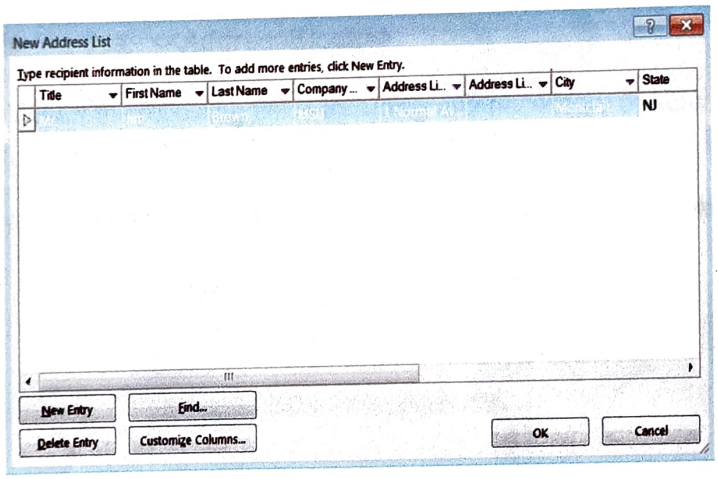
1) Click **Type a new list** under **Select recipients**
2) Click **Create**
3) Click **Customize Columns** to modify the list of fields



4) Delete any unnecessary field names and/or add new ones
5) Click **OK**



6) Begin typing records, hitting **TAB** to advance to the next field and to continue adding new records



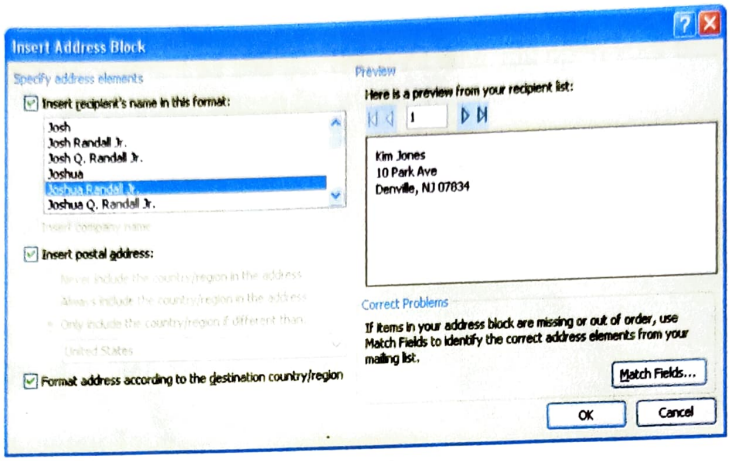
7) Click **OK**
8) Click **Save**

The recipients list will be saved as a separate file as a Microsoft Access file type. It is saved in the **My Data Sources** folder. It is recommended to save the file in this folder.

9) Click **Next: Write your letter**

Step 4 – Write Your Letter

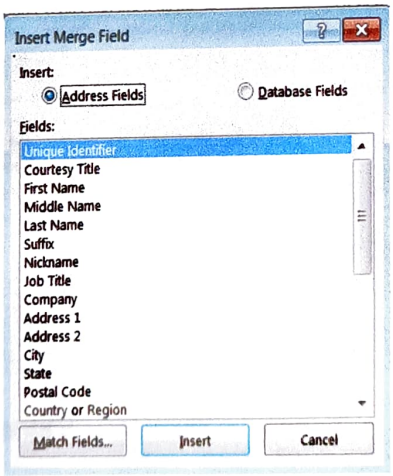
1) If including an address, click the location in your document where the address data will be inserted
2) Click **Address block…**
3) Select the address elements you want included
4) Click **OK**



The field name will look like this: **<<AddressBlock>>**

The address block will insert the following fields including any necessary punctuation: First Name, Last Name, Company, Address 1, Address 2, City, State, Postal Code.

If your fields do not match the ones listed above or you are not using address fields, click **More items…**



5) Click on the field from the list
6) Click **Insert**
7) Click **Close**
   The field name will look like this - **«First_Name»**
8) Repeat this step until all fields have been inserted.
   Remember to put spaces and punctuation where needed.
9) Click **Next: Preview your letters**

Step 5 – Preview Your Letters

Here is where you can preview the first page with the fields filled in.

Click **Next: Complete the merge**

Step 6 – Complete the Merge

1) Click **Print** to send directly to the printer
2) Click **Edit individual letters** to create a new file

Remember to save your document as you go. The next time you open your document and click on **Step-by-Step Mail Merge**, the data source file will be attached.

Mail Merge – Labels

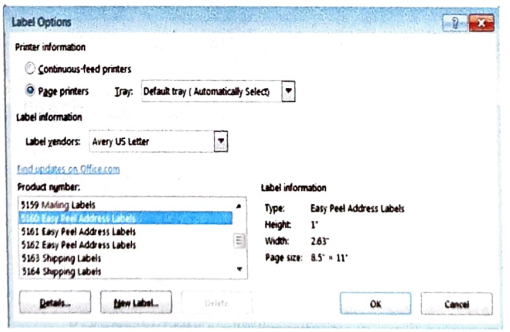
1) Create a new blank document
2) Click the **Mailings** tab
3) Click **Start Mail Merge**
4) Click **Step-by-Step Mail Merge Wizard**

Step 1 – Select Document Type

1) Click **Labels** for the document type
2) Click **Next: Starting document**

Step 2 – Select Starting Document

1) Click **Use the current document**
2) Click **Label options** under **Change document layout**
3) Choose the label style you are using
4) Click **OK**



5) Click **Next: Select recipients**

Step 3 – Select Recipients

1) Click **Use an existing list** under **Select recipients** (or you can create a new list)
2) Click **Browse**
3) Select the file
4) Click **Open**
5) Select the worksheet tab name that contains the data
6) Click **OK**
7) Click **Next: Arrange your labels**

Step 4 – Arrange Your Labels

1) Click in the first label box and click on either **Address block** or **More items** to insert the data fields
2) Click **Update all labels** to include the fields on all labels
3) Click **Next: Preview your labels**

Step 5 – Preview Your Labels

Here is where you can preview the labels.

Click **Next: Complete the merge**

Step 6 – Complete the Merge

Click **Print** to send directly to the printer

OR

Click **Edit individual labels** to create a new file

STUDENTS MARKSHEET CALCULATION

Hallticket no.	Name of the student	Sub-1	Sub-2	Sub-3	Sub-4	Sub-5	Sub-6	Total Marks	Average(%)	Rank	pass/fail	status
100101	Rose	73	35	94	78	91	78	449	74.8333333	5	pass	good
100102	Raju	97	90	83	78	85	98	531	88.5	2	pass	distinction
100103	Rajesh	87	85	78	85	64	87	486	81	4	pass	distinction
100104	Rana	18	75	73	65	12	46	289	48.1666667	8	fail	poor
100105	Ram	13	25	68	45	31	15	197	32.8333333	9	fail	poor
100106	Shyam	8	20	63	13	13	35	152	25.3333333	11	fail	poor
100107	Akhil	3	15	58	12	45	21	154	25.6666667	10	fail	poor
100108	Sourav	99	34	53	45	25	46	302	50.3333333	7	fail	good
100109	Shivam	98	97	35	76	78	58	442	73.6666667	6	pass	good
100110	Tatan	78	56	99	85	98	87	503	83.8333333	3	pass	distinction
100111	Tapo	98	89	98	99	99	89	572	95.3333333	1	pass	distinction

>75% distinction
>50% good
<50% poor

⊛ Total Marks → =SUM (Select Sub-1 to Sub-5) ↵

⊛ Average → = Average (Select Sub-1 to Sub-5) ↵

⊛ Rank → =Rank (Total Marks, i2:i11) ↵

⊛ Pass/Fail → =IF(and (logical 1, [logical 2], ...)

Conditions → IF(and (Sub-1 >=35, Sub-2 >=35, Sub-3 >=35, Sub-4 >=35, Sub-5 >=35, Sub-6 >=35), "Pass", "Fail")

⊛ Status → =IF(Average >75, "Distinction", IF(Average >50, "good", "Poor"))

SALARY DETAILS OF EMPLOYEES

PAID ON 25-Apr-22

EMPLOYEE ID	EMPLOYEE NAME	DESIGNATION	BASIC SALARY	WORKING DAYS	PAYMENTS			GROSS SALRY	DEDUCTION					NET SALARY
					ALLOWANCE				INCOME TAX	PF	EOBI	SALARY ADVANCE	TOTAL DEDUCTION	
					CONVEYANCE	HOUSE RENT	MEDICAL							
N011	NITIN	Administrator	50000	30	1250	3000	1750	54387.09677	652.6451613	543.871		4500	5696.51613	48691
N012	ASHOKE	instructor	25000	30	500	1375	750	26818.54839	0	268.1855		2000	2268.18548	24550
N013	RATAN	instructor	25000	28	500	1375	750	25205.64516	0	252.0565		17000	17252.0565	7953.6
N014	ASLAM	instructor	30000	28	600	1650	900	30246.77419	0	302.4677		0	302.467742	29944
N015	AVI	instructor	40000	26	1000	2400	1400	38348.3871	0	383.4839		500	883.483871	37465
N016	SAMRAT	receptionist	20000	26	400	1100	600	18874.19355	0	188.7419		0	188.741935	18685
N017	DIPANKAR	instructor	28000	30	560	1540	840	30036.77419	0	300.3677		200	500.367742	29536
N018	SUBRATA	instructor	12000	30	240	660	360	12872.90323	0	128.729		1000	1128.72903	11744
N019	AVINASH	office guard	10000	30	200	550	300	10727.41935	0	107.2742		5000	5107.27419	5620.1
N020	SURAJIT	office guard	10000	29	200	550	300	10404.83871	0	104.0484		5500	5604.04839	4800.8
N021	SAMIRAN	guard	20000	28	400	1100	600	20164.51613	0	201.6452		0	201.645161	19963
N022	DEBASISH	manager	30000	26	600	1650	900	28311.29032	0	283.1129		1000	1283.1129	27028

⊛ =IF(logical test, [Value_if_true], [Value_if_false]) ↵

⊛ Conveyance → IF(Basic Salary >= 35,000, Basic Salary * 2.5%, Basic Salary * 2%) ↵

⊛ House Rent → = IF(Basic Salary >= 35,000, Basic Salary * 6%, Basic Salary * 5.5%) ↵

⊛ Medical → = IF(Basic Salary >= 35,000, Basic Salary * 3.5%, Basic Salary * 3%) ↵

⊛ Gross Salary → = SUM(Select "conveyance", "House Rent", "Medical" Row) + Basic Salary / 31 * working days ↵

⊛ Income Tax → = IF(Gross Salary >= 50,000, Gross Salary * 1.2%, 0) ↵

⊛ PF → Gross Salary * 1% ↵

⊛ Total Deduction → = SUM(Select "Income Tax", "PF", "EOBI", Salary advance) ↵

⊛ Net Salary → Gross Salary − Total Deduction . ↵

What is Tally

Tally is an ERP accounting software package used for recording day to day business data of a company. The latest version of Tally is Tally ERP 9. Tally ERP 9 Software is one acclaimed financial accounting system and inventory management system with power computer. Tally.ERP 9 is one best accounting software that can integrated with other business applications such as Sales, finance, Purchasing, Payroll, Inventory, etc. Tally software stores all the business transactions of each account in detail. Tally ERP 9 follows double entry accounting system and hence eliminates and rectifies possible errors

Features of Tally

1. Tally ERP 9 supports multi languages, so it is called as multi-lingual tally software. Accounts can be maintained in one language and reports can be viewed in another language. 2. You can create and maintain accounts up to 99,999 companies. 3. Using payroll feature, you can automate employee records management. 4. Tally has feature of synchronization, the transactions maintained in multiple locations offices can be automatically updated. 5. Generate consolidated financial statements as per requirements of company. 6. Managing single and multiple groups are very important features of tally

. Advantages of Tally

1. Tally ERP 9 software is a low cost of ownership and it can be easily implement and customize. 2. Supports multi operating systems such as Windows & Linux and can be installed on multiple systems. 3. Tally software utilizes very low space for installation and the installation of tally is an easy method. 4. It is built in back up and restore, so the user can easily backup all companies data in a single directory, in a local system disk. 5. Supports all types of protocols such as HTTP, HTTPS, FTP, SMTP, ODBC, etc. 6. Supports multi languages including 9 Indian language. The data can be entered in one language and you can generate invoices, Po's, delivery notes, etc in other language.

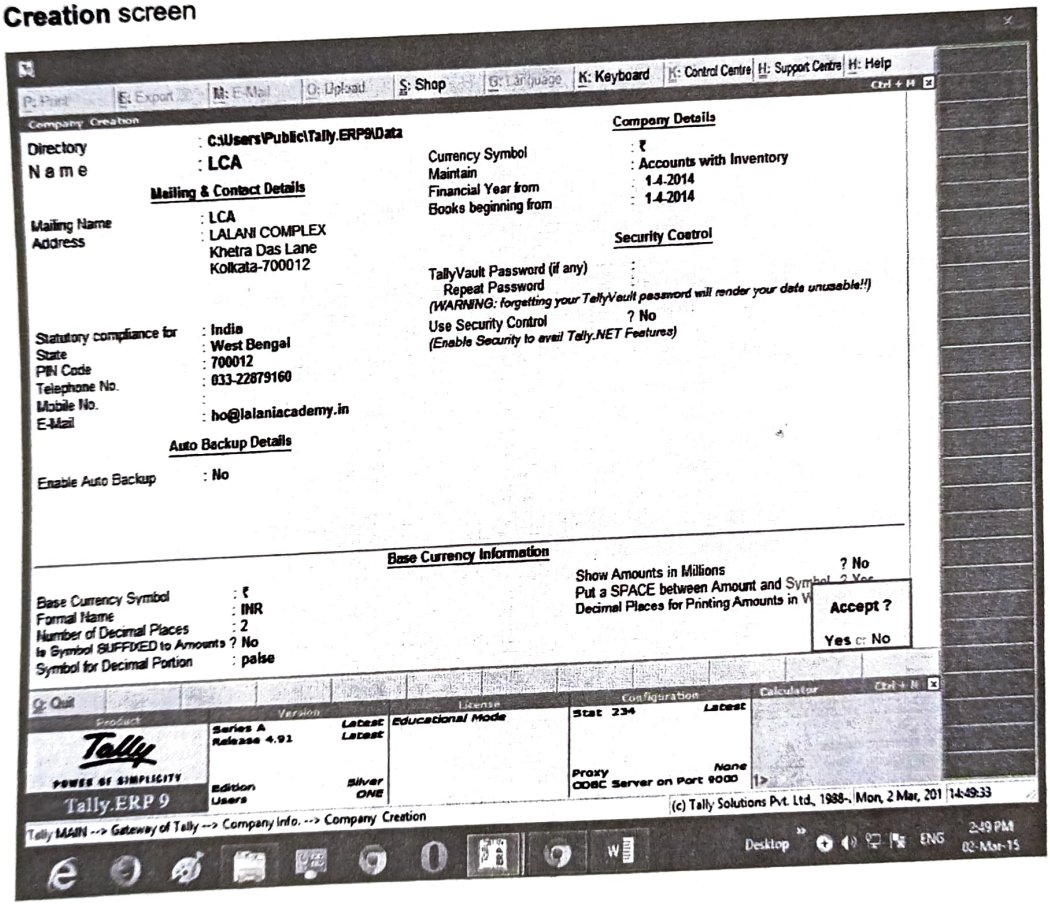
COMPANY CREATION

Creation/ Setting up of Company in Tally.ERP 9

The first step towards understanding Tally.ERP 9 is to create a company in Tally.ERP 9. Create a company using the **Company Creation** screen.

Creation of a Company

Go to **Gateway of Tally > Company Info. (Alt+F3) > Create Company** The **Company Creation** screen



Press **Y** or **Enter** to accept the screen.

Ensure that **Default Companies** is set to **Yes** and specify the company number which has to be loaded automatically, for example, Load = 10000

SHORTCUT KEYS OF ACCOUNTING VOUDHER

Shortcut Key	Description	Where to find them
F1	To select the company or to open the company	On Gateway of Tally
CTRL + F1	To select payroll voucher from Inventory Voucher/Accounting Screen	On Gateway of Tally > Inventory Voucher/Accounting Voucher > Payroll Voucher
CTRL + F2	To select Sales Order Voucher from Accounting Voucher/ Inventory Voucher Screen	On Gateway of Tally > Accounting Voucher/ Inventory Voucher > Sales Voucher
CTRL + F4	To select Purchase Order Voucher from Accounting Voucher Screen	On Gateway of Tally > Accounting Voucher / Inventory Voucher > Purchase Order Voucher
CTRL + F10	To select memorandum voucher	On Gateway of Tally > Accounting Voucher / Inventory Voucher > Memorandum Voucher
CTRL + F9	To select Debit note voucher	On Gateway of Tally > Accounting Voucher > Debit Note
CTRL + F8	To select Credit Note Voucher	On Gateway of Tally > Accounting Voucher > Credit Note
F8	To Select Sales Voucher	On Gateway of Tally > Accounting Voucher > Sales Voucher
F9	To select Purchase Voucher	On Gateway of Tally > Accounting Voucher > Purchase Voucher
F7	To select Journal Voucher	On Gateway of Tally > Accounting Voucher > Journal Voucher
F6	To select Receipts Voucher	On Gateway of Tally > Accounting Voucher > Receipts Voucher
F5	To select Payments Voucher	On Gateway of Tally > Accounting Voucher > Payments Voucher
F4	To Select Contra Voucher	On Gateway of Tally > Accounting Voucher > Contra Voucher

15/6/23.

Sample Project Report (2022-2023)

Department of Political Science

KAZI NAZRUL UNIVERSITY

DESHBANDHU MAHAVIDYALAYA

POLITICAL SCIENCE DEPARTMENT (HONS.)

TOPIC- DR. B.R. AMBEDKAR ROLE IN MAKING OF THE INDIAN CONSTITUTION

NAME- SREOSHREE SANTRA

REGISTRATION NO- KNU2010000515

OF-2020-21

ROLL-NO- 10420051210340 17

SEMESTER- 6TH

COURSE CODE- BAHPLSC602

YEAR- 2023

ভারতের সংবিধান

প্রস্তাবনা

আমরা ভারতের জনগণ ভারতকে একটি সার্বভৌম সমাজতান্ত্রিক ধর্মনিরপেক্ষ গণতান্ত্রিক সাধারণতন্ত্র রূপে গড়িয়া তুলিতে এবং ইহার সকল নাগরিক যাহাতে :

সামাজিক, অর্থনীতিক এবং রাজনীতিক ন্যায়বিচার;

চিন্তার, অভিব্যক্তির, বিশ্বাসের, ধর্মের ও উপাসনার স্বাধীনতা;

প্রতিষ্ঠা ও সুযোগের সমতা নিশ্চিতভাবে লাভ করেন;

এবং তাঁহাদের সকলের মধ্যে ব্যক্তি-মর্যাদা ও জাতীয় ঐক্য ও সংহতির আশ্বাসক ভ্রাতৃভাব বর্ধিত হয়;

এজন্য সত্যনিষ্ঠার সহিত সংকল্প করিয়া আমাদের সংবিধান সভায় অদ্য, ২৬ শে নভেম্বর, ১৯৪৯ তারিখে, এতদ্বারা এই সংবিধান গ্রহণ করিতেছি, বিধিবদ্ধ করিতেছি এবং আমাদিগকে অর্পণ করিতেছি ॥

সূচিপত্র

27/6/23

কৃতজ্ঞতা স্বীকার

প্রকল্পটির রূপ দান করতে গিয়ে বিচিত্র অভিজ্ঞতা লাভ করেছি, নিজের কার্য সম্পাদনে আমি অনেক কিছু শিখতে পেরেছি এবং প্রকল্পটি নিয়ে চর্চার আগ্রহ আমার আরও বেড়েছে, সীমিত সময়কালের মধ্যে প্রকল্পটি সম্পূর্ণ করতে গিয়ে কিছু ত্রুটি থেকে যাওয়ায় আমি ক্ষমাপ্রার্থী, আমার তত্ত্বাবধায়ক শিক্ষক-শিক্ষিকাগণ মহাশয়—মহাশয়া-র নির্দেশ ও সহযোগিতা আমাকে প্রকল্পটি রূপায়নে গভীরভাবে সক্রিয় করেছেন, এজন্য তাদের কাছে আমি কৃতজ্ঞ।

শিক্ষক/শিক্ষিকার স্বাক্ষর

ভূমিকা

ডঃ ভীমরাও আম্বেদকর ভারতের সংবিধানের খসড়া তৈরি করে একটি সসাধারণ অবদান রেখেছেন, ডঃ আম্বেদকর ।৪ই এপ্রিল, ।৪৭। সালে মধ্যে (বর্তমানে মধ্যপ্রদেশে) জন্মগ্রহণ করেন, ডঃ বাবাসাহেব আম্বেদকর ছিলেন ভারতের একজন কৃতী সন্তান, যিনি ভারতীয় সমাজকে সবচেয়ে সমতাবাদী এবং মানবিক নীতিতে পুনর্গঠন করার জন্য সংগ্রাম করেছিলেন, সমগ্র জীবন উৎসর্গ করেছিলেন দলিত, অস্পৃশ্য, বিশেষ করে সমাজের প্রান্তিক জনগোষ্ঠী এবং সার্বিক-ভাবে অন্তর্ভুক্তি মূলক গনতন্ত্রের জন্য, তার সারা জীবন, তিনি দলিত এবং অন্যান্য সামাজিকভাবে অনগ্রসর শ্রেনির অধিকার সম্পুক্ত রেখে সামাজিক বিষম্যের বিরুদ্ধে লড়াই করেছেন, তাকে এখনও ভারতীয় সংবিধানের জনক হিসাবে বিবেচনা করা হয়, ভারতীয় সংবিধান প্রনয়নে তাঁর গুরুত্বপূর্ন ভূমিকার কারণে, ডঃ ভীমরাও আম্বেদকর ভারতীয় সংবিধানের প্রধান স্থপতি হিসাবে সারা ভারতে জনপ্রিয়, সামাজিক কুফল দূরীকরনে তাঁর প্রচেষ্টা ছিল অসাধারন এবং এই কারনেই তাঁকে ভারতে দলিত ও নিপীড়িতদের "মসিহা" বলা হয়, 29 শে আগাস্ট, ।৭৭-এ ড. আম্বেদকরকে স্বাধীন ভারতের জন্য একটি সংবিধান প্রনয়নের জন্য গনপরিষদ দ্বারা গঠিত খসড়া কমিটির চেয়ারম্যান নিযুক্ত করা হয়েছিল,

জওহরলাল নেহেরু, রাজেন্দ্র প্রসাদ, বি. আর. এর আগে গণপরিষদে মহান নেতা ও আইনজ্ঞদের সম্মিলিত প্রচেষ্টার ফল ছিল আমাদের সংবিধান, এটি 26 জানুয়ারী, 1950 সাল থেকে কার্যকর হয়েছে, যা ভারতে প্রজাতন্ত্র দিবস হিসাবে পালিত হয়, আম্বেদকরের মতে সংবিধান শুধু দেশের আইনের মৌলিক আইন ছিল না; বরং এটি ছিল জাতির অগ্রগতির একটি বাহন, যা দেশের অতীত ঐতিহ্যের সর্বোত্তম প্রতিফলন ঘটায়, বর্তমানের চাহিদা মোকাবিলা করে এবং ভবিষ্যতের চাহিদা মেটাতে যথেষ্ট স্থিতিস্থাপকতার অধিকারী ছিল, সামাজিক, অর্থনৈতিক, রাজনৈতিক, স্বাধীনতা, সাম্য এবং ভ্রাতৃত্ব নিশ্চিত করে সংবিধানের একটি অনুপ্রেরণামূলক প্রস্তাবনা প্রদান করেন, ডঃ আম্বেদকর ভারতীয় সংবিধান প্রনয়নে গুরুত্বপূর্ন ভূমিকা পালন করেছিলেন, সংবিধান প্রনয়নে তিনি তার সমস্ত অভিজ্ঞতা ও জ্ঞান কাজে লাগিয়েছেন,

সংবিধান প্রণয়নে অবদান

■ মৌলিক অধিকার

সাম্বেদকর মৌলিক অধিকারের একজন চ্যাম্পিয়ন ছিলেন, ভারতীয় সংবিধানের ইতীয় সংশে রাষ্ট্রের বিরুদ্ধে নাগরিকদের মৌলিক অধিকারের নিশ্চয়তা দেয়, অনুচ্ছেদ 15(2), 17, 23 এবং 24-এ থাকা কিছু মৌলিক অধিকার ব্যক্তিদের বিরুদ্ধেও বলবৎযোগ্য করন, এগুলি ধর্ম, জাতি, বর্ন, লিঙ্গ বা জন্মস্থানের ভিত্তিতে বৈষম্য নিষিদ্ধ করার সাথে সম্পর্কিত অত্যন্ত গুরুত্বপূর্ন অধিকার, সাম্বেদকর কর্তৃক প্রনীত পাচ্যটি ধর্মের স্বাধীনতা, অস্পৃশ্যতা বিলুপ্তি এবং সকল প্রকার বৈষম্যকে বেআইনি ঘোষনাসহ প্রত্যেক নাগরিকদের জন্য বিস্তৃত নাগরিক স্বাধীনতার জন্য সাংবিধানিক গ্যারান্টি এবং সুরক্ষা প্রদান করে, সাম্বেদকর নারীদের জন্য ব্যাপক অর্থনৈতিক ও সামাজিক অধিকারের জন্য যুক্তি দিয়েছিলেন, ড: সাম্বেদকর 17 অনুচ্ছেদ অন্তর্ভুক্ত করার ক্ষেত্রে বরং আরও গুরুত্বপূর্ন ভূমিকা পালন করেছিলেন যা 'অস্পৃশ্যতা বিলুপ্তির' বিধান করে, এই অনুচ্ছেদের উপর ভিত্তি করে, নাগরিক অধিকার সুরক্ষা আইন 1965 এবং নৃশংসতা প্রতিরোধ (তফসিলি জাতি তফসিলি উপজাতি) আইন 1989 দলিত অধিকার সুরক্ষার জন্য সংসদ দ্বারা প্রনয়ন করা হয়েছিল, যদিও, বর্ন-ভিত্তিক বৈষম্য এবং সহিংসতা এখনও আজকের ভারত জীবনের একটি সত্য, সমাজের ঐতিহাসিকভাবে অনগ্রসর অংশগুলির জন্য যথেষ্ট অগ্রগতি হয়েছে, প্রকৃত সামাজিক সমতা অর্জন অবশ্যই একটি ধীরে ধীরে প্রক্রিয়া এবং

কয়েক প্রজন্ম দূরে সরে গেছে, কিন্তু আজ ড. বি. আর. আম্বেদকর যিনি 'দলিত' কে কেন্দ্র হিসাবে বিবেচনা করে দর্শনের উপর ভিত্তি করে একটি লিখিত সংবিধান দিয়ে আমাদের এই পথে নিয়ে গেছেন, সমস্ত মৌলিক অধিকার প্রবর্তনের ক্ষেত্রে তাঁর দৃষ্টিভঙ্গি সম্পূর্ণভাবে গুরুত্বপূর্ণ ছিল যেখানে সংবিধান জাতি, ধর্ম নির্বিশেষে সমস্ত ভারতীয় নাগরিকের জন্য সমান ন্যায়বিচার, স্বাধীনতা এবং মর্যাদা প্রদান করে,

যদিও তিনি ভারতের সংবিধান প্রণয়নে অসামান্য অবদান রেখেছিলেন, সংবিধানের 32 অনুচ্ছেদ প্রণয়নের ক্ষেত্রে তাঁর প্রচেষ্টা ছিল যা একজন নাগরিককে তার মৌলিক অধিকার প্রয়োগের জন্য সরাসরি সুপ্রিমকোর্ট, মাদ্রাজের মৌলিক অধিকারের নিশ্চয়তা দেয়, ড: আম্বেদকর এই বিধানটিকে 'সংবিধানের প্রাণ এবং এর হৃদয়' হিসাবে বিবেচনা করেছিলেন,

■ মানুষের জন্য আর্থ-সামাজিক ন্যায়বিচার

আর্থ-সামাজিক ন্যায়বিচারের ধারণা, যেটিকে ড. বি. আর. আম্বেদকর রাষ্ট্রীয় নীতির নির্দেশমূলক নীতিগুলিতে খুব ভালভাবে প্রতিফলিত হয়েছেন, সংবিধানের চতুর্থ খন্ড, যা রাষ্ট্রীয় নীতির নির্দেশমূলক নীতি হিসাবে এগুলোহচ্ছে, এতে রয়েছে জীবিকার পর্যাপ্ত উপায়ের অধিকার, অর্থনৈতিক শোষনের বিরুদ্ধে অধিকার, উভয় লিঙ্গের সমান কাজের জন্য সমান বেতনের অধিকার, কাজের অধিকার, অবসর ও বিশ্রামের অধিকার, এবং বেকারত্ব, বার্ধক্য, অসুস্থতা ইত্যাদি ক্ষেত্রে জনসহায়তার সহায়তা পাওয়ার অধিকার, এই অংশে অর্থনৈতিক ও সামাজিক ন্যায়বিচারের কিছু নীতি এবং কিছু আদর্শ

রয়েছে যা অর্জনের জন্য রাষ্ট্রের চেষ্টা করা উচিত, অনুচ্ছেদ ৩৪, উদাহরনস্বরূপ, রাষ্ট্রকে একটি সামাজিক শৃঙ্খলা আনতে নির্দেশ দেয় যেখানে ন্যায়বিচার, সামাজিক, রাজনৈতিক এবং অর্থনৈতিক ক্ষেত্রীয় জীবনের সমস্ত প্রতিষ্ঠানের জন্য অভিন্ন হবে, অনুচ্ছেদ ৩৭, এমন পরিস্থিতি তৈরির নির্দেশ দেয় যেখানে 'সম্পদ এবং উৎপাদনের উপায় সাধারন ক্ষতির জন্য কেন্দ্রীভূত হবে না' এবং দেখতে হবে যে 'সম্প্রদায়ের বস্তুগত সম্পদের মালিকানা এবং নিয়ন্ত্রন এমনভাবে বিতরন করা হয়েছে যে উপ-এর জন্য সর্বোত্তম, সাধারন ভালো পরিবেশন করুন',

■ সাংসদীয় গনতন্ত্র

বি. আর. আম্বেদকরের মতে, "সাংসদীয় ব্যবস্থা একটি অ-সাংসদীয় ব্যবস্থা থেকে আলাদা, যতটা প্রাক্তনটি পরেরটির চেয়ে বেশি দায়ী, তবে তাদের দায়িত্ব মূল্যায়নের জন্য সময় এবং সংস্থার ক্ষেত্রেও তাদের পার্থক্য রয়েছে," ১৭৩৫ সালের ভারত সরকার আইনের সূচনা থেকেই তিনি সাংসদীয় পদ্ধতির সরকারের একজন দৃঢ় প্রবক্তা ছিলেন, তিনি দৃঢ়ভাবে বিশ্বাস করতেন যে, শুধুমাত্র সাংসদীয় সরকার ব্যবস্থাই সামাজিক গনতন্ত্রের নীতির প্রয়োগের মাধ্যমে একটি সমতাভিত্তিক সমাজের সূচনা করতে পারে, ডঃ আম্বেদকরের সামাজিক গনতন্ত্রে রাজনীতিবিদ, রাজনৈতিক নিষ্ক্রিয়তা, সততা এবং সততার উচ্চমানসম্পন্ন রাজনৈতিক দল এবং দরিদ্র ও দুর্ভোগগ্রস্ত শ্রেনির জন্য প্রতিশ্রুতিবদ্ধ কার্যকলাপ এবং অত্যন্ত দায়িত্বশীল বিরোধী দল বা দলগুলির নিয়ে গঠিত, ভারতীয় সংবিধানের প্রস্তাবনা (ড. আম্বেদকর কর্তৃক প্রনীত) সাংসদীয় গনতন্ত্রের নীতিগুলির প্রতিফলন করে যা "তার সমস্ত নাগরিকদের জন্য সুরক্ষিত – ন্যায়বিচার, সামাজিক,

অর্থনৈতিক এবং রাজনৈতিক; চিন্তার স্বাধীনতা, অভিব্যক্তি, বিশ্বাস, বিশ্বাস ও উপাসনা, মর্যাদা ও সুযোগের সমতা এবং তাদের মধ্যে সর্ব ভ্রাতৃত্বের প্রচার করা..."

তাই, ডঃ আম্বেদকর একটি কার্যকারী কেন্দ্র এবং স্বাধীন রাজ্যের নীতির উপর ভিত্তি করে ইউনিয়ন এবং রাজ্যগুলির যেভাবেল কাঠামোর একজন কার্যকারী উকিল ছিলেন, ডঃ আম্বেদকর ভারতীয় ঐক্য ও অখন্ডতাকে কার্যকারী করার লক্ষ্যে একটি একীভূত বিচার ব্যবস্থা এবং সংবিধান সর্বভারতীয় পরিষেবার প্রতিষ্ঠানের প্রস্তাব করে জাতির জন্য মহান সেবা করেছিলেন,

■ জনগণের জন্য সুরক্ষামূলক বিষয় / সংরক্ষণ

আম্বেদকরের প্রকৃত অবদান প্রতিফলিত হয় প্রতিরক্ষামূলক বিষয়-মূলক প্রকল্পে বা সরকারের সংরক্ষণ নীতিতে যা পার্ট 3 এবং পার্ট 4-এর অনেকগুলি বিধানের অধীনে পরিকল্পিত হয়েছে যা তফসিলি জাতি ও তফসিলি উপজাতিদের অবস্থার উন্নতি সাংবিধানিক আদেশের সাথে কাজ করে এবং অন্যান্য অনগ্রসর শ্রেণী অনুচ্ছেদ 15(4), 16(4) এবং অনুচ্ছেদ 30 সংখ্যালঘুদের সুরক্ষার সাথে সম্পর্কিত পার্ট 3 এবং পার্ট XI এর কিছু উল্লেখযোগ্য উদাহরন এবং তফসিলি জাতি এবং তফসিলি উপজাতিদের উন্নতির সাথে সম্পর্কিত, অস্পৃশ্যদের উন্নয়নে আম্বেদকরের উল্লেখযোগ্য অবদান রয়েছে, আম্বেদকর অস্পৃশ্য এবং অন্যান্য নিপীড়িত জনসাধারণকে হীনমন্যতার অসম অবস্থান থেকে উন্নীত করাকে তাঁর লক্ষ্যে পরিনত করেছিলেন, এই লক্ষ্য অর্জনের জন্য সংরক্ষণ নীতি বা প্রতিরক্ষামূলক বিষয়ের পরিকল্পনাটি হিন্দু সমাজের নিম্ন-মদস্থ সংখ্যালঘুর অবস্থার উন্নতির জন্য অন্তত দশ বছর তাঁর দ্বারা উকিল এবং বাস্তবায়ন করা হয়েছিল,

রাষ্ট্রীয় সমাজতন্ত্র

ডঃ আম্বেদকর খসড়া সংবিধানে তার 'রাষ্ট্রীয় সমাজতন্ত্র' এর অর্থনৈতিক মতবাদের পক্ষে ছিলেন, তিনি চাষবাদের একটি সমষ্টিগত পদ্ধতি এবং শিল্পের ক্ষেত্রে রাষ্ট্রীয় সমাজতন্ত্রের একটি পরিবর্তিত রূপের সাথে কৃষির রাষ্ট্রীয় মালিকানার প্রস্তাব করেছিলেন, কিন্তু, সংবিধান পরিষদে প্রবল বিরোধিতার কারনে তিনি তার রাষ্ট্রীয় সমাজতন্ত্রের পরিকল্পনাকে সংবিধানের একটি অংশ হিসেবে মৌলিক অধিকারের আওতায় অন্তর্ভুক্ত করাতে পারেননি,

ডঃ আম্বেদকরের রাজনৈতিক চিন্তার মূল তার বক্তব্যের মধ্যে রয়েছে– 'অধিকার আইন দ্বারা নয়, সমাজের সামাজিক ও নৈতিক বিবেক দ্বারা সুরক্ষিত হয়,' এবং সরকারের একটি গনতান্ত্রিক রূপ সমাজের একটি গনতান্ত্রিক রূপকে অনুমান করে, সামাজিক বিবেকই মৌলিক বা অ-মৌলিক সকল অধিকারের একমাত্র রক্ষাকবচ, আম্বেদকরের কাছে গনতন্ত্র মূলত সমাজের একটি রূপ, যুক্ত জীবনযাপনের একটি পদ্ধতি, গনতন্ত্রের ভিত্তি অনুসন্ধান করতে হবে সামাজিক সম্পর্কের মধ্যে এবং সমাজ গঠনকারী মানুষের মধ্যে সংশ্লিষ্ট জীবনের পরিপ্রেক্ষিতে, সমাজে সমতা, আইন ও প্রশাসনের সামনে সমতা, সাংবিধানিক নৈতিকতা, সাংখ্যাগরিষ্ঠের অত্যাচারের অভাব এবং জনসংযোগের বিবেকের বিকাশ ভারতে গনতন্ত্রের সাফল্যের শর্ত, গনতন্ত্রের প্রধান শর্ত, আম্বেদকরের মতে, সমাজে সমতা কারন সাম্য হল ভিত্তিপ্রস্তর যেখানে স্বাধীনতা ও ভ্রাতৃত্বের ধারনাগুলি বিকাশ লাভ করে, সামাজিক ও অর্থনৈতিক জীবনে সমতা অস্বীকার করা রাজনৈতিক গনতন্ত্রকে হুমকির মুখে ফেলা হবে, 25 নভেম্বর, 1949 তারিখে ডঃ আম্বেদকর যে পর্যবেক্ষন করেছেন তা সামনের দেশের বর্তমান রাজনৈতিক পরিস্থিতি বিবেচনা করে ভবিষ্যদ্বানীমূলক এবং প্রাসঙ্গিক, সংবিধান শুধুমাত্র রাষ্ট্রের অঙ্গ-প্রত্যঙ্গ যেমন আইনসভা, নির্বাহী বিভাগ এবং বিচার বিভাগ প্রদান করতে পারে, রাষ্ট্রের এই অঙ্গগুলির কার্যকারিতা যে

বিষয়গুলির উপর নির্ভর করে তা হল জনগণ এবং রাজনৈতিক দলগুলিকে তার তাদের ইচ্ছা ও নীতি বাস্তবায়নের জন্য তাদের যন্ত্র হিসাবে স্থাপন করবে।

■ সামাজিক দর্শন

আম্বেদকর ছিলেন সর্বাধুনিক, উপেক্ষিত মানবতার মুখপাত্র-শ্রমিক, ক্ষুদ্র কৃষক এবং ভূমিহীন শ্রমিক, তিনি অস্পৃশ্যদের দুঃখ প্রকাশ করেন এবং হতাশাগ্রস্ত শ্রেণির কর্মকেন্দ্র পরিচালনার জন্য আন্তরিকভাবে চেষ্টা করেন, তাদের সংগঠিত করার জন্য, তিনি তাদের মধ্যে আত্মসম্মান ও গর্ববোধ তৈরি করেছিলেন, তিনি অস্পৃশ্যতা দূর করার জন্য তার জীবন উৎসর্গ করেছিলেন এবং ভারতীয় সমাজের সামাজিকভাবে বিচ্ছিন্ন সংঘের সাথে নিজেকে সম্পূর্ণরূপে চিহ্নিত করেছিলেন, তিনি একজন অস্পৃশ্য জন্মগ্রহণ করেছিলেন এবং তাই তিনি অস্পৃশ্যরা যাতে সামাজিক, রাজনৈতিক এবং সর্বোত্তমভাবে স্থান পায় তা দেখার জন্য তার তীব্র আবশ্যকতা ছিল, তিনি একটি সম্পূর্ণ জীর্ণ কাঠামো পুনর্গঠন করার চেষ্টা করেছিলেন, মৌলিক মানবাধিকারে, নারী-পুরুষের সমান অধিকারে, ব্যক্তির মর্যাদায়, জীবনের উন্নত মানের উন্নয়নে এবং সর্বোপরি মানব জীবনের সকল ক্ষেত্রে শান্তি ও নিরাপত্তায় তাঁর গভীর বিশ্বাস ছিল, আম্বেদকর জাতিভেদ প্রথা বিনাশের জন্য সম্পূর্ণরূপে প্রতিশ্রুতিবদ্ধ ছিলেন, তাঁর মতে, বর্ণপ্রথা নিছক শ্রমের বিভাজন নয় বরং শ্রমিকদের বিভাজন, এটি ক্ষতিকারক কারণ এতে মানুষের প্রাকৃতিক ক্ষমতার স্বাধীনতা এবং সামাজিক নিয়মের প্রয়োজনের প্রতি কোঁক দেয়, আম্বেদকরের মহান দৃষ্টিভঙ্গি প্রতিটি অভিব্যক্তি ও আকারে বর্ণবাদের বিলুপ্তির নির্দেশ দেয়, যেহেতু তিনি সমস্ত বিভাজনকারী শক্তির বিরোধী ছিলেন এবং জাতীয় সংহতির প্রবক্তাকে শক্তিশালী করার লক্ষ্যে ছিলেন, তার দূর-পরিসরের প্রতিবিধান ছিল মূল কারণ অর্থাৎ বর্ণপ্রথার বিরুদ্ধে সরাসরি আক্রমণ, বাবা সাহেব প্রকৃতপক্ষে একজন বন্ধু, দার্শনিক এবং সমাজের নিম্নস্তরের মানুষের পথপ্রদর্শক ছিলেন, এটি একটি মহান ছিল প্রত্যাশা যা ভারতের অধিকাংশ মানুষের পথকে আলোকিত করার পথ প্রশস্ত করেছে।

উপসংহার

ড: বি. আর. আম্বেদকর-এর মূল উদ্দেশ্য ছিল গভীর শিকড়যুক্ত জাতিভেদ প্রথার কুফলকে উপড়ে ফেলা এবং এই দেশকে অসভ্য রাষ্ট্র থেকে সভ্য রাষ্ট্রে রূপান্তর করা, ডক্টর বি. আর. আম্বেদকরের নিরলস প্রচেষ্টা এবং ব্যক্তির প্রতি কোলাহলগত দৃষ্টিভঙ্গির ফলে ভারতীয় সংবিধান বিকশিত হয়েছে, ভারতীয় সংবিধানে তাঁর প্রণীত বিধান যা দলিত ও নারীদের স্বাধীনতার সম্ভাবনা উপভোগ করতে এবং তাদের স্বতন্ত্র পরিচয় উপলব্ধি করতে সক্ষম করেছে, একজন বিবেকবান নাগরিকের আজ যা সমস্যা হচ্ছে তা হলো সংবিধানের কার্যকর বাস্তবায়নে আগ্রহের অভাব, মানুষ যখন বর্ণের ভিত্তিতে সামাজিক স্তরবিন্যাস প্রবর্তন করেছিলেন, তখন ড: আম্বেদকর ভারতে বর্ণ নির্মূলের কল্পনা করেছিলেন, ব্যক্তিগত মানবিক মর্যাদা, মানবাধিকার, সমান সুযোগ এবং সবচেয়ে গুরুত্বপূর্ণভাবে সামাজিক ন্যায়বিচার নিশ্চিত করার জন্য আম্বেদকর সংবিধানের অধ্যয়ন মন্ত্রকে পরাজিত করেছিলেন, সামাজিক ও অর্থনৈতিক বৈষম্য অব্যাহত রয়েছে, তাঁর জীবন মহান সংগ্রাম ও অর্জনের গাথা, জনগনের প্রতি তাঁর বার্তা ছিল: "আপনার মিশনের পবিত্রতার প্রতি আপনার দৃঢ় বিশ্বাস থাকতে হবে, অহং আপনার লক্ষ্য এবং মহিমান্বিত আপনার মিশন," প্রকৃতপক্ষে তিনি ভারতীয় সংবিধান প্রনয়নে গুরুত্বপূর্ন ভূমিকা পালন করেছিলেন এবং ভারতের সংবিধানের খসড়া প্রনয়নের জন্য প্রধানত দায়ী ছিলেন, সেই বাবা আম্বেদকরের অবদান ভারতবাসীর জন্য অবিস্মরনীয়, ভারতের মানুষ ব্যালট বাক্সের মাধ্যমে স্বাধীনতা পেয়েছে, প্রকৃতপক্ষে, ভারতের মতো দেশের জন্য তাঁর অসামান্য অবদানের বদলে জন্য পুরো কৃতিত্ব বাবা সাহেব আম্বেদকরকে যায়,

গ্রন্থপঞ্জী

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Sample Project Report (2022-2023)

Department of Economics

Deshabandhu Mahavidyalaya, Chittaranjan

B.Sc. Hons. 6th Semester Examination, 2023

Paper Name: Project on Socio Economic Aspects

Paper Code: BSCHECODSE604

Date of Examination: 08.06.2023

Attendance Sheet

Sl. No.	Name of the Student	Signature with date
01	Sourav Mondal	Sourav Mondal 8/6/23

Trend in Petroleum Price in India over Last Decade

Sourav Mondal

Registration Number: KNU20100000436

Roll Number: 2015087

6th Semester

B.Sc. Honours in Economics

Deshabandhu Mahavidyalaya, Chittaranjan

I. INTRODUCTION

The objective of this project report is to analyze the historical trend of petrol prices and compare the price hike over the years. The provided dataset includes petrol prices from the year 2003 to 2023. By examining the price fluctuations, we aim to understand the overall pattern and identify significant changes in petrol prices over time . Current Petrol prices remain high across India with the price being close to 100 rupees per litre in New Delhi, the nation's capital. The petrol hike has made citizens miserable as they find it difficult to afford essential commodities and transportation in their day to day lives. Here are the top five countries where India imports most of its crude oil from: Iraq , United States ,Nigeria ,Saudi Arabia , UAE . India imports most of its oil from the Middle East, with Iraq and Saudi Arabia being primary. Here is a quick look at India's crude oil imports according to regions in 2021 : Middle East: 52.7% , Africa: 15% , United States: 14%. Normally these 4 types of taxes imposed on petroleum , these are ,Central Excise duty, State sales tax , VAT , Cost for dealers .

Prior to the pandemic, in 2020, an owner of a two-wheeler was paying approximately INR 900/- for a full tank of fuel . Today that cost is around INR 1500/- . To make things worse, petrol prices in India have been on the rise in recent months. According to the Ministry of Petroleum and Natural Gas, the average retail price of gasoline in India was Rs. 89 per litre in February 2023. This is a one rupee increase from the previous year, when the average retail price was Rs. 88 per ltr. Recently the price of petrol prices increasing because ,The factors driving this increase include a rise in international oil prices, fluctuations in the exchange rate between the Indian Rupee and the US Dollar, and changes in taxes and duties levied by the government .

In India It's easy to blame the government for not reducing the tax on petrol . In fact, those who are criticizing the current government seem to forget the fact that during the previous UPA government which was in power from 2004-2014, taxes on petroleum were high and the UPA government raised

the tax not once, but several times to help meet its fiscal targets.

The reality is, that no matter who is in power in India right now... the petrol prices would be high in India because the price of crude oil is also significantly high And also, because the decision to reduce taxes on gasoline, including petrol is a complex one that requires careful consideration of For starters, the Indian government collects taxes on gasoline to generate revenue that is used And she had several factors to fund various public services and infrastructure projects. The current Modi government has made infrastructure development a top priority and has invested hundreds of billions of dollars to finally get much needed modem infrastructure into India. One example is the Sagarmata project, which focuses on port-led development. This is estimated to cost over $120 billion USD The Pradhan Mantri Gram Sadak Yojana , which aims to connect all unconnected habitations in rural areas with all-weather roads, is another large infrastructure project that has been undertaken by the government and is estimated to cost several billion dollars Another example is the Pradhan Mantri Gram Sadak Yojana, which aims to connect all unconnected habitations in rural areas with all-weather roads According to estimates, the cost for this is several billion dollars. This is where the heavy tax we pay on petrol is going. Additionally, in recent years, the Indian government has faced rising fiscal deficits, which have put pressure on public finances. The COVIC19 pandemic has also made it difficult to reduce taxes on gasoline, as the government may rely on this source of revenue to meet its financial obligations: Ultimately, the Indian government will have to weigh these considerations and make a decision that is in the best interests of the country and its citizens.

The present increase in oil export from Russia and revenue benifit due to this oppurtunities . India reaps pricing benefits of crude oil imports from Russia. The government also said its three oil marketing companies are not buying crude from Russia but only the private companies are the ones who are buying, refining and shipping out. In the case of oil imports, India till now is on a firm path of sourcing the product cheaply from Russia since

the latters invasion of Ukraine. This is much against the wishes of the western powers who want to bring down the Russian economy by curbing its oil revenue. However, the Indian government has categorically said that it would source what it needs from where the price is advantageous. The government also said its three oil marketing companies are not buying crude from Russia but only the private companies are the ones who are buying, refining and shipping out. According to reports, India's exports of petroleum products shot up to $78.58 billion for the period April 2022 to January 2023, from $50.77 billion shipped out during the previous year corresponding period. Fueled by the imports of crude oil, India's imports from Russia went up by about 384 per cent to $37.31 billion during April 2022-January 2023. As a result, Russia became India's fourth largest import partner up from 18th position in 2021-22.The soaring oil imports from Russia have prevented India from paying for the commodities in Rupees. Queried about the impact of the Russia-Ukraine war on the Indian oil sector, Sweta Patodia, AVP, Analyst, Moody's Investors Service told IANS: "Crude oil and international fuel prices have surged following the Russia-Ukraine war. Net realized prices for the oil marketing companies in India, however, have not increased at the same pace which has resulted in significant marketing losses for them.

While the marketing losses were steep in the first half of the fiscal year, it has narrowed since then. "According to Patodia, the EU imposed price cap on Russian crude purchases will have an impact on the overall crude oil market but any assessment of specific impact will be speculative. On the Russian announcement of cutting down oil production following the price cap, Patodia said: "Reduction in oil production from Russia, if not met by a corresponding increase in production from other producers or demand moderation, will reduce the overall supply relative to demand and may strengthen the crude oil prices. "According to a recent credit rating report by ICRA on Oil and Natural Gas Corporation Limited (ONGC), the latter's subsidiary OVL's assets in Russia were impacted due to geopolitical issues and normal operations in these are expected to resume shortly. Moody's in

a research report last March said ONGC, Oil India, Indian Oil Corporation and Bharat Petroleum Corporation Ltd (BPCL) have invested in upstream oil and gas assets in Russia. According to Moody's import bans and international sanctions on Russia may constrain the future cash flow-generating capacity of these assets and lead to impairment losses for the companies. Indian companies, however, have not announced an exit from their Russian investments. An immediate impairment in the value of investments will be limited, especially in the current oil price environment.

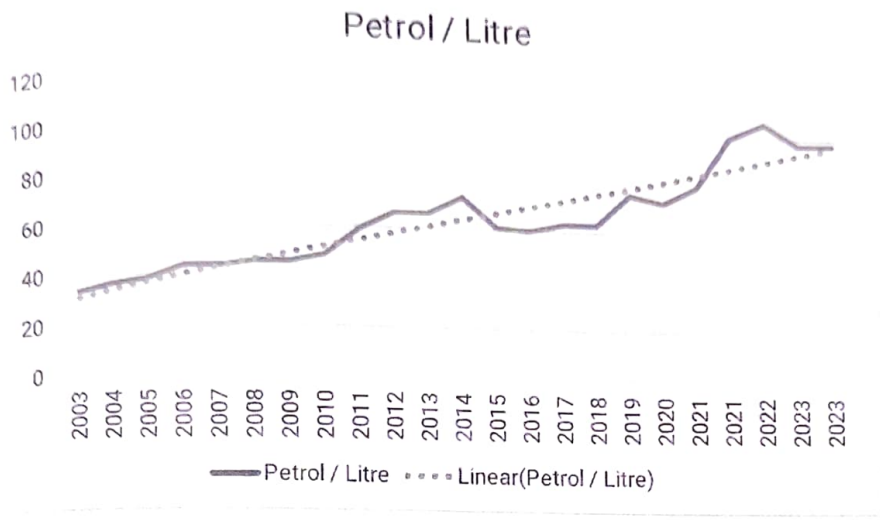
II. DATA

For the purpose of this study to analyze the historical trend of petrol prices and compare the price hike over the years, The data is collected from the website , Indian oil corporation. Here the data from the year 2003 to 2023. In last 20 years the prices increased too much . To perform the analysis, we will utilize the given dataset of petrol and diesel prices. We will organize the data chronologically and visualize the price changes using a line graph. Additionally, we will calculate the percentage increase in petrol and diesel prices for each year to compare the relative price hikes over the years.

Analysis:

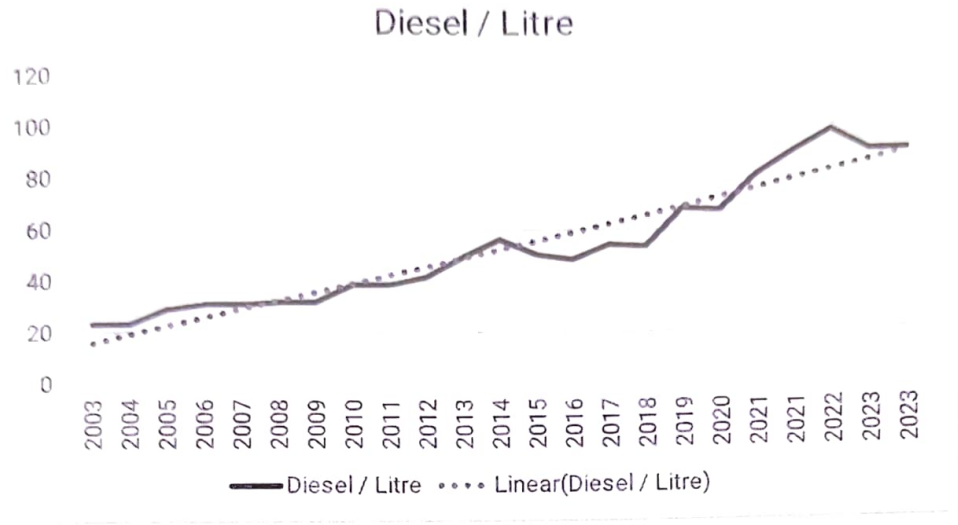
Petrol Price Trend:

The line graph below illustrates the overall trend of petrol prices from 2003 to 2023.



The graph demonstrates that petrol prices have experienced upward trend fluctuations over the years. There are periods of steady increases, followed by decreases or relative stability. Based on the percentage increase calculations, we can identify years with notable price hikes: The year 2011 witnessed a significant increase of 22.50% in petrol prices compared to the previous year. In 2019, there was a considerable surge of 19.74% in petrol prices. By December 2021, there was an additional price increase of 25.22% compared to the previous year. In recent years, petrol prices have shown more volatility. The year 2020 had a slight decrease of 3.43%, while 2021 saw an increase of 9.34% compared to the previous year. By December 2021, there was a substantial price increase of 25.22%. However, in 2023, there was a notable decrease of 8.23% in petrol prices.

Diesel Price Trend: From the line graph below, we can observe the overall trend of diesel prices over the years.



The graph demonstrates that diesel prices have experienced both upward and downward fluctuations over the years. There are periods of steady increases, followed by decreases or relatively stable prices.Based on the percentage increase calculations, we can identify years with notable price hikes: The year 2005 witnessed a significant increase of 24.11% in diesel prices compared to the previous year. In 2010, there was a considerable surge of 23.44% in diesel prices. The year 2019 experienced a significant rise of 26.38% in diesel prices compared to the previous year. In recent years, diesel prices have shown more volatility. The year 2020 had a slight decrease of 1.03%, while 2021 saw a significant increase of 19.78% compared to the previous year. However, by December 2021, there was an additional price increase of 11.84%. In 2023, there was a notable decrease of 7.29% in diesel prices.

Conclusion:

This project report analyzed the historical trend of petrol and diesel prices from 2003 to 2023. By examining the given data and calculating percentage increases, we identified years with significant price hikes. The analysis

revealed fluctuations in petrol and diesel prices over the years, with periods of increases, decreases, and relative stability. Recent trends showed increased volatility in diesel prices. This information can be valuable for understanding the historical pattern of petrol and diesel price changes and making informed decisions related to fuel consumption and budget planning.

Sourav Mondal
08/6/23

Sample Project Report (2022-2023)

Department of Physics

Kazi Nazrul University

Asansol

4th Sem (SEC) Project work

Session:2022-2023

Name: Ayan Chakraborty

Registration No: KNU104211220051

Discipline: Physics

Course Code: BSCHPHSSEC401

Paper: Basic Instrumentation Skills

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17/08/23

ACKNOWLEDGEMENT :

Before we get into the thick of thieves I would like to add words for the people who have being part of this project right from the inception. The writing of this project has been one of the significant academic challenges which I have faced and without the support and guidance of the people involved in this task it would have not been completed.

It gives me pleasure in presenting the project on SEC - Skill Enhancement Course on "Instrumental Skills". It has been my privilege to have a team of project guide who have associated us from the determination of completion of this project. This successful project is result of hard work and determination put in by us and our project guide.

I hereby take this opportunity to add special thanks to Mr Siba Prasad Mondal our physics teacher for providing necessary information and guidance.

Teacher's Signature :

MULTIMETER :

This is a moving coil meter. By switching and selection of proper probe jacks, the following measurements can be made :

a. A.C. Voltage
b. D.C. Current
c. D.C. Voltage
d. Resistance

This is also called voltmeter. Some times A.C. current can also be measured.

i. Measurement of D.C. Current : This current is measured by multimeter by placing it in series in the circuit. Different ranges are switched for measurement of different values of D.C. current.

ii. Measurement of D.C. Voltage : The multimeter is connected in parallel with the circuit whose potential is to be measured. Two voltmeter leads are connected to the points and reading gives potential difference across the points.

iv. Measurement of A.C. Voltage : As in A.C. current meters, A.C. voltmeters respond to the average value of rectified voltage. Therefore rectification is required.

v. Measurement of Resistance : The Resistance can be measured by multimeter —

a. Use a circuit as shown in the figure.
b. Short circuit the test probs, $R_v = 0$
c. "Ohm's adjust" control is switched on.
d. Measure current I_1 through the total Resistance ($R_m + R_f + R_u$) meter, deflects from middle to full size.
e. The current in the probs across resistance to be measured R_u.
f. Measure I_2.
g. For battery voltage 1.5 V, calculate R_u for 1 mA meter movement
h. $R_u = (I_1/I_2 - 1)\,1500$

Date

Page No. 4.

Specifications:

The specifications of a multimeter is -

Voltage D.C.	:	10V / 50V / 250V / 500V
Voltage A.C.	:	50V / 250V / 500V
Current D.C.	:	25m / 250mA
Resistance	:	Rx10 / Rx1KΩ
Battery check	:	1.5V, 9V
dB	:	4 to 56 dB
Fuse	:	0.5 / 250V, 5x20 mm
Power	:	1.5V (AA) Battery
Dimensions (WxHxT)	:	90x120x28 mm
Weight	:	150g (with battery)

DIGITAL METERS :

i. DIGITAL VOLTMETER :

- Working Principle of Digital Voltmeter :

Voltmeter is an electrical measuring instrument used to measure potential difference between two points. The voltage to be measured may be A.C. or D.C. Two types of voltmeters are available for the purpose of voltage measurement, they are analog and digital.

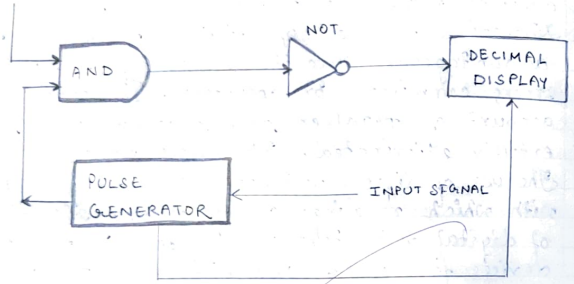
Analog voltmeters generally contain a dial with a needle moving over it according to the measure and hence displaying the value of the same. With time analog voltmeters are replaced by Digital voltmeters due to the same advantages associated with digital voltmeters. Although digital voltmeters donot fully replace analog voltmeters, still there are many places where analog voltmeters are preffered over digital voltmeters.

Digital voltmeters display the value of A.C or D.C voltage being measured directly as discrete numerical instead of a pointer deflection on a continous

scale as in analog instrument.

A Digital voltmeter always displays the value of A.C or D.C voltage being measured directly as discrete numericals in the decimal number system. Numerical read out of digital voltmeter is advantageous since its eliminates observational errors committed by operators. The errors on account of parallex and approximations are entirely eliminated. The errors reduces as a result. The use of digital voltmeter increases the speed with which readings can be taken. Also the output of digital voltmeters can be fed to memoric devices for storage and future computations.

A digital voltmeter is a versatile and accurate voltmeter which has many laboratory applications. On account of developments in the Integrated Circuits (I.C's) Technology, it has been possible to reduce the size, power requirement and cost. In fact for the same accuracy a digital voltmeter now less costly than its analog counter parts. The decrease in the size of digital voltmeters on account of the use of



BLOCK DIAGRAM OF DIGITAL VOLTMETER

Date

Expt. No.

ICs, the portability of the instruments has increased.

Description of circuit diagram of digital voltmeter : From the block diagram the voltage to be measured is given to the input signal present in the circuit diagram and next to this signal is processed on to the pulse generator which generates a train of rectangular pulses by using both analog and digital technique.

The Digital circuitry present inside the pulse generator will control the width and frequency while analog circuitry will control the amplitude, rise time and fall time of the pulse generator.
When AND Gate is fed with train pulse and rectangular pulse, it will give train pulses with the same duration of that of the rectangular pulses.

Explanation of various blocks :

Input signal : It is basically the signal that means voltage to be measured.

Teacher's Signature

TRAIN PULSE

RECTANGULAR PULSE

NOT GATE

(Inverts the output of AND Gate)

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Pulse Generator : Actually it is a voltage source. It uses digital, analog or both techniques to generate a rectangular pulse. The width and frequency of the rectangular pulse is controlled by the digital circuitry inside the generator, while amplitude and rise and fall time is controlled by analog circuitry.

AND Gate : It gives high output only when both the inputs are high. When a train pulse is fed to it along with rectangular pulse, it is possible to provide us an output having train pulses with duration as same as the rectangular pulse generator.

Decimal Display : It counts the numbers of impulses and hence the duration and display the value of volt on LED or LCD display after callibrating it.

Teacher's Signature : _____

Working of digital voltmeter :

i. Unknown voltage signal is fed to the pulse generator which generates a pulse whose width is proportional to the input signal.

ii. Output of pulse generator is fed to one leg of the AND Gate.

iii The input signal to the other leg of the AND gate is a train of pulses.

iv. Output of the inverter is fed to a counter which counts the number of triggers in the duration which is proportional to the input signal i.e. voltage under measurement.

v. Thus the counter can be calibrated to indicate voltage in volts directly.

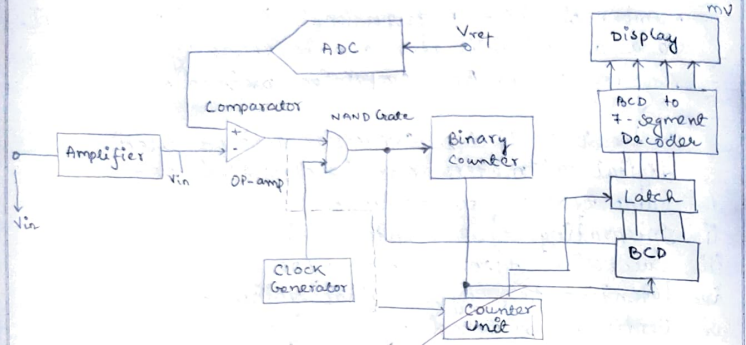
The working of digital voltmeter that is nothing but an analog to digital converter which converts an analog signal in to a train of pulses, the

number of which is proportional to the input signal. So a digital voltmeter can be made by using any one of the A/D conversion method.

On the basis of A/D conversion method used digital voltmeters can be classified as —

i. Ramp type digital voltmeter.
ii. Integrating type digital voltmeter
iii. Successive Approximation type
iv. Potentiometric type digital voltmeter.
v. Continous balanced type digital voltmeter

Nowadays digital voltmeters are also replaced by digital milimeters due to its multitasking feature that means it can be used for measuring current, voltage and resistance. But still there are some fields where seperated digital voltmeters are being used.



Block diagram of Digital Ammeter.

ii. DIGITAL AMMETER :

Introduction : As we know a word "meter" is associated with the measurement system. Meter is an instrument which can measure a particular quantity. As we know the unit of current is Ampere, Ammeter means Ampere-meter which measures Ampere value. Ampere is the unit of current so an ammeter is a meter or an instrument which measures current.

Working Principle of Ammeter : The main Principle of Ammeter is that the resistance and inductive reactant must be very low. The ammeter cannot be connected in parallel because of the above mentioned reason. In a series connection the current will be same. For an ideal Ammeter, the impedence must be zero so that the voltage drop across the Ammeter is zero.

Digital Ammeter Description : Digital Ammeter are instruments that measure current flow in Amperes and display current levels on a digital display. This devices provide information about current draw

and current contuinity in order help users troubleshoot erratic loads and trends.

Measurement Type : Digital Ammeter can measure levels of both AC and DC. Some devices that measure AC current also measure R.M.S power which is the square root of the time average of the square of the instantaneous power. Many digital Ammeters include a current sensor build in the meter or that clamps around the wire. Different types of digital ammeters can measure different ranges of A.C. current frequency.

Form factor : Some devices are hand held and portable, while others are designed for bench top or shop floor use. Battery powered digital Ammeter can be operated without plugin power and are often suitable for outdoor use.

Features : Many digital Ammeter provide special measurement types or advanced option or feature.

i. Adjustable Sampling Rate : The sampling rate is manually adjustable.

ii. Alarm LED : Alarm LED lights up when the RMS value or peak value is greater than the range. Typically, alarm LEDs light up only when the range has been greatly exceeded.

iii. Application Software : The devices has embedded application software.

iv. Auto ranging : This devices are self adjusting to offer the best measurement scenario.

v. Battery Powered : Devices are battery powered.

vi. Data Acquisition : Devices with data acquisition capabability have a computer interface and software for uploading data.

17/06/21

Teacher's Signature :

Sample Project Report (2022-2023)

Department of BBA

A

PROJECT REPORT

ON

Analysis of Capital Structure and measurement of Leverage Ratios of SAIL with Reference to Other Public Sector Steel Companies.

Submitted by: SAMPANNA SAMANTA

Stream: BBA/6th SEM

ROLL NO: 10420061280007007

REGISTRATION NO: KNU 20104000677

A

PROJECT REPORT

ON

Analysis of Capital Structure and measurement of Leverage Ratios of SAIL with Reference to Other Public Sector Steel Companies.

SAMPANNA SAMANTA

BBA(Hons)/6TH SEMESTER

DESHABANDHU MAHAVIDYALAYA,CHITTARANJAN

SESSION:2020-21 (2020-23)

ROLL NO: 1042006128007007

REGISTRATION NO: KNU 20104000677

DECLARATION

I ,SAMPANNA SAMANTA hereby declare that the project work done by me is my original work and all the database as used by me is my own derivation and compilation from the annual reports of the company in strict supervision of my guide **Prof.Tushar Kanti Ghosh** and with suggestions from **Prof. Darpan Bhattcharyya.**

The work has been done using two Analytical tools **viz. SPSS and N-VIVO** and the project is done with satisfaction from my side and the view of my guide ,

The project has been done as a part of my academia for the 6th Semester Examination, 2023 and it has been done for submission to the college. No other prospect is there to be adhered to the work for any award or publication.

Sampanna Samanta
.....

Sampanna Samanta

BBA/6th SEM/2020-21

DEPARTMENT OF BBA
DESHABANDHU MAHAVIDYALAYA
CHITTARANJAN

PROJECT PROFILE:

1. Title of the Project: "Analysis of Capital Structure and measurement of Leverage Ratios of SAIL with Reference to Other Public Sector Steel Companies."

2. Name of the Student: SAMPANNA SAMANTA

3A) Stream: BBA / 6th Semester.**3B) Basic Port: FINANCE**

4. Registration No:: KNU 20104000677

5. Roll No: 1042006128007007

6. Session: 2020-21 (Batch-2020-2023)

7. Internal Guide: Prof. Tushar Kanti Ghosh.

Tushar Kanti Ghosh 10/06/23

Signature of Guide

DEPARTMENT OF BBA
DESHABANDHU MAHAVIDYALAYA
CHITTARANJAN

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people and I am extremely privileged to have got this all along the completion of my project. All that I have done is only due to such supervision and assistance and I would not forget to thank them.

I respect and thank Mr. Prafulla Das, for providing me an opportunity to do the project work in Durgapur and giving us all support and guidance which made me complete the project duly. I am extremely thankful to SumitMaji, Head Technician at Durgapur Steel Plant for providing such a nice support and guidance, although he had busy schedule managing the corporate affairs.

I owe my deep gratitude to my project guide ***Prof. Tushar Kanti Ghosh*** *, who took keen interest on our project work and guided us all along, till the completion of our project work by providing all the necessary information for developing a good system.*

and ***Prof .Darpan Bhattacharyya****for his moral support.*

I would not forget to remember all the staffs of DSP Durgapur for their encouragement and more over for their timely support and guidance till the completion of our project work.

I heartily thank our internal project guide, Prof. TusharKantiGhosh, Department BBA(Hons) , [Finance] for his guidance and suggestions during this project work.

I am thankful to and fortunate enough to get constant encouragement, support and guidance from all Teaching staffs of DeshabandhuMahavidyalaya, Chittaranjan which helped us in successfully completing our project work. Also, I would like to extend our sincere esteems to all teachers in laboratory for their timely support .

SAMPANNA SAMANTA
BBA(Hons)/ 6TH SEMESTER

CERTIFICATE

This is to certify that the project entitled, **"Analysis of Capital Structure and measurement of Leverage Ratios of SAIL with Reference to Other Public Sector Steel Companies."** submitted **by SAMPANNA SAMANTA** , a student of **BBA(Hons)** in partial fulfillment of the requirements for the award of **"BBA(Hons)"** in the Department of Business Administration at the DeshabandhuMahavidyalaya, Chittaranjan is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project has not been submitted to any other University / Institute for the award of any Degree or Diploma.

10/06/23

(Prof Tushar Kanti Ghosh)
[Department of BBA(H)]

10/06/2023

DEPARTMENT OF BBA
DESHABANDHU MAHAVIDYALAYA
CHITTARANJAN

CHAPTERISATIONS

1. INTRODUCTION AND COMPANY HISTORY OF SAIL:

Finance is the backbone of modern business enterprise without which no business entity can prosper. So, it must have sufficient funds at its disposal. The primary aim of any business enterprise is to earn profit and to achieve this objective there should be a sufficient financial plan for proper utilization of various sources of finance. Decisions and control, financial planning, resource allocation, cash flow management, surplus disposal, acquisitions, mergers, and capital budgeting – all are required to be managed efficiently for which plans and policies should be made properly and in this way, finance can be handled in a prudent way. The chapter deals with the concept of long-term funds, factors affecting the requirements of long-term funds, gearing od capital, operating leverage, financial break-even point and total leverage of the selected public sector steel companies in India. The chapter emphasizes to determine the long-term solvency position of the selected steel public sector steel companies in India during the study period from 2010-11 to 2021-22.

The study of the project is to determine the relation of Leverage with Return on Equity of SAIL with other 10 steel companies in India.

The Steel Authority of India Ltd. (SAIL) was created in 1973 as the holding company and supervisory agency for those parts of the Indian iron and steel industry which are wholly within the public sector. Its main product, by volume, is iron ore, most of which is exported. It has a total production capacity of 11 million tons of steel per year, representing more than four-fifths of India's total capacity. It operates its own collieries, a special steels plant, and a foundry for pipes and castings.

The history of the iron and steel industry in modern India is closely bound up with political and economic developments since the country achieved independence from Britain in 1947. Most of the productive units now run by SAIL were built as state ventures with aid and assistance from industrially-developed countries, and operated by SAIL's predecessor, Hindustan Steel Ltd. SAIL's main subsidiary, the Indian Iron & Steel Co. Ltd., which is India's largest single iron and steel company, developed separately as a private company before nationalization, but it depended on state subsidies from 1951 onwards and had to function within the terms of the government's planning system.

However, the industry did not spring from nowhere in 1947. Iron had been produced in India for centuries, while Indian steel was superior in quality to British steel as late as 1810. With the consolidation of the British raj the indigenous industry declined and the commercial production of steel did not begin in earnest till 1913, when the Tata Iron and Steel Company began production at Sakchi, on foundations laid by Jamsetji Tata whose sons had raised the enormous sum of Rs23 million to set up the company, partly from family funds but mostly from Bombay merchants, several maharajahs, and other wealthy Indians who supported the movement for Indian self-sufficiency (*Swadeshi*) but did not want to appear openly anti-British. Tata was to dominate the Indian steel

industry until the 1950s. The Indian Iron & Steel Company was set up in West Bengal in 1918 by the British firm Burn & Co., with plans to become a rival steelmaker. However, steel prices declined in the early 1920s and the company produced only pig iron until 1937. The acute depression suffered by the iron and steel industry after World War I was alleviated by the government's protective measures. The industry continued to make steady progress.

From the late 1920s, when the British authorities introduced a system of tariffs which protected British and Indian steel but raised barriers against imports from other countries, the Indian market was divided in the ratio of 70 to 30 between British producers on the one hand and the Tata company on the other--thus effectively excluding indigenous newcomers. By 1939 the Tata works were producing 75% of the steel consumed in what was then the Indian Empire, comprising the present-day India, Sri Lanka, Pakistan, Bangladesh, and Burma.

In the late 1930s, as European rearmament pushed iron and steel prices upward, the export of Indian pig iron increased and two small firms began to compete directly with the Tata company in steel production. The first was the Mysore State Iron Works, which had been set up by the maharajah of Mysore in 1923, to produce pig iron at Benkipur, now Bhadravati. The second was the Steel Corporation of Bengal, a subsidiary established by the Indian Iron & Steel Company in 1937, the year after it had bought up the assets of the bankrupted Bengal Iron and Steel Company. The Steel Corporation of Bengal was reabsorbed into its parent company in 1953. All three companies profited from the British connection during World War II. Annual output rose from 1 million tons in 1939 to an average of 1.4 million tons in 1940-1945.

In 1947, when India became independent as the biggest, but not the only, successor state to the British raj, the three major iron and steel companies had a total capacity of only 2.5 million tons. A great deal of their plant was already more than three decades old, and badly in need of repair and replacement, while demand for iron and steel was growing.

Like other Third World states that have achieved political independence but still find their economic prospects determined by their subordinate position in the world economy, the new republic's policymakers decided to seek economic growth through a combination of protection for domestic industries, heavy public investment in them, encouragement of savings to finance that investment, and state direction of production and pricing. The Mahalanobis model of the Indian economy, based on the assumptions that exports could not be rapidly increased and that present consumption should be curbed for the sake of longterm growth through import substitution by the capital goods sector, provided the theoretical justification for this set of policies, which closely resembled what was done in the Soviet Union in the 1930s, in China in the 1950s, and in Africa and Asia in the 1960s, though with much less loss of life than in most of these cases.

1.1 Scope and Significance of the study:

An investor who would like to rational and scientific in his investment activity has to evaluate a lot of information about past performance and future performance of the companies, industries and the economy as a whole before taking the investment decision and hence, the present study attempts to analyse the effect of leverage on financial performance of selected automobile companies in India.

1.2 Objectives of the study:

The objectives of this study are as follows:

- 1.2.1 To conduct leverage analysis of selected automobile companies
- 1.2.2 To study the relationship between liquidity and profitability of selected automobile companies
- 1.2.3 To study the impact of leverage on profitability of selected steel companies.

1.3: Methodologies, Data Collection andResearch Design:

Research design indicates the method and produce of conducting research study. In pursuance of objectives stated above, the following research design is used for conducting the study for the period of 12 years from 2010-11 to to 2021-22. The reason for restricting the study to this small period was due to the time constraint.

2. Financial Structure and Capital Structure:

The financial structure refers to sources of capital and the proportion of finance coming from short-term liabilities, short-term debt, long-term debt, and equity to fund the company's long-term and short-term working capital requirements. It is a mixture of **short-term liabilities, short-term debt, long-term debt, and equity** that a business uses to finance its assets. A significant reliance on debt funding allows shareholders to achieve a higher return on investment, since there is less equity in the business.

The capital structure must be considered to ensure that after the investment the company is able to remain solvent. Capital structure is determined by the mixture of long-term debt and equity used by the firm to finance its operations. After having determined the finance required for a project to be undertaken, the question arises what shall be the sources of finance, i.e., what are the securities to be issued and what shall be the proportion of various securities. A company's capital structure is analysed together with its cost of capital while considering various types of financial plans to be pursued by the company.

Capital structure clearly determines the Valuation of a company using its cost of common capital. Valuation is structured with the determination of the value of the company. The value of a firm is important not only to its existing and prospective shareholders but also quite useful when a firm is considering a merger with another firm as well as obtaining capital.

A capital structure consists of two sources of funds having certain characteristic differences. These sources are simplified as **debtcapital**and**equitycapital**although these can be broken into various long-term financing debts and equity components including stockholders' equity, preferred stock, common stock retained earnings, and long-term debts.

- **Debt capital** includes any type of long-term funds obtained by borrowing. There are various types of long-term debt. It can be secured or unsecured, senior or subordinated, raised by the sale of bonds, or through a negotiated long-term loan. Many large manufacturing firms have more than one type of debt on their books. Probably the most common type of long–term debt instrument is the corporate bond.

- **Equity capital** consists of the long-term funds provided by the firm's owners. Unlike borrowed funds that must be repaid at a specified date, equity capital is expected to remain in the firm for an infinite period of time. The three basic sources of equity capital to the firm are preferred stock, common stock, and equity capital differs. Common stock is typically the most expensive.

The capital structure of the company shows how much of the company assets are financed by the company through debt and how much from equity. The company while trying to source for funds must consider the optimal cost that will not affect the capital to structure further each source of capital has its own cost of capital and its effect on the long-term sustainability of the firm there are a few constraints that the firm uses in determining the firm capital that will be chosen. The most important aspect is the gearing aspect.

Gearing is an important concept in connection with capital structure. Gearing is said to exist wherever a company is financed partly by debt. The more debt there is, the more highly geared is the company. Debt creates a fixed annual charge against profits in the form of interest payments. This causes a magnification of any fluctuations in the residual profits available to equity holders, i.e., they become riskier. This increase in risk due to gearing is known as financial risk. it is to be distinguished from the commercial risk to which any business, however, financed, is subject.

There are two opposing theories of capital structure and its relationship to the cost of capital. The first of these, the traditional theory, says that, since debt is cheaper than equity, it will pay initially it increases the amount of debt financing used. At some critical point, financial risk will begin to impinge on the cost of equity it will be disadvantageous to expand it further. There is thus a minimum cost combination of debt and equity which should be sought.

According to Modigliani and Miller the cost of capital relates to the value of the business as an economic entity and is independent of the method of finance. This theory implies that the financial manager has no important decision to make regarding capital structure although a company may sometimes find it desirable to reorganize its capital structure.

3.Meaning of Long-term Funds:

Long-Term Funds refers to funds with a long-term investment horizon, according to perpetual theory which may generate a flow of earnings to support current operations that will remain stable or grow in real or inflation-adjusted terms, and it may include true endowment funds which means that the principal may be expended after a stated period of time or upon the occurrence of a certain event. So, Long-term funds can be defined as any financial instrument with maturity exceeding one year (such as bank loans, bonds, leasing and other forms of debt finance), and public and private equity instruments.

Short term financing arises with an attempt to finance current assets. It can help to finance working capital, paying suppliers or even increase inventory. Long term financing is used for overall improvement of the business. It could be used for purchasing or maintaining capital.

Following factors are responsible for affecting the requirement of Long Term funds:

1. Nature of Business:

The type of business is much crucial which is involved as the first factor which helps in deciding the requirement of fixed capital. A manufacturing company needs more fixed capital as compared to a trading company, as trading company does not need fixed assets like plant, machinery, etc.

2. Level of Operation:

The companies which are operating at large scale require more fixed capital as they need more machineries and other assets in comparison to small scale enterprises having a need of less amount of fixed capital.

3. Technique for Production:

Companies using capital-intensive techniques require more fixed capital whereas companies using labour-intensive techniques require less capital because capital-intensive techniques make use of plant and machinery and company needs more fixed capital to buy plants and machinery.

4.Rapidity for Technology Up-gradation:

Industries in which technology up-gradation is fast need more amount of fixed capital as when new technology is invented old machines become obsolete and they need to buy new plants and machinery whereas companies where technological up-gradation is slow they require less fixed capital as they can manage with old machines.

5.Requirement of Diversification:

Companies having plans to diversify their activities by including more range of products require more fixed capital as to produce more products they require more plants and machineries which means investment of more fixed capital.

6. Availability of Finance and Leasing Facility:

Companies having arrangement of financial and leasing facilities can have easy requirement of less fixed capital as they can acquire assets on easy instalments instead of paying huge amount at one time. Lack of these two rewuire more fixed capital to be needed as companies will have to buy plant and machinery by paying huge amount together.

7. Collaboration or Joint Ventures:

If companies are preferring collaborations or joint venture ,companies will have a need of less fixed capital as they can share plant and machinery with their collaborators but if company prefers to operate independently there is more requirement of fixed capital.

4.Gearing of Capital:

The term capital gearing refers to the ratio of debt a company relating to its equities. Capital gearing represents the financial risk of a company. The term, when applied to the capital of a company, means the ratio of equity share capital to the total capital and is known as **capital gear ratio** or **capital gearing**. It is also referred to as financial gearing or financial leverage in American context. Industries that require a large capital investment may have a high capital gearing ratio.

Need of Capital Gearing:

- Capital gearing is needed for the smooth and profitable running of a company.
- It is a qualitative aspect of the capital structure of a company to establish an enterprise.
- It shows a reasonable proportion of the capital to be obtained from various sources.
- The development and growth of a business enterprise, inter alia, depend to a great extent on capital gearing.
- The Capital Gearing is important in a business to upgrade a higher proportion of fixed-cost capital in the total capital. Thus, the process of capital gearing is directly concerned with capital structure.
- The possibility of fluctuations of capital also gets minimized in the long run. Under such a situation company can minimize its profits by raising the proportion of preference share capital and debt capital.
- High capital-gearing is beneficial to those companies with high earning and in which possibilities of fluctuations in income are the least.

Impact on Shareholders:

If the level of gearing increases, **the expected return of equity shareholders will also increase**, along with the increase in financial risk and bankruptcy risk. Due to higher levels of debt instruments in total capital bankruptcy risk increases to a great extent.

A gearing ratio higher than 50% is typically and critically considered highly levered or geared. As a result of which the company would be at greater financial risk, because **during** times of lower profits and higher interest rates, the company would be more susceptible to loan default and bankruptcy.

$$\text{Capital Gearing Ratio} = \frac{(\text{Common Shareholders' Equity})}{\text{Fixed Interest bearing Funds}}$$

5:Leverages:

Leverage means using borrowed money to invest. Leverage can be used to help finance anything from a home purchase to stock market speculation. Businesses widely use leverage to fund their growth, whereas families apply leverage—in the form of mortgage debt-to purchase homes, and financial professionals use leverage to boost their investment strategies.

*View of Leverages in Steel Industries:

Steel is a capital-intensive business, as we already know upon discussion. There are high fixed costs that increase companies' operating leverage. To add to that, there are high interest costs to increase financial leverage. Leverage, simply put, reflects of fixed obligations for a company. It can include rent, leases, or interest payments. Now, if things are looking good, leverage is actually good, as the fixed costs are distributed among a greater number of units. The problem arises in downturns, where sales go down but fixed expenses stay relatively stable. To meet high capital requirements, steel companies take on a lot of debt.

Leverage is a tool which businesses frequently as well as randomly use to grow inventory, purchase equipment, or increase their assets. It is the employment of an asset or source of finance for which firm pays fixed cost. So, the term 'leverage' arises only when a firm uses debt capital in its capital structure and we can use it to finance big acquisition. So, Leverage refers to borrowing funds for a particular purpose with an obligation to repay these funds, with interest, at an agreed schedule. The idea behind leverage is to help borrowers achieve a higher return with a smaller investment.

There are three main types of leverage:

- Financial
- Operating
- Combined

*Operating leverage explains about the fixed operating costs and variable costs of providing goods and services. As fixed assets don't change with the level of output produced, their costs are constant and must be paid regardless of whether the business is making a profit or suffering losses. The formula for Degree of Operating Leverage has been deduced as:

$$DOL = \frac{\text{Profit Before Tax}.}{\text{Gross Sales}}$$

*Financial leverage results from using borrowed capital as a source of fund when investment is to expand the firm's asset base and generate returns on risk capital. Financial Leverage is thus an investment strategy for using borrowed money—specifically, the use of various financial instruments to increase the potential return of an investment. The formula for Degree of Financial Leverage has been deduced as:

$$DFL = \frac{\textbf{Total Debt (Total Assets} - \textbf{Share Holders' Equity).}}{\textbf{Shareholders' Equity}}$$

*Combined leverage simply called as combination of Operating Leverage and Financial Leverage (OL× FL) represents a company's total risk related to operating leverage, financial leverage, and the net effect on the EPS.Combined leverage is a leverage that refers to high profits due to fixed costs. It includes fixed operating expenses with fixed financial expenses.

It indicates leverage benefits and risks which are in fixed quantity. Steel Companies choose high level of degree of combined leverage whereas other conservative firms as well as small manufacturing firms choose lower level of degree of combined leverages degree of combined leverage indicates benefits and risks involved in it.If the two leverages are combined to determine Total Leverage, the risk associated with Combined Leverage is called Total Risk. Symbolically, Degree of Combined Leverage has been deduced as:

DCL=DOL×DFL.

*Return on Equity (ROE):

Return on equity signifies **how good the company is in generating returns on the investment that it received from its shareholders**. High and stable ROE is considerably better, but the absolute number should be considered in the context of the industry. It's also a good sign if ROE increases over time. ROE is especially used for comparing the performance of companies in the same industry. As with return on capital, a ROE is a measure of management's ability to generate income from the equity available to it. The formula has been deduced for Return on Equity as:

$$ROE=\frac{EBT}{S}\times\frac{S}{A}\times\frac{A}{E}\times (1\text{-}TR)$$ (TR=Tax Rate)

$$OR\frac{\text{Net Income}}{\text{Shareholders' Equity}}$$

To keep the risk on manageable limits, a firm with high degree of operating leverage should have low degree of financial leverage and vice versa.

5.1:-Analysis of degree of leverages and the return on equity of the selected public sector steel companies in India:

The Degree of Operating leverage (DOL) , Degree of Financial Leverage(DFL) and Degree of Total Leverage (DTL) for the selected steel companies in India have been computed to make an objective analysis of operating risk, financial risk and total risk of the selected public sector steel companies in India during the study period from 2010-11 to 2021-22. The Return on Equity (ROE) of the selected steel companies in India during the period under study. The Table 3.1 to table 3.10 highlight the values of DOL, DFL, DCL and ROE of the selected steel companies in India during the study period from 2010-11 to 2021-22. Attempts have been undertaken to analyze the degree of leverages and ROE of the selected steel companies in India during the study period from 2010-11 to 2021-22.

Table 5.1: DOL, DFL, DTL and ROE of SAIL during the study period from 2010-11 to 2021-22

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.15	0.08	0.012	13.2
2011-12	0.10	0.94	0.094	8.9
2012-13	0.06	0.57	0.0342	3.98
2013-14	0.06	0.63	0.0378	4.65
2014-15	0.05	1.28	0.064	4.81
2015-16	0.18	1.26	0.2268	(9.24)
2016-17	(0.09)	1.91	(0.1719)	(7.65)
2017-18	(0.01)	2.12	(0.0212)	(1.30)
2018-19	0.04	2.05	0.082	5.71
2019-20	0.09	0.68	0.0612	5.08
2020-21	0.10	1.66	0.166	8.85
2021-22	0.15	1.26	0.189	23.10
Average	**0.12**	**1.20**	**0.096**	**8.039**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.2: Diagrammatic presentation of the degree of leverages of SAIL during the study period from 2010-11 to 2021-22.

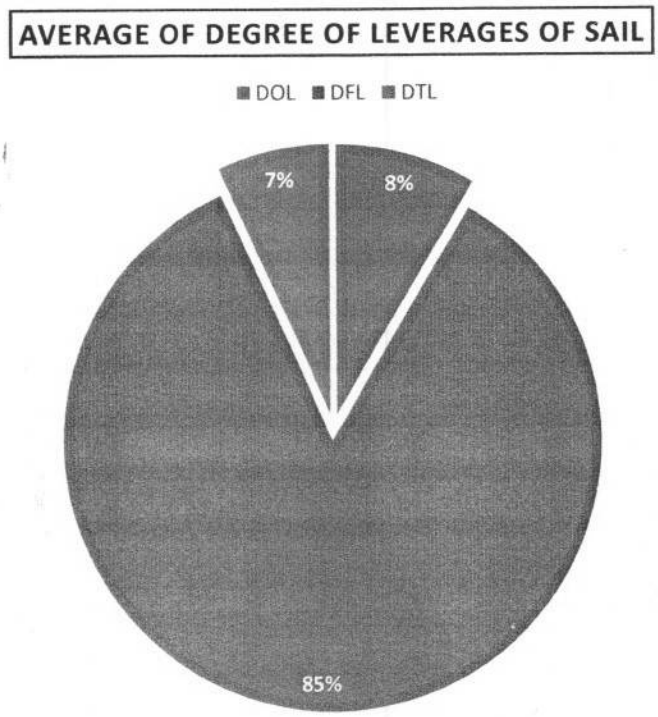


Table 5.2: DOL, DFL.DTL and ROE of RINL during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.08	0.85	0.068	6.40
2011-12	0.08	0.99	0.0792	6.94

2012-13	0.04	0.76	0.0304	2.58
2013-14	0.04	0.98	0.0392	2.94
2014-15	0.01	1.29	0.0149	(0.51)
2015-16	(0.12)	1.91	(0.2292)	(14.39)
2016-17	(0.13)	2.21	(0.2873)	(13.64)
2017-18	(0.13)	3.26	(0.4238)	(17.85)
2018-19	(0.01)	3.79	(0.0379)	1.32
2019-20	(0.27)	9.61	(2.5947)	(119.51)
2020-21	(0.07)	0.00	0.00	(41.07)
2021-22	0.03	0.00	0.00	25.39
Average	**0.08**	**2.13**	**0.317**	**21.015**

Source: Data compiled and computed from published Annual Reports of the Company

Chart5.2: Diagrammatic presentation of the degree of leverages of RINL during the study period from 2010-11 to 2021-22.

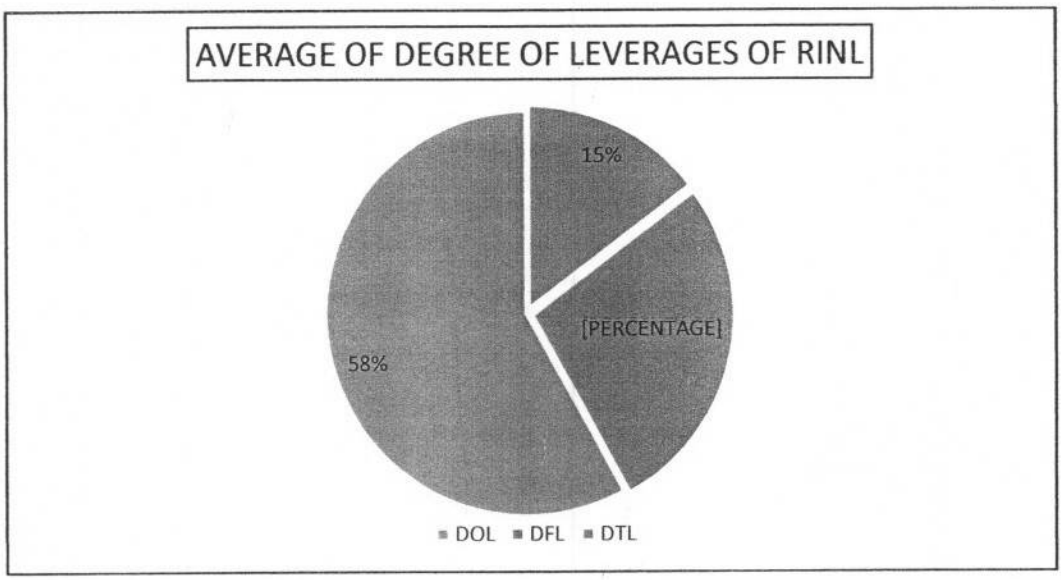


Table 5.3: DOL, DFL,DTL and ROE of NMDC during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.85	0.10	0.085	33.78

2011-12	0.95	0.09	0.0855	29.77
2012-13	0.88	0.12	0.1056	23.38
2013-14	0.81	0.05	0.0405	21.41
2014-15	0.79	0.07	0.0553	19.86
2015-16	0.55	0.12	0.066	10.40
2016-17	0.44	0.14	0.0616	11.50
2017-18	0.50	0.17	0.085	15.63
2018-19	0.57	0.15	0.0855	17.89
2019-20	0.50	0.32	0.16	15.34
2020-21	0.57	0.24	0.1368	21.01
2021-22	0.49	0.28	0.1372	26.97
Average	**0.65**	**0.15**	**0.092**	**20.57**

Source: Data compiled and computed from published Annual Reports of the Company**Chart 5.3: Diagrammatic presentation of the degree of leverages of NMDC during the study period from 2010-11 to 2021-22.**

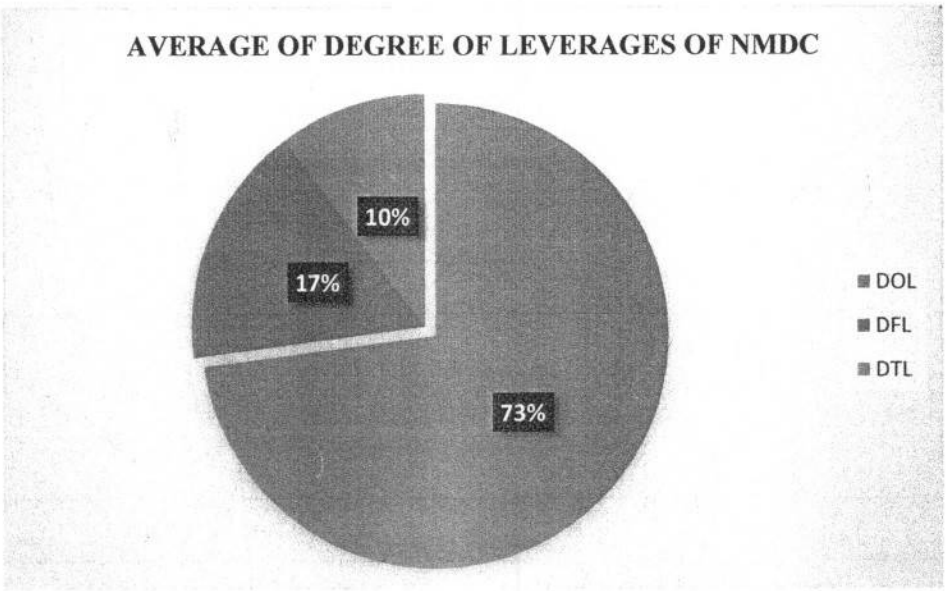


Table 5.4: DOL, DFL.DTL and ROE of MOILduring the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.77	0.16	0.1232	27.63
2011-12	0.67	0.13	0.0871	16.83
2012-13	0.65	0.14	0.091	15.61
2013-14	0.75	0.11	0.0825	16.29
2014-15	0.79	0.08	0.0632	12.66
2015-16	0.43	0.08	0.0344	5.01

2016-17	0.38	0.10	0.038	10.90
2017-18	0.43	0.16	0.0688	15.08
2018-19	0.54	0.17	0.0918	15.37
2019-20	0.28	0.19	0.056	8.98
2020-21	0.23	0.20	0.046	6.26
2021-22	0.34	0.20	0.068	17.60
Average	**0.521**	**0.143**	**0.0708**	**14.01**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.4: Diagrammatic presentation of the degree of leverages of MOIL during the study period from 2010-11 to 2021-22.

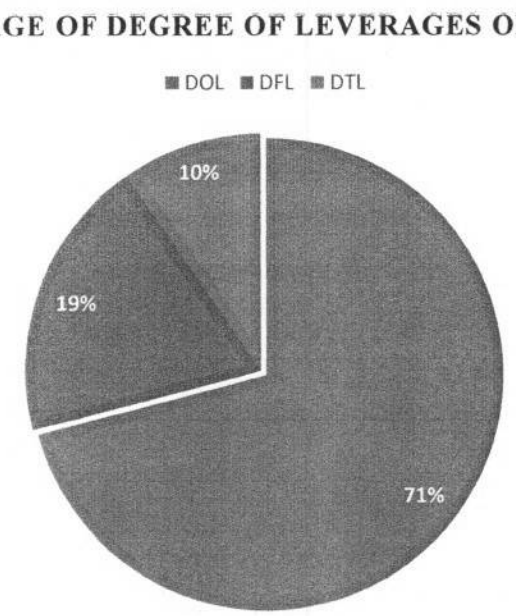


Table 5.5: DOL, DFL.DTL and ROE of MSTC during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.04	13.13	4.4642	24.28
2011-12	0.09	5.34	0.2136	23.43
2012-13	0.07	5.85	0.4095	21.93
2013-14	(0.02)	7.69	(0.1538)	(11.19)
2014-15	0.02	7.27	0.1454	13.11
2015-16	0.03	5.02	0.1506	8.17

2016-17	0.08	7.82	0.6256	15.40
2017-18	0.05	7.46	0.373	13.72
2018-19	(0.09)	10.89	(0.9801)	(155.97)
2019-20	0.15	5.37	0.8055	26.87
2020-21	0.12	3.03	0.3636	18.11
2021-22	0.18	2.08	0.3744	30.59
Average	**0.078**	**6.745**	**0.754**	**30.23**

Source: Data compiled and computed from published Annual Reports of the Company**Chart 5.5: Diagrammatic presentation of the degree of leverages of MSTC during the study period from 2010-11 to 2021-22.**

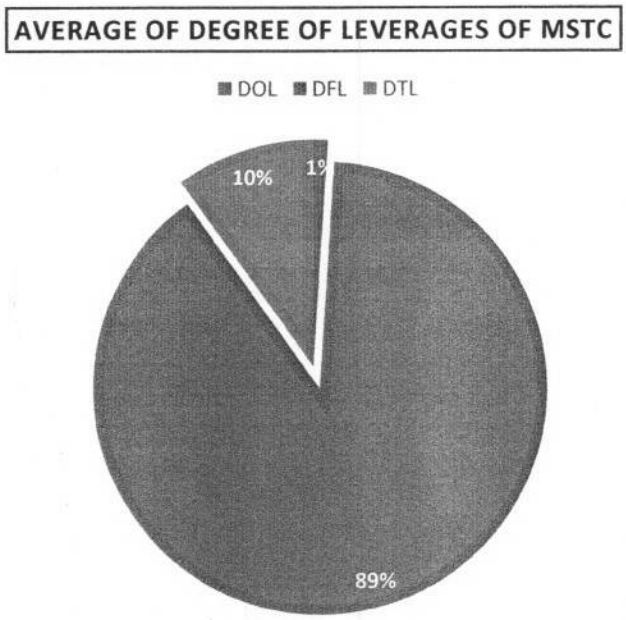


Table 5.6: DOL, DFL.DTL and ROE of FSNL during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.01	0.60	0.006	0.88
2011-12	0.01	0.47	0.0047	1.00
2012-13	0.01	0.69	0.0069	1.41
2013-14	0.06	0.65	0.039	5.76
2014-15	0.07	0.92	0.0644	10.88
2015-16	10.09	1.13	11.4017	12.23
2016-17	0.11	5.45	0.5995	45.26
2017-18	0.04	3.96	0.1584	11.10
2018-19	0.11	0.86	0.0946	13.32
2019-20	0.11	1.03	0.1133	14.07
2020-21	0.08	0.99	0.0792	10.71
2021-22	0.15	0.87	0.1305	17.78
Average	**0.904**	**1.46**	**1.106**	**12.03**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.6: Diagrammatic presentation of the degree of leverages of FSNL during the study period from 2010-11 to 2021-22.

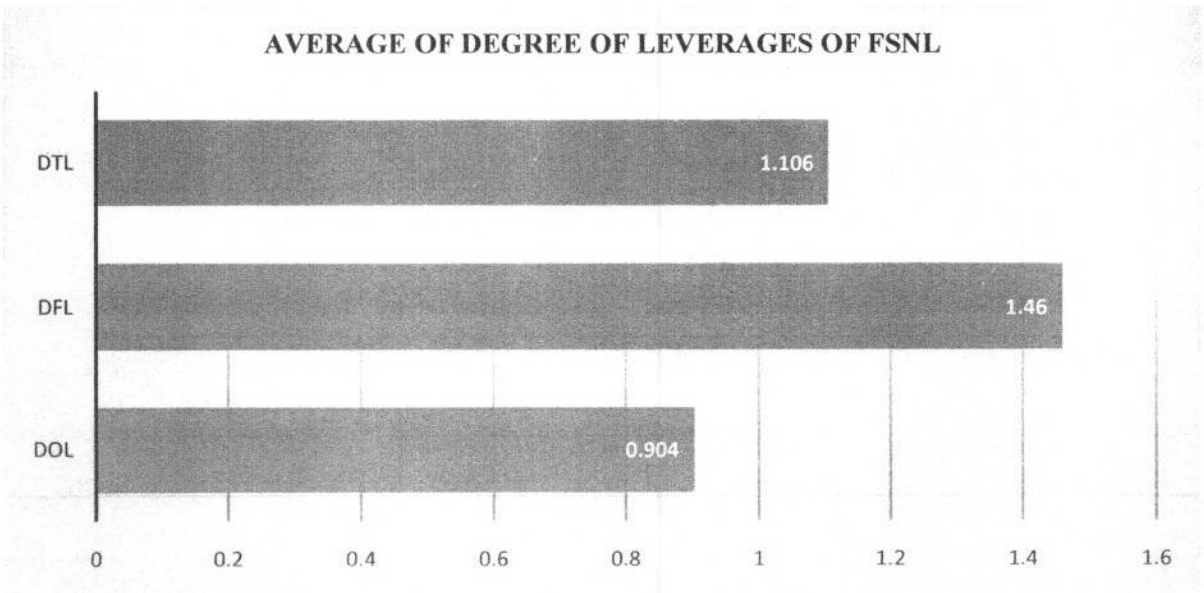


Table 5.7: DOL, DFL.DTL and ROE of MECON during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.00	1.81	0.00	0.38
2011-12	0.00	2.08	0.00	0.53
2012-13	0.00	2.13	0.00	0.38
2013-14	0.00	311.64	0.00	17.35
2014-15	0.06	1.80	0.108	7.63
2015-16	0.44	3.50	1.54	67.87
2016-17	(0.19)	6.84	(1.2996)	(49.87)
2017-18	0.07	5.36	0.3732	28.18
2018-19	0.02	3.22	0.0644	4.04
2019-20	0.13	2.32	0.3016	17.33
2020-21	0.00	2.92	0.00	5.15
2021-22	0.02	2.17	0.0434	4.01
Average	**0.0775**	**28.81**	**0.31**	**16.89**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.7: Diagrammatic presentation of the degree of leverages of MECON during the study period from 2010-11 to 2021-22.

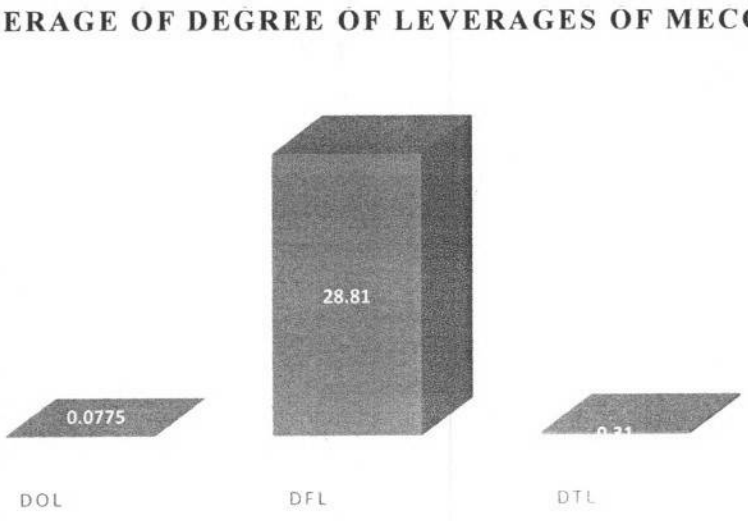


Table 5.8: DOL, DFL.DTL and ROE of KIOCL during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.06	0.06	0.0036	3.82
2011-12	0.08	0.06	0.0048	4.55
2012-13	0.03	0.14	0.0042	1.48
2013-14	0.05	0.21	0.0105	1.88
2014-15	0.04	0.19	0.0076	1.44
2015-16	0.22	0.16	0.0352	3.76
2016-17	0.03	0.21	0.0063	2.28
2017-18	0.05	0.19	0.0095	3.80
2018-19	0.09	0.16	0.0144	5.60
2019-20	0.03	0.24	0.0072	2.27
2020-21	0.17	0.25	0.425	15.16
2021-22	0.13	517.13	67.2269	14.62
Average	**0.11**	**43.25**	**5.64**	**5.05**

Source: Data compiled and computed from published Annual Reports of the Company

Chart3.8: Diagrammatic presentation of the degree of leverages of KIOCL during the study period from 2010-11 to 2021-22.

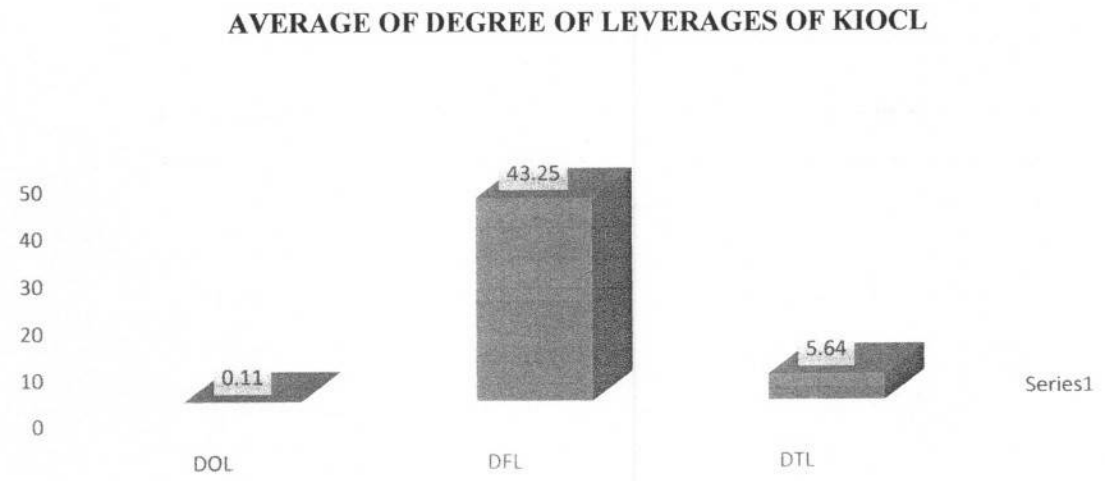


Table 5.9: DOL, DFL.DTL and ROE of MIDHANI during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.18	1.48	0.0864	14.20
2011-12	0.19	1.19	0.2261	15.02
2012-13	0.21	1.21	0.2541	13.20
2013-14	0.22	1.41	0.3102	14.72
2014-15	0.21	0.87	0.1827	17.14
2015-16	0.21	0.83	0.1743	20.70
2016-17	0.22	0.56	0.1232	17.93
2017-18	0.29	0.73	0.2117	16.64
2018-19	0.27	1.19	0.3213	15.64
2019-20	0.28	1.50	0.42	16.67
2020-21	0.28	1.30	0.364	15.50
2021-22	0.28	1.34	0.3752	14.81
Average	**0.21**	**1.134**	**0.2541**	**16.01**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.9: Diagrammatic presentation of the degree of leverages of MIDHANI during the study period from 2010-11 to 2021-22.

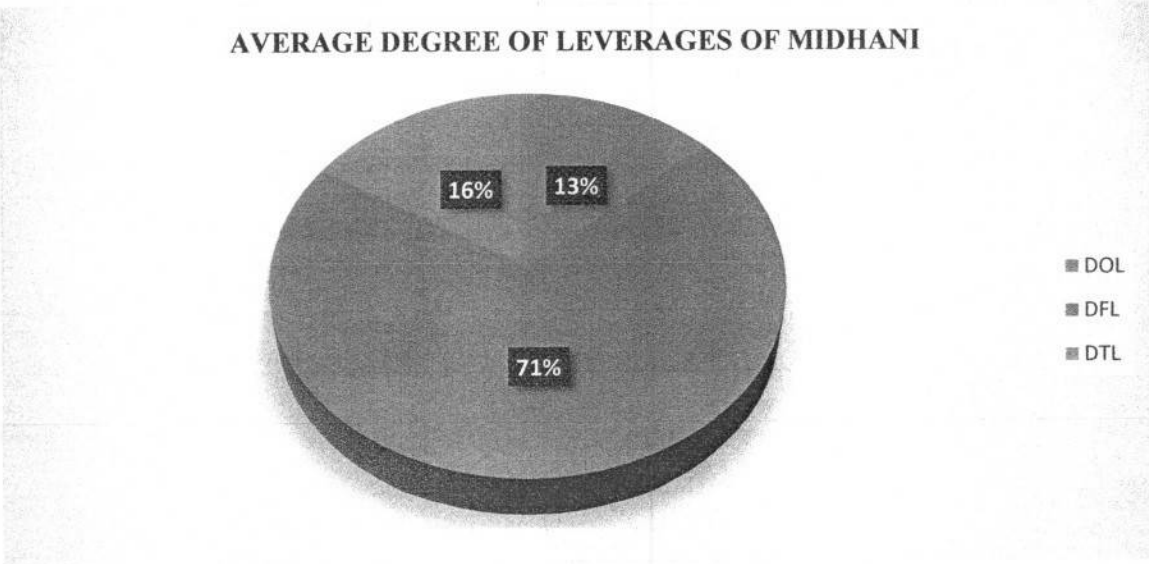
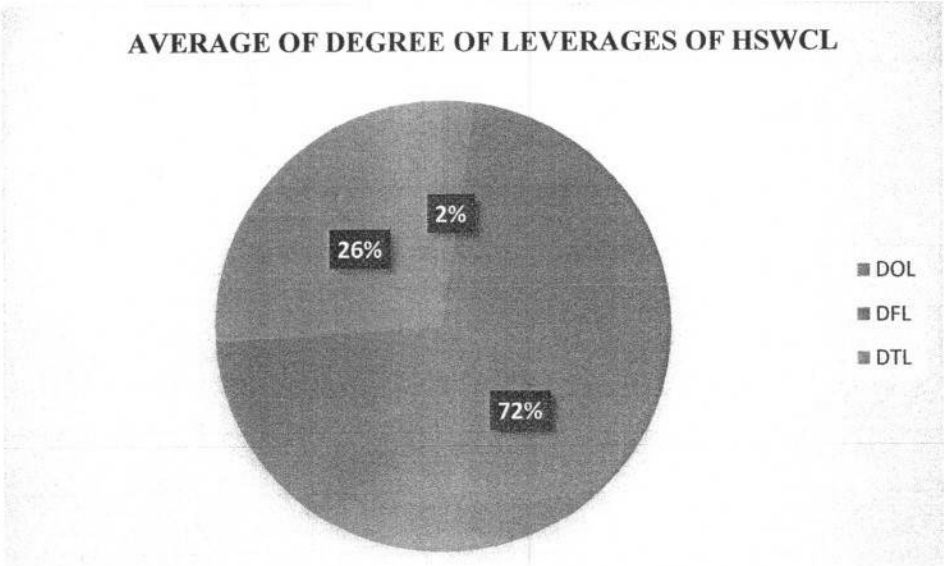


Table 5.10: DOL, DFL, DTL and ROE of HSWCL during the study period from 2010-11 to 2021-22.

Year	DOL	DFL	DTL	ROE (%)
2010-11	0.11	(0.16)	(0.0176)	5.28
2011-12	0.27	(0.02)	(0.0054)	16.64
2012-13	(0.02)	0.05	(0.001)	(1.51)
2013-14	(0.01)	0.05	(0.0005)	(1.30)
2014-15	(0.01)	0.21	(0.0021)	(0.53)
2015-16	0.02	29.97	0.5994	45.99
2016-17	(0.01)	3.17	(0.0317)	2.21
2017-18	0.05	4.02	0.201	11.58
2018-19	0.03	4.53	0.1359	11.38
2019-20	1.06	8.24	8.7344	3.75
2020-21	1.23	16.60	20.418	4.90
2021-22	0.11	23.06	2.5366	5.93
Average	**0.244**	**7.50**	**2.72**	**9.25**

Source: Data compiled and computed from published Annual Reports of the Company

Chart 5.10: Diagrammatic presentation of the degree of leverages of HSWCL during the study period from 2010-11 to 2021-22.



5.10.1: Analysis of Correlation between the degree of leverages and return on Equity of the selected steel companies in India

An attempt has been undertaken to measure the degree of leverages (i.e DOL,DFL,DTL) and measure of profitability (i.e ROE) of the selected public sector steel companies in India during the study period from 2010-11 to 2021-22 for which correlation analysis has been applied taking into consideration their magnitudes by Pearson's Simple Coefficient, for ranking of their magnitudes by Spearman's rank correlation coefficient and to highlight nature of their associated changes by Kendall's correlation coefficients. In order to examine whether the computed values of correlation coefficients between the measures of profitability and leverage ratios are statistically significant, t-test has been applied.

Analysis of Correlation Coefficients between DOL, DFL, DTL and ROE Of the selected public sector steel companies in India during the study period from 2010-11 to 2021-22.

Companies	Correlation Coefficient between DOL and ROE			Correlation Coefficient between DFL and ROE			Correlation Coefficient between DTL and ROE		
	Pearson	Spearman	Kendall	Pearson	Spearman	Kendall	Pearson	Spearman	Kendall
SAIL	0.537	0.515	0.371	-0.606	-0.556	-0.392	-0.567	-0.535	-0.364
RINL	-0.64	-0.63	-0.45	-0.67	-0.65	-0.45	-0.71	-0.69	-0.48
NMDC	0.617	0.545	0.364	0.444	0.354	0.236	0.390	0.390	0.260
MOIL	0.614	0.660	0.474	0.240	0.346	0.250	0.639	0.722	0.523
MSTC	0.516	0.415	0.292	-0.142	-0.121	-0.085	0.174	0.134	0.093
FSNL	0.107	0.206	0.137	-0.314	-0.313	0.222	-0.001	0.021	0.014
MECON	0.077	-0.007	-0.005	-0.128	-0.130	-0.089	-0.266	-0.292	-0.204
KIOCL	0.602	0.583	0.417	-0.049	-0.318	-0.233	-0.048	-0.300	-0.217
MIDHANI	0.0654	0.2750	0.2000	-0.8899	-0.80000	-0.6364	0.1714	0.3625	0.2727
HSWCL	0.074	0.245	0.176	0.248	0.211	0.151	0.104	0.163	0.114

Source: Table 5.1 to 5.10.
Note: Statistically significant at 0.05 Level and statistically significant at95% level.

5.11:Findings on Leverage Analysis are as follows:

SAIL: The Pearson and Spearman coefficients show that there is a moderately positive correlation between DOL and ROE, but there is a moderately negative correlation between DFL and ROE (both Pearson and Spearman coefficients). There is a significant inverse relationship between DTL and ROE (both Pearson and Spearman coefficients).

RINL: DOL and ROE have a strong negative connection (both Pearson and Spearman coefficients), while DFL and ROE also have a large negative correlation. On the other hand, ROE and DFL have a strong positive association (both Pearson and Spearman coefficients). There is a significant inverse relationship between DTL and ROE (both Pearson and Spearman coefficients).

NMDC finds that the DOL and ROE have a very significant positive association (based on both the Pearson and Spearman coefficients), whereas the correlation between DFL and ROE is only somewhat positive (both Pearson and Spearman coefficients). There is a slender positive association between DTL and ROE (both Pearson and Spearman coefficients).

MOIL: The Pearson and Spearman coefficients show that there is a high positive correlation between DOL and ROE, whereas the correlation between DFL and ROE is only somewhat positive (both Pearson and Spearman coefficients). There is a significant and positive association between DTL and ROE (both Pearson and Spearman coefficients).

MSTC: DOL and ROE have a weak positive correlation (Spearman and Kendall coefficients) and a moderate positive correlation (Pearson coefficient), but DFL and ROE have a weak negative correlation (Spearman and Kendall coefficients) (both Pearson and Spearman coefficients). There is a slender positive association between DTL and ROE (both Pearson and Spearman coefficients).

FSNL: Both the Pearson and Spearman coefficients show that there is a weak positive correlation between DOL and ROE. On the other hand, there is a weak negative correlation between DFL and ROE (both Pearson and Spearman coefficients). There is a marginally positive association (Pearson coefficient) between DTL and ROE, although there is no link at all (Spearman and Kendall coefficients).

MECON: The Pearson coefficient shows that DOL and ROE have a weak positive connection, but the Spearman and Kendall coefficients show that there is no link between these two variables. On the other hand, the Pearson coefficient shows that DFL and ROE have a weak negative correlation (both Pearson and Spearman coefficients). There is just a little inverse relationship between DTL and ROE (both Pearson and Spearman coefficients).

KIOCL: The Pearson and Spearman coefficients show that there is a substantial positive correlation between DOL and ROE, whereas the correlation between DFL and ROE is only weakly negative (both Pearson and Spearman coefficients). There is just a little inverse relationship between DTL and ROE (both Pearson and Spearman coefficients).

MIDHANI: The Pearson and Spearman coefficients show that there is only a very slight positive correlation between DOL and ROE, however there is a very high negative correlation between DFL and ROE (both Pearson and Spearman coefficients). There is a slender positive association between DTL and ROE (both Pearson and Spearman coefficients).

Both the Pearson and Spearman coefficients show that there is a weak positive correlation between DOL and ROE. On the other hand, there is a weak negative correlation between DFL and ROE (both Pearson and Spearman coefficients). There is a slender positive association between DTL and ROE (both Pearson and Spearman coefficients).

The overall association between financial leverage ratios (DFL and DTL) and ROE can be seen to be mainly negative across all of the companies, however the correlation between operating leverage (DOL) and ROE differs from company to company. This can be seen by looking at the overall picture.

This suggests that while operating leverage may have a good influence on ROE, financial leverage may not necessarily have a positive impact and may even have a negative impact. This is because operating leverage is used to generate revenue whereas financial leverage is used to generate profits. In order for businesses to attain their full potential in terms of their financial performance, it is essential for them to find a happy medium between the various leverage ratios.

6.Financial Break-even point:

Before starting the discussion on Financial Break-even point it should be quite clear that a firm can finance its investment from various sources such as borrowed capital or equity capital. The proportion of various sources may also be different under various financial plans. In every financing plan the firm's objectives lie in maximizing EPS. The EBIT-EBT analysis is the method that studies the leverage, i.e. comparing alternative methods of financing at different levels of EBIT. Simply put, EBIT-EPS analysis examines the effect of financial leverage on the EPS with varying levels of EBIT or under alternative financial plans. Such analysis gives a scientific basis for comparison among various financial plans and shows ways to maximize EPS. Hence EBIT-EPS analysis may be defined as 'a tool of financial planning that evaluates various alternatives of financing a project under varying levels of EBIT and suggests the best alternative having highest EPS and determines the most profitable level of EBIT'. We know that a firm can finance its investment from various sources such as borrowed capital or equity capital. The proportion of various sources may also be different under various financial plans. In every financing plan the firm's objectives lie in maximizing EPS.

Financial breakeven point refers to that level of EBIT at which the firm can satisfy all fixed financial charges. **EBIT less than this level will result in negative EPS**. Therefore, EPS is zero at this level of EBIT. Therefore, **if EBIT is zero the FL is also equal to Zero**. In order for EPS to remain stable, the company's EBIT must also increase at least as much as the new interest expense from the debt. **If EBIT increases the same as the next interest expense, then EPS should remain stable, assuming no change in taxes**.

EBIT is an important measure of a firm's operating efficiency. **Because it does not take into account indirect expenses such as taxes and interest due on debts, it shows how much the business makes from its core operations**. Thus,An EBITDA margin of **10% or more** is considered good.

The term "Break-Even Point" (BEP) refers to the point at which a company has generated sufficient income to cover both its fixed and variable costs, resulting in a situation in which the company is neither making nor losing money. The Break-Even Point is an important financial indicator that helps organisations calculate how much income they need to earn in order to cover their expenditures and begin producing a profit. The Break-Even Point can be found by subtracting the whole amount of expenses from the total amount of revenues.

When it comes to financial measures such as sales revenue, gross profit, operating profit, net profit, cash flow, and return on investment, the Break-Even Point (BEP) is referred to as the Financial BEP (ROI). It is possible for each of these financial measures to have its own BEP, however this will depend on the aims and financial goals of the organisation.

In a similar vein, the point at which a company's net profit is equal to zero is referred to as the net profit BEP. This statistic is essential for companies that want to figure out how much revenue they need to earn in order to pay off all of their costs and still have money left over for profit.

In general, the financial BEP is a significant indicator for businesses of all sizes and in all sectors since it enables these companies to understand the least amount of revenue, they need to earn in order to meet their financial objectives and cover their expenses.

The BEP analysis has the potential to be improved further by taking into consideration a number of alternative scenarios and hypotheses, such as variations in sales volume, pricing, or cost structure. The use of sensitivity analysis can assist in the identification of the important elements that have an effect on the BEP, which in turn enables organisations to make decisions regarding their operational and financial strategies that are better informed.

In conclusion, the Break-Even Point is a key financial concept that assists businesses in determining the minimum sales volume or revenue required to cover their costs and become profitable. This may be done by comparing the costs of the business with the revenue generated by the firm. Businesses are able to improve their pricing, production, and management of costs when they have a solid understanding of the BEP, which also helps to assure the companies' continued success over the long term.

6.1-Analysis of Financial Break-Even-Points of the selected public sector steel companies in India

6.1 Table Showing Earnings Before Interest and Tax(EBIT) of Public Sector Steel Companies from 2010-11 to 2021-22:

COMPANY NAME	MAXIMUM	MINIMUM	MEAN	SD	CV
SAIL	16645.28	-7443.28	2525.033	6207.562	2.456
RINL	4105.54	-1690.49	891.665	1634.799	1.833
NMDC	13307.32	4277.54	8346.313	2770.439	0.332
MOIL	880.15	290.11	586.969	204.364	0.348
MSTC	284	115	166.576	62.175	0.373
FSNL	46.02	1.78	22.041	19.362	0.879
MECON	201.54	-174.80	42.838	105.471	2.462
KIOCL	411.03	-89.67	89.304	141.999	1.590
MIDHANI	239.12	75.18	150.411	51.738	0.344
HSWCL	101.66	-12.11	55.423	37.965	0.686

Based on the table showing earnings before interest and tax (EBIT) of public sector steel companies in India from 2010-11 to 2021-22, we can see that SAIL has the highest maximum EBIT of 16,645.28 and the lowest minimum EBIT of -7,443.28. On the other hand, FSNL has the lowest maximum EBIT of 46.02 and the lowest minimum EBIT of 1.78.

In terms of the mean EBIT, NMDC has the highest with 8,346.31, while FSNL has the lowest with only 22.041. When it comes to the standard deviation (SD), SAIL has the highest with 6,207.562, while MECON has the lowest with only 105.471.

The coefficient of variation (CV) also shows the level of variability in the data. In this case, SAIL has the highest CV with 2.456, indicating that the data has a high degree of variability. On the other hand, MIDHANI has the lowest CV with only 0.344, indicating a lower degree of variability.

6..2 Table showing Fixed Interest (Expense) Charges of Selected Public Sector Steel Companies from 2010-11 TO 2021-22

COMPANY NAME	MAXIMUM	MINIMUM	MEAN	SD	CV
SAIL	3487	475	1842.42	935.99	0.508
RINL	938	12.78	408.16	386.50	0.946
NMDC	3495.56	266.80	1871.05	949.10	0.507
MOIL	292	79.04	188.63	75.50	0.400
MSTC	793.43	23	240.14	290.07	1.208
FSNL	180.53	-16.71	141.11	54.13	0.384
MECON	118.00	30.00	80.23	27.45	0.342
KIOCL	311.96	-16.71	109.03	118.66	1.087
MIDHANI	21.50	2.43	7.04	6.08	0.864
HSWCL	109.94	8.60	51.43	37.87	0.736

The table shows the fixed interest expenses of selected public sector steel companies from 2010-11 to 2021-22. SAIL had the highest mean fixed interest expense of Rs. 1842.42 crores, while RINL had the lowest mean fixed interest expense of Rs. 408.16 crores. The standard deviation was relatively high for most of the companies, indicating significant variation in fixed interest expenses over the years. The coefficient of variation was relatively low for most of the companies, indicating a relatively stable trend in fixed interest expenses over the years. Overall, it suggests that fixed interest expenses are an important aspect of the financial health of these companies and should be closely monitored.

Table showing Financial BEP for the Selected Public Sector Steel Companies from 2010-11 TO 2021-22

COMPANY NAME	FINANCIAL BEP
SAIL	0.39
RINL	0.92
NMDC	0.17
MOIL	0.13
MSTC	0.02
FSNL	1.60
MECON	4.82
KIOCL	-1.23
MIDHANI	0.09
HSWCL	0.30

The table shows the financial break-even point (BEP) for selected public sector steel companies from 2010-11 to 2021-22. The financial break-even point is the level of sales at which a company generates just enough revenue to cover its total costs, including both fixed and variable costs, and earns no profit or incurs no loss.

7.Findings of B-E-P Analysis::

- SAIL has a financial break-even point of 0.39, indicating that the company needs to generate 39% of its total sales revenue just to cover its total costs and break even financially.
- RINL has a financial break-even point of 0.92, indicating that the company needs to generate 92% of its total sales revenue just to cover its total costs and break even financially.
- NMDC has a financial break-even point of 0.17, indicating that the company needs to generate 17% of its total sales revenue just to cover its total costs and break even financially.
- MOIL has a financial break-even point of 0.13, indicating that the company needs to generate 13% of its total sales revenue just to cover its total costs and break even financially.
- MSTC has a financial break-even point of 0.02, indicating that the company needs to generate only 2% of its total sales revenue just to cover its total costs and break even financially.
- FSNL has a financial break-even point of 1.60, indicating that the company needs to generate 160% of its total sales revenue just to cover its total costs and break even financially. This implies that FSNL has been incurring losses over the years.
- MECON has a financial break-even point of 4.82, indicating that the company needs to generate 482% of its total sales revenue just to cover its total costs and break even financially. This implies that MECON has been incurring losses over the years.

- KIOCL has a negative financial break-even point of -1.23, indicating that the company's total costs are higher than its sales revenue, leading to losses. This is a cause for concern as the company has been operating at a loss for several years.
- MIDHANI has a financial break-even point of 0.09, indicating that the company needs to generate 9% of its total sales revenue just to cover its total costs and break even financially.
- HSWCL has a financial break-even point of 0.30, indicating that the company needs to generate 30% of its total sales revenue just to cover its total costs and break even financially.

Reference:

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3. Directorate of Public Enterprise survey.
4. OlayinkaAkinlo, T. A. (2012). Profitability and Leverage: Evidence From Nigerian Firms. Global Journal of Business Research, 6 (1), 17-25. ShehlaAkhtar, S. A. (2012). Relationship between Financial Leverage and Financial Performance:Evidence from Fuel & Energy Sector of Pakistan. European Journal of Business and Management, 4 (11), 7 to 17.
5. OlayinkaAkinlo, T. A. (2012). Profitability and Leverage: Evidence From Nigerian Firms. Global Journal of Business Research, 6 (1), 17-25. ShehlaAkhtar, S. A. (2012). Relationship between Financial Leverage and Financial Performance:Evidence from Fuel & Energy Sector of Pakistan. European Journal of Business and Management, 4 (11), 7 to 17.
6. Reddy, D. B. (2016). Analysis of Leverage and its Impact on ProfitabilityA Study on Tata Steel Limited. International Journal in Management and Social Science , 4 (3), 127-135.

Sample Project Report (2022-2023)

Department of BCA

KAZI NAZRUL UNIVERSITY, ASANSOL

A Project submitted in partial fulfilment of

The requirement for the Degree of

Bachelor of Computer applications

Online Inventory Management System

Paper: - BCAH605

Year of Examination: - 2023

Submitted by

Name: **PARMINDER SINGH**

Reg No.: **KNU20104000776**

Roll.No.:

OF

DESHABANDHU MAHAVIDYALAYA, CHITTARANJAN

ACKNOWLEDGEMENT

I respect and thank Mr. Sushant Kumar Das for giving me an opportunity to do the project work in **Online Inventory Management System** and providing me all support and guidance which made me complete the project on time. I am extremely grateful to him for providing such a nice support and guidance though he had busy schedule managing the company affairs.

I am thankful and fortunate enough to get constant encouragement support and guidance from all teaching staffs of department of BCA which helped us in successfully completing our project work. Also, I would like to extend our sincere regards to all the non – teaching staff of our college for their timely support.

CERTIFICATE FROM PROJECT GUIDE

This is to certify that this project entitled "**Online Inventory Management System**" submitted in partial fulfilment of the degree of BCA, KAZI NAZRUL UNIVERSITY, ASANSOL, done by **PARMINDER SINGH**, Reg. No. – **KNU20104000776** is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief and project report is developed according to the **"BCA PROJECT & PROJECT REPORT STANDARD, KAZI NAZRUL UNIVERSITY ASANSOL"**

Parminder Singh

Signature of the Student

DEPARTMENT OF BCA
DESHABANDHU MAHAVIDYALAYA
CHITTARANJAN

Signature of the Guide

Mr. Sushant Kumar Das
SACT-II
Department of B.C.A
Deshabandhu Mahavidyalaya,
Chittaranjan

SELF CERTIFICATE

This is certified that the dissertation/project report entitled **"Online Inventory Management System"** is done by me is an authentic work carried out for the partial fulfilment of the requirements for the award of the degree of BCA under the guidance of **Mr. Sushant Kumar Das.** I also certify that I am aware of the **"BCA PROJECT & PROJECT REPORT STANDARD"** issued by **KAZI NAZRUL UNIVERSITY ASANSOL** and this project report is based on that standard. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Parminder Singh

Signature of the Student

Name of the Student: - PARMINDER SINGH

Reg. No.: - KNU20104000776

College Name: - Deshabandhu Mahavidyalaya, Chittaranjan

THE PREAMBLE OF THE PROJECT

Title of the Project: - Online Inventory Management System

The Name of the College: - Deshabandhu Mahavidyalaya, Chittaranjan

Name of the Students: -

Name: PARMINDER SINGH

Roll No.: KNU20104000776

The Name of the Internal Project Guide: - Sushant Kumar Das

The Synopsis: -

Purpose:

In the 21st century, there is technological advancement taken place across the world. The technology has been crafted keeping in mind many purposes that can be solved in the days to come. There is one such advancement named Inventory Management System in PHP that have extended its assistance by providing the management information. The actual objective of this management system is to manage all the inventory details, including the supplier, customer and payment purchasing. All the information relating to Inventory Receiving stock, Inventory and Purchasing are managed by this system. The project is in general built at the end of the administration and the access can be guaranteed to the administrator. The main purpose of inventing this project is to construct an application program aiming to lower the manual work and manipulating the inventory, Receiving stock, customer, supplier. All the details such as Payment, Supplier, and Purchasing can be tracked by this system.

Problem Definition, Requirement Specification:

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. there used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records. One

more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records.

The reason behind it is that there is lot of information to be maintained and have to be kept in mind while running the business. For this reason, we have provided features in the present system which is automated (computerized), existing system is quite laborious as one has to enter same information at three different places.

Features of Online Inventory Management System

Functionalities Provided by Online Inventory Management System Are as Follows:

- By using this system, the Online Inventory Management System will be able to explore the details of Items, customers detail as well as the details of sales and purchase.
- The various searching facilities such as Supplier, Inventory, Purchasing and Payment can be provided by this inventory management system.
- It can manage the information of customers.
- It can show the description and information of the Supplier and Inventory.
- Monitoring all the transactions and information of the payment can be completed by this system efficiently.
- Efficiency of manipulation of the inventory can be taken place by this system.
- Information of payment can be done by using this system.
- The improvement of adding, updating and editing of records is possible by using the inventory management system.
- The printing of reports is integrated with this management system.

Report Generation:

- The system can provide the filter reports on purchasing, supplier and payment.
- The excel export report can be provided by the application for customers, supplier and inventory.
- The user easily exports the PDF for receiving stock, payment and inventory
- The user can export report for inventory, purchasing and customer into csv format.

Project Modules

Online Inventory Management System is a web application for the sales and inventory which manages Items, customers and suppliers. In this project, we use PHP and MySQL database. The entire project mainly consists of 6 modules, which are

- Item module
- Vendor module
- Customer module
- Purchase module
- Sales module
- Report module

Item Module: This module helps to enter the details of a new Item, modify the details of existing Item and delete the existing Item from the database. We can also upload the image of a particular item for a better view to the customer.

Vendor Module: This module helps to enter the details of a new vendor, modify the details of existing vendor and delete the existing vendor from the database.

Customer Module: This module helps to enter the details of a new customer, modify the details of existing customer and delete the existing customer from the database.

Purchase Module: This module records the details of the purchase of an item including vendor name, purchase date, quantity, price and total cost.

Sales Module: This module records the details of the sales of an item including item details, customer details, quantity, price and total cost.

Report Module: This module generates the reports of Items, Customers, Vendors, Sales and Purchase. It shows the reports in place. We can also export the reports as CSV files, Excel file, PDF files and even print them directly to the printer.

The nature of the project: - Standalone

The software to be used for development: -

Web Technologies:	PHP 8.1.5
Runtime Environment:	XAMPP 8.1.5
Database:	MySQL 8.0.29
Web Server:	Apache Web Server
Operating System:	WINDOWS 10

The Declaration: - I do hereby declare that I am aware of BCA PROJECT & PROJECT REPORT STANDARD, KAZI NAZRUL UNIVERSITY, ASANSOL and I shall develop the project and prepare the project report according to the guideline with best of our efforts.

Name & Roll of the students

Name: **PARMINDER SINGH**

Roll No: - **KNU20104000776**

Signature of the Students

Parminder singh

DEPARTMENT OF BCA
DESHABANDHU MAHAVIDYALAYA
CHITTARANJAN

Signature of the Internal Guide

Signature of the External Guide

9/6/23.

Signature of the Principal

Principal
Deshabandhu Mahavidyalaya
Chittaranjan

INDEX

OBJECTIVE & SCOPE OF THE PROJECT: -

In the 21st century, there is technological advancement taken place across the world. The technology has been crafted keeping in mind many purposes that can be solved in the days to come. There is one such advancement named Inventory Management System in PHP that have extended its assistance by providing the management information. The actual objective of this management system is to manage all the inventory details, including the supplier, customer and payment purchasing. All the information relating to Inventory Receiving stock, Inventory and Purchasing are managed by this system. The project is in general built at the end of the administration and the access can be guaranteed to the administrator. The main purpose of inventing this project is to construct an application program aiming to lower the manual work and manipulating the inventory, Receiving stock, customer, supplier. All the details such as Payment, Supplier, and Purchasing can be tracked by this system

BENEFIT OF THE PROJECT: -

This system provides the detail structure of the Inventory System. Online Inventory Management System synchronizes all the modules. It looks on all aspects of the Items, Vendors, Cutomers, several types of Sales and Purchase and reports.

Inventory Management System is the easiest way to manage all functionalities of Inventory System, Sales and Purchase.

Inventory Management System is a simple yet powerful one joint integrated platform that connects all the various modules of Inventory System like, Items, Vendors, Customers and many more specialized modules.

CATEGORY OF THE PROJECT: -

The project is a web-based project which will help the Online Inventory Management System to work efficiently and provide better service to its users. This application is designed so that it can maintain all the detail and at the same time it can be updated to connect to a server easily.

This project is designed so that it can run on the device without any other requirements or resources.

THEORETICAL BACKGROUND: -

In our system we have the provision for adding the detail of the Inventory System. Another advantage of the system is that it is very easy to edit the detail of the Items, Sales, Purchase and delete any record when it found unnecessary. If the server id connected to Internet and the website developed is published on Internet then it can have the online facility to enter Sales details, Stock entries and purchase details. By developing the system, we can attain the following facilities:

- Easy to handle and feasible
- Easy to operate
- Fast and convenient

DEFINITION OF THE PROBLEM: -

Inventory can be defined in several ways as follows as given below:

- Inventory is the stock of physical items such as materials, components, work-in-progress, finished goods, etc., held at a specific location at a specific time.
- Inventory is a list of what you have. In company accounts, inventory usually refers to the value of stocks, as distinct from fixed assets. An inventory would include items which are held for sale in the ordinary course of business or which are in the process of production for the purpose of sale, or which are to be used in the production of goods or services which will be for sale.
- Any quantifiable item that you can handle, buy, sell, store, consume, produce, or track can be considered inventory. This covers everything from office and maintenance supplies, to raw material used for manufacturing, to semi-finished and finished goods, to fuel used to power equipment used in the business.

It is important to know about the input data and validation of the Inventory Management System. The requisite information about the input data and validation on the Inventory Management System is mentioned below:

- It can control the huge amount of input data
- It can avoid errors in data.
- The entire fields such as supplier, inventory, and receiving stock can be validated and it does not take invalid number or value.

Project Modules

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Report Module: This module generates the reports of Items, Customers, Vendors, Sales and Purchase. It shows the reports in place. We can also export the reports as CSV files, Excel file, PDF files and even print them directly to the printer.

SYSTEM REQUIREMENTS SPECIFICATIONS: -

The customer requirements identified during the requirements gathering and analysis activity are organized into a SRS documents. The important components of this document are the requirements, the non-functional requirements, and the goals of implementation. Documenting the functional requirements involves identification of the functions to be supported by the system. Each function can be characterized by the input data, the processing required on the input data and the output to be produced. The non-functional requirements identify the performance requirements, the required standards to be followed, etc. The SRC documents written using the end-user terminology. This makes the SRS document understandable by the customer. After all, it is important that the SRS document be reviewed and approved by the customer. The SRS document normally serves as a contract between the development team and the customer. Any future dispute between the customer and the developers can be settled by examining the SRS document. It is therefore an important document which must be thoroughly understood by the developer team, and reviewed jointly with the customer. The SRS document provides not only the basis for carrying out all the development activities, but also the basis for several other documents such as the design document, the users' manuals, the system test plan, etc. The SRC document produced at the end of this phase is also called the black-box who's external (i.e., input / output) behavior is only specified, and the interval details are not known. In other words, the requirements analysis and specification phase concentrates what needs to be done and carefully avoids the solution (how to do) aspects.

SYSTEM PLANNING (Gantt Chart): -

Planning in project management is a necessity. And so are Gantt charts. In around 1910, "The Gantt Duo" – Henry Gantt and his Gantt chart – introduced the world to better tools for project management, control, and planning.

- A Gantt chart is a **visual project management tool** that helps to plan and schedule projects of every size.

- Gantt charts look like a **horizontal bar chart** that shows project management timelines, task starting and ending dates, dependencies between different tasks, and general project task flow.
- It is a visual interpretation of the project which gives an **overview** of the project's progress, timeline, and tasks over its entire time frame.

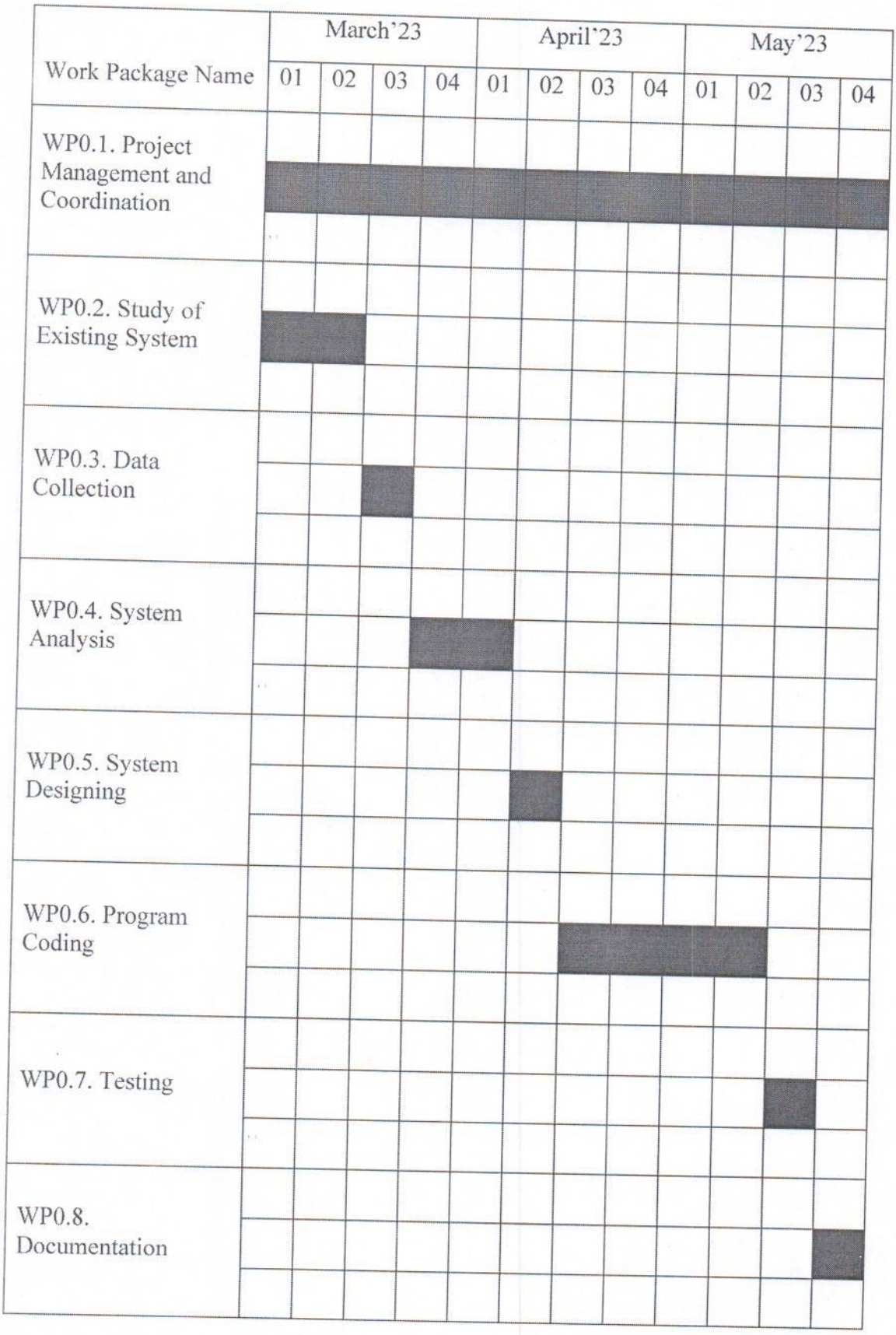
A classic Gantt chart consists of:

- **Projects dates and timeline** – this gives project managers an overview of all the project dates. From the start, to dates connected with project tasks, and to the finish.
- **Gantt chart bars as project tasks** – projects normally consist of different tasks and the Gantt chart is a great way to see them all in one place. A visual overview helps you make sure that everything is in the right place on the timeline and nothing is forgotten. Task names are normally set on the Gantt chart.
- **Milestones** – milestones are the little "wins" of the projects. They are normally at the end of the task and hold some significance for the project. Usually, milestones are displayed as diamond-shaped – which feels like a bonus after the completion of the task.

- **Dependencies** – there are always tasks in your projects that need to be completed before the next task can begin or end. So one task is dependent on the other's start or finish. In Gantt charts, dependencies between the tasks are shown with little arrows.

- **Resources** – In a classic Gantt chart, you can add a resource to your task to see who's responsible for the task and who's working on it. In modern Gantt charts, there are ways to make it more visual and understandable. It's not rare to use Gantt charts for resource planning and project portfolio management, in addition to single project planning.

PROJECT SCHEDULING –GNATT CHART



HARDWARE REQUIREMENT: -

- Processor – Intel i3 2nd generation or above
- RAM – 4 GB minimum
- Hard disk – 120 GB minimum
- Monitor – LCD, TFT at least 512 MB RAM
- Peripheral devices – Keyboard, Monitor, Mouse etc.

SOFTWARE REQUIREMENT: -

- Operating System: Windows 10
- Web-Technology: PHP 8.1.5
- Runtime Environment: XAMPP 8.1.5
- Back-End: MySQL 8.0.29
- Web Server: Apache Web Server

SCOPE SYSTEM MAINTENANCE & EVOLUTION: -

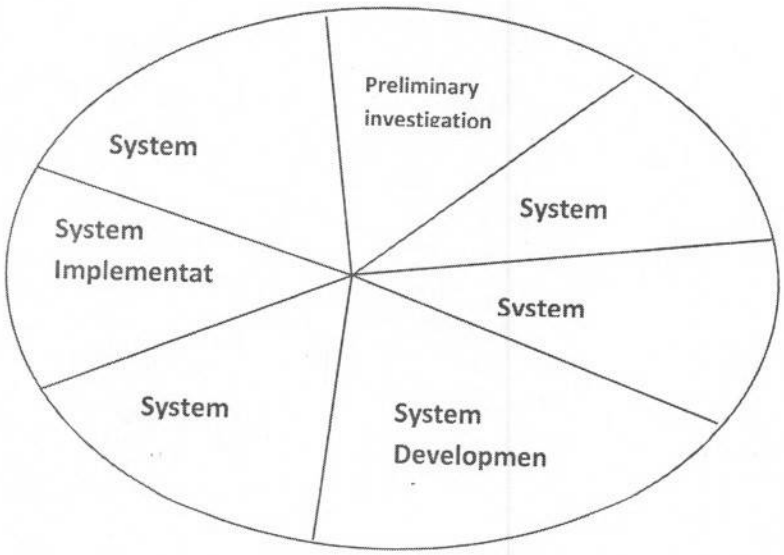
Maintenance of a typical software product requires much more effort than the effort necessary to develop the product itself. Maintenance involves performing any one or more of the following three kinds of activities: -

- Correcting errors that were not discovered during the product development phase. This is called corrective maintenance.
- Improving the implementation of the system and enhancing the functionalities of the system according to the customer's requirements. This is called perfective maintenance.
- Porting the software to work in a new environment. For example, porting may be required to get the software to work on a new computer platform or with a new operating system. This is called adaptive maintenance.

DETAILED LIFE CYCLE OF THE PROJECT: -

A software life cycle is the series of identifiable stages that a software product undergoes during its lifetime the first stage in the life cycle of any software product is usually the feasibility study stage. Commonly, the subsequent stages are: -requirements analysis and specification, design, coding, testing, and maintenance. Each of these stages is called a life cycle phase. A software life cycle model is a descriptive and diagrammatic representation of the software life cycle. A life cycle model represents all the activities required to make a software product transit through its life cycle phase. It also captures the order in which these activities are to be undertaken. In other words, a life cycle model maps the different activities performed on a software product from its inception to retirement. Different life cycle models may map the basic development activities to phase in different ways. The growth of an information system passes through various identifiable stages and these stages put together are referred to as the System Development Life Cycle (SDLC). The system development life cycle is consisting of;

1. Preliminary investigation
2. System Analysis
3. System Design
4. System Development / Coding
5. System Testing
6. System Implementation and evaluation
7. System Maintenance



PRELIMINARY INVESTIGATION: -

Feasibility study

(i) Technical Feasibility
(ii) Economic Feasibility
(iii) operational Feasibility

The feasibility study is useful to evaluate the cost and benefit of the system requested. There are three types of feasibility study:

Technical Feasibility: -The technical feasibility allowed focuses on the existing computer hardware, software and personal. This also includes the need of more hardware, software and personal and the possibility for instinct search facility search facility.

Economical Feasibility: -Economical feasibility is help to find the system development cost and checks whether it is just able are or are not for example: - software and hardware cost,

Training – cost, salaries maintenance etc.

Operational Feasibility: - It considers the accepts ability of the system. It checks whether the system is used if it is develop and implement? Are the users of the system able to handle the system? Etc.

SYSTEM ANALYSIS AND SYSTEM DESIGN: -

System analysis is a process of gathering and interoperating FACTS, diagnosing problems and using the information to recommend improvement to the system. System Design is a process of planning a new business system or, are to replace of constipating an existing system and determine how computers can best used to make its operation more effective.

SYSTEM CODING AND SYSTEM TESTING: -

After system design, it must be translated into a machine language. The coding system includes writing new, custom-design programs. Excellent programming skills and experiences are required for disk phage of SDLC. The next phase is system testing. The basic advantage of system testing is to find the errors. The system testing guaranty that the software does not fail, and it will run superbly.

SYSTEM IMPLEMENTATION AND EVALUATION: -

Once the system has been declared fully developed and tested. It is ready for implementation. The implementation includes the following activities:

(a) Planning and preparing schedule for the implementation

(b) Motivation and darning to the selecting personal and the users

(c) Final change over

(d) Operation and production.

SYSTEM MAINTENANCE: -

The last stage is system maintenance.

(i) Customer may not shut changed in the system. There is a need to have system persons to look after the system and minting it even during the operation and production. The system Maintenance could be because of any of the Following reasons: -

(a) Minor changed in the processing logic

(b) Errors detected during the process

(c) Revisions of the formats for data inputs end of the reports.

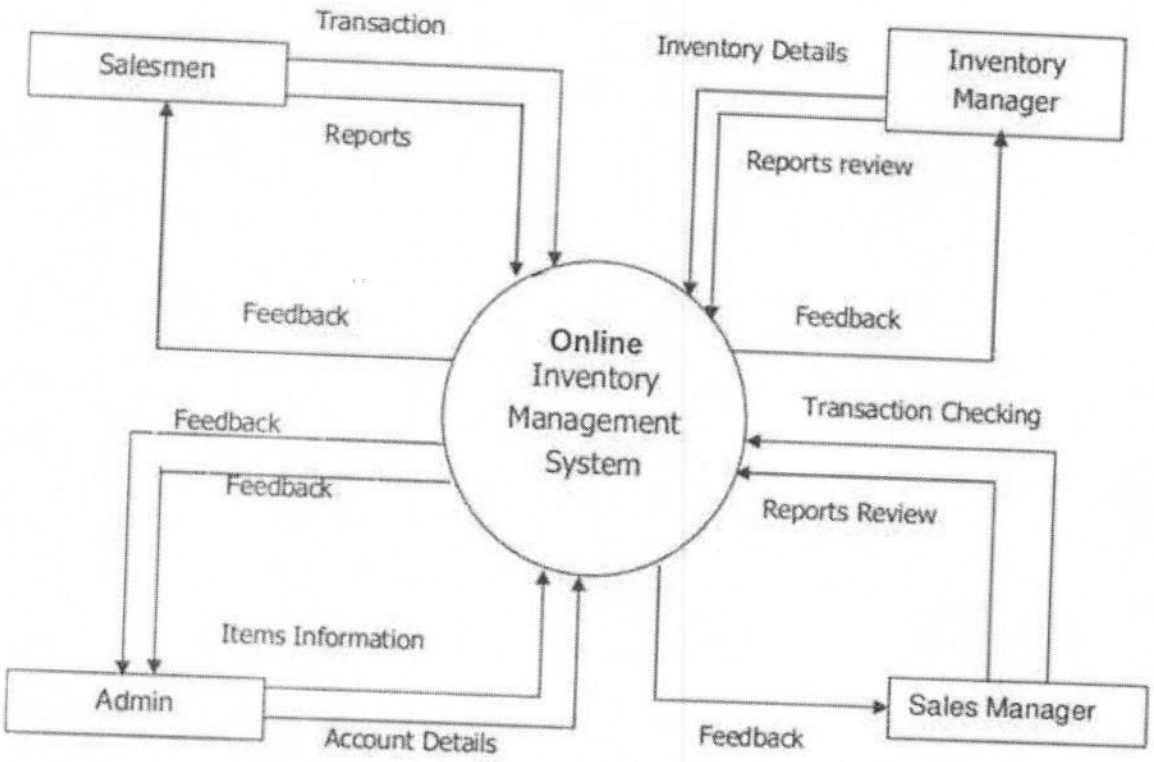
DATA FLOW DIAGRAM (DFD): -

The DFD (also known as the bubble chart) is a simple graphical formalism that can be used to represent a system in terms of the input data to the system, various processing carried out on these data, and the output data generated by the system . The main reason why the DFD technique is so popular is probably because of the fact that DFD is a very simple formalism it is simple to understand and use.

These starting with a set of high-level functions that a system performs, a DFD model hierarchically represent various sub functions. If fact, any hierarchically model is simple to understand. Human mind is such that it can easily understand any hierarchical model of a system because in a hierarchical model, starting with a very simple and abstract model of a system, different details of the system can be showily introduced through different hierarchies. The data flow diagramming technique also follows a very simple set of intuitive concepts and

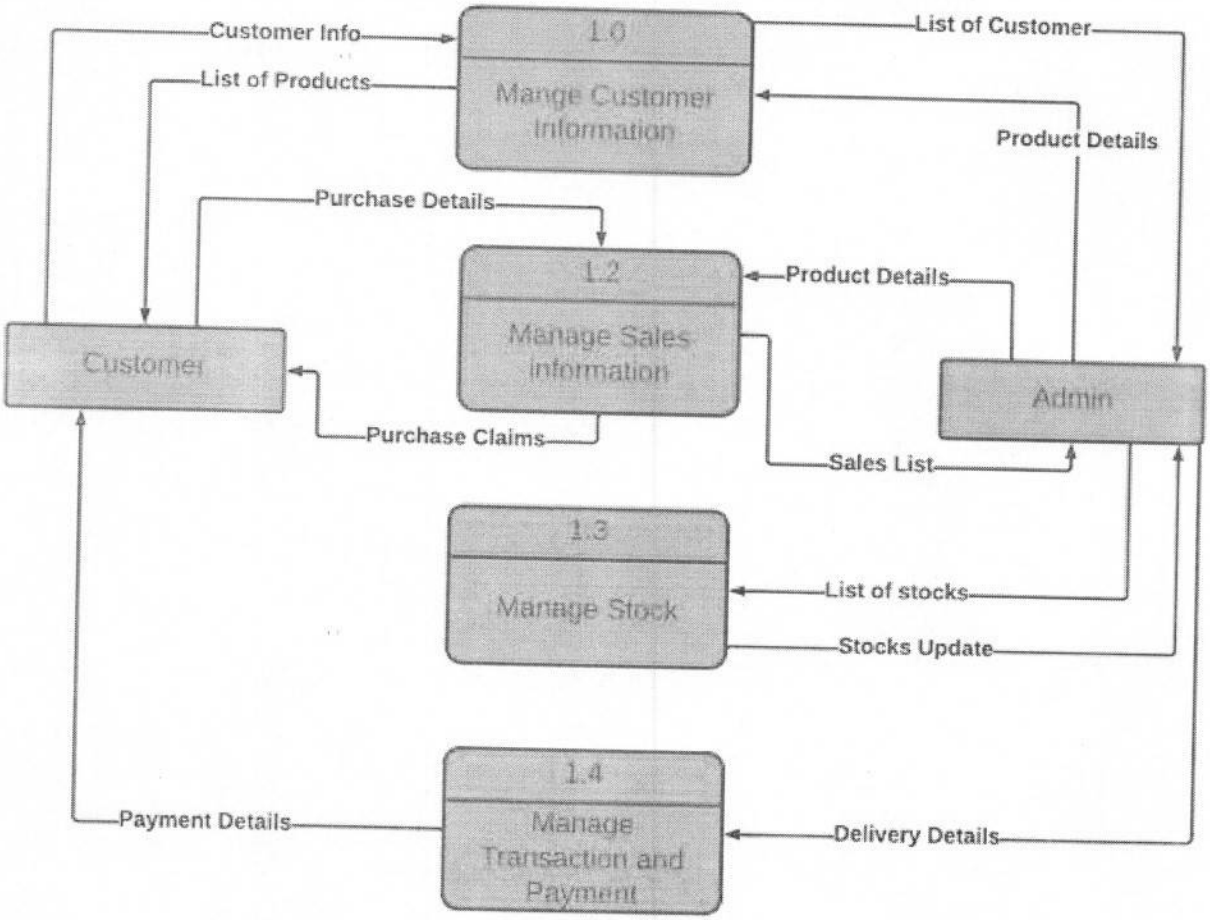
rules. we now first explain the different symbols and then elaborate the various concepts associated with building a DFD model of a system .

Context Level Digram

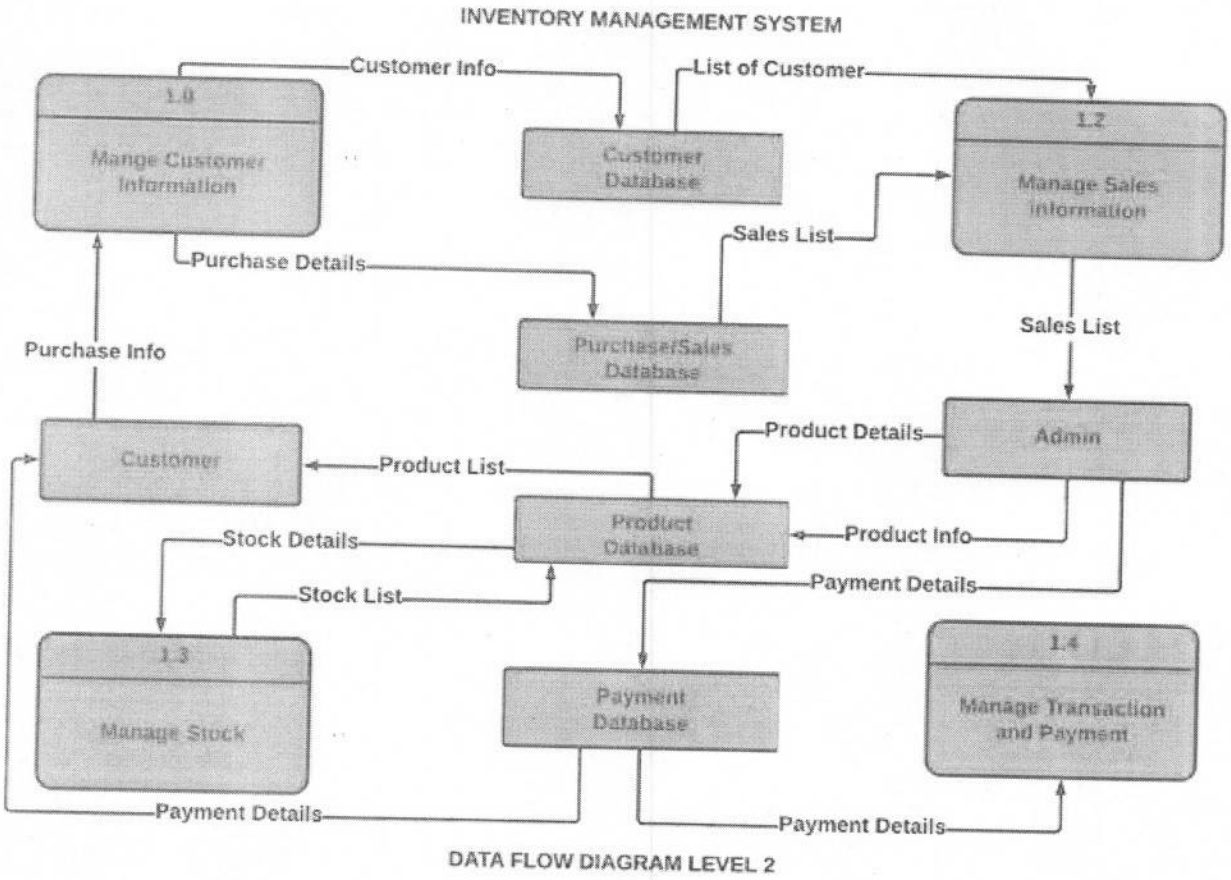


DFD Level-0

INVENTORY MANAGEMENT SYSTEM



DATA FLOW DIAGRAM LEVEL 1



DATA FLOW DIAGRAM LEVEL 2

ENTITY RELATIONSHIP DIAGRAM (ERD): -

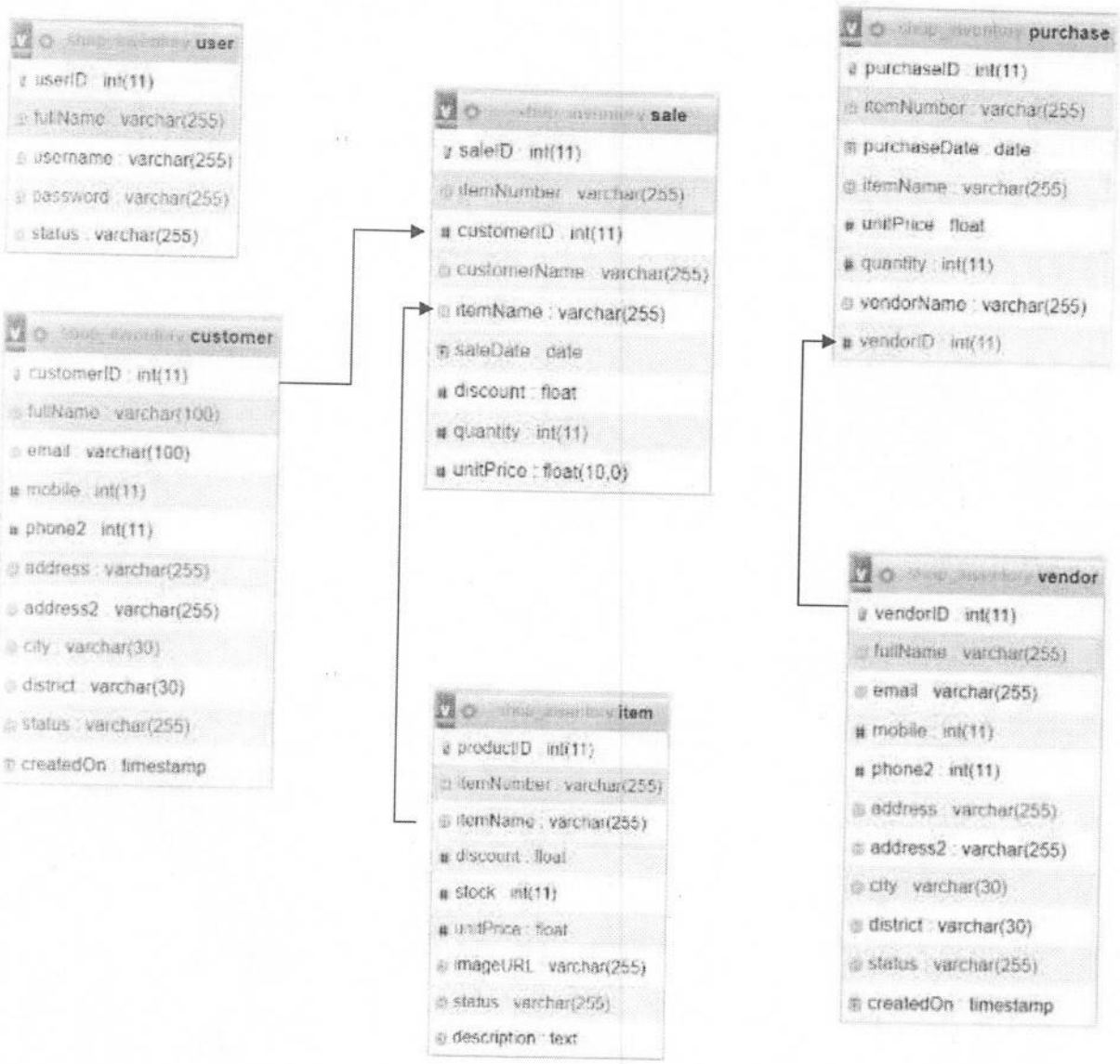
Entity Relationship Diagram (ERD) is a database design tool that provides graphical representation of database tables, the columns in tables and the relationships between tables. With neat organization of tables, table columns and flexible representation of cardinalities, ERD is extremely helpful in modeling databases that have a large amount of tables and with complex relationships in between. A well-developed ERD can provide sufficient information for database administrator to follow when developing and maintaining database.

- Conceptual
- Logical
- Physical

CONCEPTUAL, LOGICAL AND PHYSICAL ER MODEL: -

Conceptual, logical and physical data models provide three distinct levels of abstraction in data modeling and database design. While the conceptual and logical model enable the high-level representation of database tables and their properties, the physical model enables the modeling of actual physical database schem

ER -DIAGRAM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userID : int(11)
fullName : varchar(255)
username : varchar(255)
password : varchar(255)
status : varchar(255)
customer
customerID : int(11)
fullName : varchar(100)
email : varchar(100)
mobile : int(11)
phone2 : int(11)
address : varchar(255)
address2 : varchar(255)
city : varchar(30)
district : varchar(30)
status : varchar(255)
createdOn : timestamp
sale
saleID : int(11)
itemNumber : varchar(255)
customerID : int(11)
customerName : varchar(255)
itemName : varchar(255)
saleDate : date
discount : float
quantity : int(11)
unitPrice : float(10,0)
item
productID : int(11)
itemNumber : varchar(255)
itemName : varchar(255)
discount : float
stock : int(11)
unitPrice : float
imageURL : varchar(255)
status : varchar(255)
description : text
purchase
purchaseID : int(11)
itemNumber : varchar(255)
purchaseDate : date
itemName : varchar(255)
unitPrice : float
quantity : int(11)
vendorName : varchar(255)
vendorID : int(11)
vendor
vendorID : int(11)
fullName : varchar(255)
email : varchar(255)
mobile : int(11)
phone2 : int(11)
address : varchar(255)
address2 : varchar(255)
city : varchar(30)
district : varchar(30)
status : varchar(255)
createdOn : timestamp

OVERVIEW OF TECHNOLOGIES USED

Front End Technology

Microsoft .NET Framework

The .NET Framework is a new computing platform that simplifies application development in the highly distributed environment of the Internet. The .NET Framework is designed to fulfill the following objectives:

- To provide a consistent object-oriented programming environment whether object code is stored and executed locally, executed locally but Internet-distributed, or executed remotely.
- To provide a code-execution environment that minimizes software deployment and versioning conflicts.
- To provide a code-execution environment that guarantees safe execution of code, including code created by an unknown or semi-trusted third party.
- To provide a code-execution environment that eliminates the performance problems of scripted or interpreted environments.
- To make the developer experience consistent across widely varying types of applications, such as Windows-based applications and Web-based applications.
- To build all communication on industry standards to ensure that code based on the .NET Framework can integrate with any other code.

The .NET Framework has two main components: the common language runtime and the .NET Framework class library. The common language runtime is the foundation of the .NET Framework. You can think of the runtime as an agent that manages code at execution time, providing core services such as memory management, thread management, and remoting , while also enforcing strict type safety and other forms of code accuracy that ensure security and robustness. In fact, the concept of code management is a fundamental principle of the runtime. Code that targets the runtime is known as managed code, while code that does not target the runtime is known as unmanaged code. The class library, the other main component of the .NET Framework, is a comprehensive, object-oriented collection of reusable types that

you can use to develop applications ranging from traditional command-line or graphical user interface (GUI) applications to applications based on the latest innovations provided by ASP.NET, such as Web Forms and XML Web services.

The .NET Framework can be hosted by unmanaged components that load the common language runtime into their processes and initiate the execution of managed code, thereby creating a software environment that can exploit both managed and unmanaged features. The .NET Framework not only provides several runtime hosts, but also supports the development of third-party runtime hosts.

For example, ASP.NET hosts the runtime to provide a scalable, server-side environment for managed code. ASP.NET works directly with the runtime to enable Web Forms applications and XML Web services.

Internet Explorer is an example of an unmanaged application that hosts the runtime (in the form of a MIME type extension). Using Internet Explorer to host the runtime enables you to embed managed components or Windows Forms controls in HTML documents. Hosting the runtime in this way makes managed mobile code (similar to Microsoft® ActiveX® controls) possible, but with significant improvements that only managed code can offer, such as semi-trusted execution and secure isolated file storage.

The following illustration shows the relationship of the common language runtime and the class library to your applications and to the overall system. The illustration also shows how managed code operates within a larger architecture.

Features of the Common Language Runtime

The common language runtime manages memory, thread execution, code execution, code safety verification, compilation, and other system services. These features are intrinsic to the managed code that runs on the common language runtime.

With regards to security, managed components are awarded varying degrees of trust, depending on a number of factors that include their origin (such as the Internet, enterprise network, or local computer). This means that a managed component might or might not be able to perform file-access operations, registry-access operations, or other sensitive functions, even if it is being used in the same active application.

The runtime enforces code access security. For example, users can trust that an executable embedded in a Web page can play an animation on screen or sing a song, but cannot access their personal data, file system, or network. The security features of the runtime thus enable legitimate Internet-deployed software to be exceptionally featuring rich.

The runtime also enforces code robustness by implementing a strict type- and code-verification infrastructure called the common type system (CTS). The CTS ensures that all managed code is self-describing. The various Microsoft and third-party language compilers generate managed code that conforms to the CTS. This means that managed code can consume other managed types and instances, while strictly enforcing type fidelity and type safety.

In addition, the managed environment of the runtime eliminates many common software issues. For example, the runtime automatically handles object layout and manages references to objects, releasing them when they are no longer being used. This automatic memory management resolves the two most common application errors, memory leaks and invalid memory references.

The runtime also accelerates developer productivity. For example, programmers can write applications in their development language of choice, yet take full advantage of the runtime, the class library, and components written in other languages by other developers. Any compiler vendor who chooses to target the runtime can do so. Language compilers that target the .NET Framework make the features of the .NET Framework available to existing code written in that language, greatly easing the migration process for existing applications.

While the runtime is designed for the software of the future, it also supports software of today and yesterday. Interoperability between managed and unmanaged code enables developers to continue to use necessary COM components and DLLs.

The runtime is designed to enhance performance. Although the common language runtime provides many standard runtime services, managed code is never interpreted. A feature called just-in-time (JIT) compiling enables all managed code to run in the native machine language of the system on which it is executing. Meanwhile, the memory manager removes the possibilities of fragmented memory and increases memory locality-of-reference to further increase performance.

Finally, the runtime can be hosted by high-performance, server-side applications, such as Microsoft® SQL Server™ and Internet Information Services (IIS). This infrastructure enables you to use managed code to write your business logic, while still enjoying the superior performance of the industry's best enterprise servers that support runtime hosting.

.NET Framework Class Library

The .NET Framework class library is a collection of reusable types that tightly integrate with the common language runtime. The class library is object oriented, providing types from which your own managed code can derive functionality. This not only makes the .NET Framework types easy to use, but also reduces the time associated with learning new features of the .NET Framework. In addition, third-party components can integrate seamlessly with classes in the .NET Framework.

For example, the .NET Framework collection classes implement a set of interfaces that you can use to develop your own collection classes. Your collection classes will blend seamlessly with the classes in the .NET Framework.

As you would expect from an object-oriented class library, the .NET Framework types enable you to accomplish a range of common programming tasks, including tasks such as string management, data collection, database connectivity, and file access. In addition to these common tasks, the class library includes types that support a variety of specialized development scenarios. For example, you can use the .NET Framework to develop the following types of applications and services:

- Console applications.
- Scripted or hosted applications.
- Windows GUI applications (Windows Forms).
- ASP.NET applications.
- XML Web services.
- Windows services.

For example, the Windows Forms classes are a comprehensive set of reusable types that vastly simplify Windows GUI development. If you write an ASP.NET Web Form application, you can use the Web Forms classes.

Client Application Development

Client applications are the closest to a traditional style of application in Windows-based programming. These are the types of applications that display windows or forms on the desktop, enabling a user to perform a task. Client applications include applications such as word processors and spreadsheets, as well as custom business applications such as data-entry tools, reporting tools, and so on. Client applications usually employ windows, menus, buttons, and other GUI elements, and they likely access local resources such as the file system and peripherals such as printers.

Another kind of client application is the traditional ActiveX control (now replaced by the managed Windows Forms control) deployed over the Internet as a Web page. This application is much like other client applications: it is executed natively, has access to local resources, and includes graphical elements.

In the past, developers created such applications using C/C++ in conjunction with the Microsoft Foundation Classes (MFC) or with a rapid application development (RAD) environment such as Microsoft® Visual Basic®. The .NET Framework incorporates aspects of these existing products into a single, consistent development environment that drastically simplifies the development of client applications. The Windows Forms classes contained in the .NET Framework are designed to be used for GUI development. You can easily create command windows, buttons, menus, toolbars, and other screen elements with the flexibility necessary to accommodate shifting business needs.

For example, the .NET Framework provides simple properties to adjust visual attributes associated with forms. In some cases the underlying operating system does not support changing these attributes directly, and in these cases the .NET Framework automatically recreates the forms. This is one of many ways in which the .NET Framework integrates the developer interface, making coding simpler and more consistent.

Unlike ActiveX controls, Windows Forms controls have semi-trusted access to a user's computer. This means that binary or natively executing code can access some of the resources on the user's system (such as GUI elements and limited file access) without being able to access or compromise other resources. Because of code access security, many applications that once needed to be installed on a user's system can now be safely deployed through the Web. Your

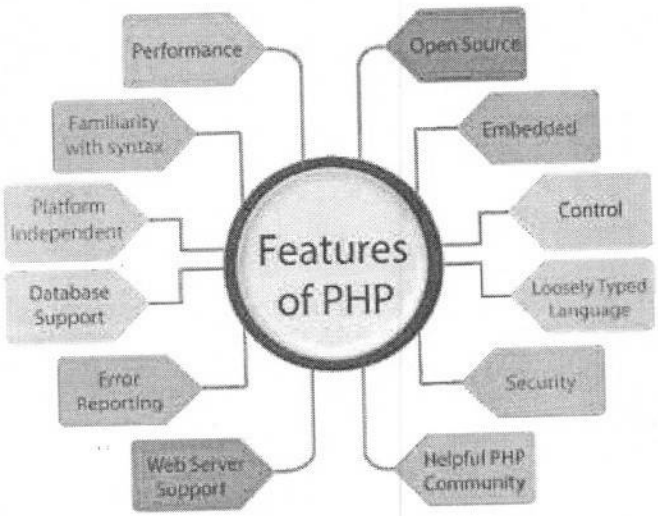
applications can implement the features of a local application while being deployed like a Web page.

What is PHP?

PHP is an open-source, interpreted, and object-oriented scripting language that can be executed at the server-side. PHP is well suited for web development. Therefore, it is used to develop web applications (an application that executes on the server and generates the dynamic page.). PHP was created by **Rasmus Lerdorf in 1994** but appeared in the market in 1995.

- PHP stands for Hypertext Preprocessor.
- PHP is an interpreted language, i.e., there is no need for compilation.
- PHP is faster than other scripting languages, for example, ASP and JSP.
- PHP is a server-side scripting language, which is used to manage the dynamic content of the website.
- PHP can be embedded into HTML.
- PHP is an object-oriented language.
- PHP is an open-source scripting language.
- PHP is simple and easy to learn language.

PHP Features:



Performance:

PHP script is executed much faster than those scripts which are written in other languages such as JSP and ASP. PHP uses its own memory, so the server workload and loading time is automatically reduced, which results in faster processing speed and better performance.

Open Source:

PHP source code and software are freely available on the web. You can develop all the versions of PHP according to your requirement without paying any cost. All its components are free to download and use.

Familiarity with syntax:

PHP has easily understandable syntax. Programmers are comfortable coding with it.

Embedded:

PHP code can be easily embedded within HTML tags and script.

Platform Independent:

PHP is available for WINDOWS, MAC, LINUX & UNIX operating system. A PHP application developed in one OS can be easily executed in other OS also.

Database Support:

PHP supports all the leading databases such as MySQL, SQLite, ODBC, etc.

Error Reporting -

PHP has predefined error reporting constants to generate an error notice or warning at runtime. E.g., E_ERROR, E_WARNING, E_STRICT, E_PARSE.

Loosely Typed Language:

PHP allows us to use a variable without declaring its datatype. It will be taken automatically at the time of execution based on the type of data it contains on its value.

Web servers Support:

PHP is compatible with almost all local servers used today like Apache, Netscape, Microsoft IIS, etc.

Security:

PHP is a secure language to develop the website. It consists of multiple layers of security to prevent threads and malicious attacks.

Control:

Different programming languages require long script or code, whereas PHP can do the same work in a few lines of code. It has maximum control over the websites like you can make changes easily whenever you want.

A Helpful PHP Community:

It has a large community of developers who regularly updates documentation, tutorials, online help, and FAQs. Learning PHP from the communities is one of the significant benefits.

BACK-END TECHNOLOGY:

MySQL

MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license. It is supported by **Oracle Company**.

MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company. It is fast, scalable, and easy to use database management system in comparison with Microsoft SQL Server and Oracle Database. It is commonly used in conjunction with PHP scripts for creating powerful and dynamic server-side or web-based enterprise applications.

It is developed, marketed, and supported by **MySQL AB, a Swedish company**, and written in C programming language and C++ programming language

The official pronunciation of MySQL is not the My Sequel; it is ***My Ess Que Ell.*** *However, you can pronounce it in your way.* Many small and big companies use MySQL. MySQL

supports many Operating Systems like Windows, Linux, MacOS, etc. with C, C++, and Java languages

MySQL follows the working of Client-Server Architecture. This model is designed for the end-users called clients to access the resources from a central computer known as a server using network services. Here, the clients make requests through a graphical user interface (GUI), and the server will give the desired output as soon as the instructions are matched. The process of MySQL environment is the same as the client-server model.

The core of the MySQL database is the MySQL Server. This server is available as a separate program and responsible for handling all the database instructions, statements, or commands. The working of MySQL database with MySQL Server are as follows:

1. MySQL creates a database that allows you to build many tables to store and manipulate data and defining the relationship between each table.
2. Clients make requests through the GUI screen or command prompt by using specific SQL expressions on MySQL.
3. Finally, the server application will respond with the requested expressions and produce the desired result on the client-side.

About XAMPP:

XAMPP is the most popular PHP development environment, XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl. The XAMPP open source package has been set up to be incredibly easy to install and to use.

Cascading Style Sheets:

Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and user interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a cornerstone

specification of the web and almost all web pages use CSS style sheets to describe their presentation.

CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content (such as by allowing for table less web design).

CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. It can also be used to allow the web page to display differently depending on the screen size or device on which it is being viewed. While the author of a document typically links that document to a CSS file, readers can use a different style sheet, perhaps one on their own computer, to override the one the author has specified.

With plain HTML you define the colors and sizes of text and tables throughout your pages. If you want to change a certain element you will therefore have to work your way through the document and change it. With CSS you define the colors and sizes in "styles". Then as you write your documents you refer to the styles. Therefore: if you change a certain style it will change the look of your entire site. Another big advantage is that CSS offers much more detailed attributes than plain HTML for defining the look and feel of your site.

Java Script

JavaScript (JS) is a dynamic computer programming language. It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. It is also being used in server-side network programming (with Node.js), game development and the creation of desktop and mobile applications.

JavaScript is a prototype-based scripting language with dynamic typing and has first-class functions. Its syntax was influenced by C. JavaScript copies many names and naming conventions from Java, but the two languages are otherwise unrelated and have very different semantics. The key design principles within JavaScript are taken from the self and Scheme

programming languages. It is a multi-paradigm language, supporting object-oriented, imperative, and functional programming styles.

The application of JavaScript in use outside of web pages—for example, in PDF documents, site-specific browsers, and desktop widgets—is also significant. Newer and faster JavaScript VMs and platforms built upon them (notably Node.js) have also increased the popularity of JavaScript for server-side web applications. On the client side, JavaScript was traditionally implemented as an interpreted language, but just-in-time compilation is now performed by recent (post-2012) browsers.

JavaScript was formalized in the ECMA Script language standard and is primarily used as part of a web browser (client-side JavaScript). This enables programmatic access to objects within a host environment.

JavaScript is the most popular programming language in the world.

It is the language for HTML, for the Web, for computers, servers, laptops, tablets, smart phones, and more.

You can use JavaScript to:

a) Change HTML elements

b) Delete HTML elements

c) Create new HTML elements

d) Copy and clone HTML elements

DATABASE TABLES:

customer

Column	Type	Null	Default
customerID	int(11)	No	
fullName	varchar(100)	No	
email	varchar(100)	Yes	NULL
mobile	int(11)	No	
phone2	int(11)	Yes	NULL
address	varchar(255)	No	
address2	varchar(255)	Yes	NULL
city	varchar(30)	Yes	NULL
district	varchar(30)	No	
status	varchar(255)	No	Active
createdOn	timestamp	No	current_timestamp()

item

Column	Type	Null	Default
productID	int(11)	No	
itemNumber	varchar(255)	No	
itemName	varchar(255)	No	
discount	Float	No	0
stock	int(11)	No	0
unitPrice	Float	No	0
imageURL	varchar(255)	No	imageNotAvailable.jpg
status	varchar(255)	No	Active
description	Text	No	

purchase

Column	Type	Null	Default
purchaseID	int(11)	No	
itemNumber	varchar(255)	No	
purchaseDate	date	No	
itemName	varchar(255)	No	
unitPrice	float	No	0
quantity	int(11)	No	0
vendorName	varchar(255)	No	Test Vendor
vendorID	int(11)	No	0

sale

Column	Type	Null	Default
SaleID	int(11)	No	
ItemNumber	varchar(255)	No	
CustomerID	int(11)	No	
CustomerName	varchar(255)	No	
ItemName	varchar(255)	No	
SaleDate	date	No	
Discount	float	No	0
Quantity	int(11)	No	0
UnitPrice	float(10,0)	No	0

user

Column	Type	Null	Default
userID	int(11)	No	
fullName	varchar(255)	No	
username	varchar(255)	No	
password	varchar(255)	No	
status	varchar(255)	No	Active

vendor

Column	Type	Null	Default
vendorID	int(11)	No	
fullName	varchar(255)	No	
email	varchar(255)	Yes	NULL
mobile	int(11)	No	
phone2	int(11)	Yes	NULL
address	varchar(255)	No	
address2	varchar(255)	Yes	NULL
city	varchar(30)	Yes	NULL
district	varchar(30)	No	
status	varchar(255)	No	Active
createdOn	timestamp	No	current_timestamp()

CODING

index.php

```
<?php
        session_start();
        // Redirect the user to login page if he is not logged in.
        if(!isset($_SESSION['loggedIn'])){
                header('Location: login.php');
                exit();
        }
        require_once('inc/config/constants.php');
        require_once('inc/config/db.php');
        require_once('inc/header.html');
?>
 <body>
<?php
        require 'inc/navigation.php';
?>
   <!-- Page Content -->
   <div class="container-fluid">
          <div class="row">
                <div class="col-lg-2">
                <h1 class="my-4"></h1>
<div class="nav flex-column nav-pills" id="v-pills-tab" role="tablist" aria-
orientation="vertical">
<a class="nav-link active" id="v-pills-item-tab" data-toggle="pill" href="#v-pills-item"
role="tab" aria-controls="v-pills-item" aria-selected="true">Item</a>
<a class="nav-link" id="v-pills-purchase-tab" data-toggle="pill" href="#v-pills-purchase"
role="tab" aria-controls="v-pills-purchase" aria-selected="false">Purchase</a>
```

```
<a class="nav-link" id="v-pills-vendor-tab" data-toggle="pill" href="#v-pills-vendor"
role="tab" aria-controls="v-pills-vendor" aria-selected="false">Vendor</a>

<a class="nav-link" id="v-pills-sale-tab" data-toggle="pill" href="#v-pills-sale" role="tab"
aria-controls="v-pills-sale" aria-selected="false">Sale</a>

<a class="nav-link" id="v-pills-customer-tab" data-toggle="pill" href="#v-pills-customer"
role="tab" aria-controls="v-pills-customer" aria-selected="false">Customer</a>

<a class="nav-link" id="v-pills-search-tab" data-toggle="pill" href="#v-pills-search"
role="tab" aria-controls="v-pills-search" aria-selected="false">Search</a>

<a class="nav-link" id="v-pills-reports-tab" data-toggle="pill" href="#v-pills-reports"
role="tab" aria-controls="v-pills-reports" aria-selected="false">Reports</a>

                    </div>

                </div>

                <div class="col-lg-10">

                    <div class="tab-content" id="v-pills-tabContent">

<div class="tab-pane fade show active" id="v-pills-item" role="tabpanel" aria-labelledby="v-
pills-item-tab">

                        <div class="card card-outline-secondary my-4">

                            <div class="card-header">Item Details</div>

                            <div class="card-body">

                                <ul class="nav nav-tabs" role="tablist">

                                    <li class="nav-item">

<a class="nav-link active" data-toggle="tab" href="#itemDetailsTab">Item</a>

                                    </li>

                                    <li class="nav-item">

<a class="nav-link" data-toggle="tab" href="#itemImageTab">Upload Image</a>

                                    </li>

                                </ul>

<!-- Tab panes for item details and image sections -->

<div class="tab-content">
```

```
<div id="itemDetailsTab" class="container-fluid tab-pane active">

<br>

<!-- Div to show the ajax message from validations/db submission -->

<div id="itemDetailsMessage"></div>

<form>

<div class="form-row">

<div class="form-group col-md-3" style="display:inline-block">

<label for="itemDetailsItemNumber">Item Number<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" name="itemDetailsItemNumber"
id="itemDetailsItemNumber" autocomplete="off">

<div id="itemDetailsItemNumberSuggestionsDiv" class="customListDivWidth"></div>

</div>

<div class="form-group col-md-3">

<label for="itemDetailsProductID">Product ID</label>

<input class="form-control invTooltip" type="number" readonly  id="itemDetailsProductID"
name="itemDetailsProductID" title="This will be auto-generated when you add a new item">

</div>

</div>

<div class="form-row">

<div class="form-group col-md-6">

<label for="itemDetailsItemName">Item Name<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" name="itemDetailsItemName"
id="itemDetailsItemName" autocomplete="off">

<div id="itemDetailsItemNameSuggestionsDiv" class="customListDivWidth"></div>

</div>

<div class="form-group col-md-2">

<label for="itemDetailsStatus">Status</label>
```

```
<select id="itemDetailsStatus" name="itemDetailsStatus" class="form-control
chosenSelect">

<?php include('inc/statusList.html'); ?>

</select>

                                                    </div>

                                                </div>

                                                <div class="form-row">

<div class="form-group col-md-6" style="display:inline-block">

<!-- <label for="itemDetailsDescription">Description</label> -->

<textarea rows="4" class="form-control" placeholder="Description"
name="itemDetailsDescription" id="itemDetailsDescription"></textarea>

                                                    </div>

                                                </div>

 <div class="form-row">

        <div class="form-group col-md-3">

         <label for="itemDetailsDiscount">Discount %</label>

<input type="text" class="form-control" value="0" name="itemDetailsDiscount"
id="itemDetailsDiscount">

                                                    </div>

<div class="form-group col-md-3">

<label for="itemDetailsQuantity">Quantity<span class="requiredIcon">*</span></label>

<input type="number" class="form-control" value="0" name="itemDetailsQuantity"
id="itemDetailsQuantity">

                                                    </div>

<div class="form-group col-md-3">

 <label for="itemDetailsUnitPrice">Unit Price<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" value="0" name="itemDetailsUnitPrice"
id="itemDetailsUnitPrice">
```

```
                                                    </div>

<div class="form-group col-md-3">

 <label for="itemDetailsTotalStock">Total Stock</label>

<input type="text" class="form-control" name="itemDetailsTotalStock"
id="itemDetailsTotalStock" readonly>

                                                    </div>

<div class="form-group col-md-3">

        <div id="imageContainer"></div>

                                                    </div>

                                                </div>

<button type="button" id="addItem" class="btn btn-success">Add Item</button>

<button type="button" id="updateItemDetailsButton" class="btn btn-
primary">Update</button>

<button type="button" id="deleteItem" class="btn btn-danger">Delete</button>

<button type="reset" class="btn" id="itemClear">Clear</button>

        </form>

                </div>

<div id="itemImageTab" class="container-fluid tab-pane fade">

                                                    <br>

<div id="itemImageMessage"></div>

<p>You can upload an image for a particular item using this section.</p>

<p>Please make sure the item is already added to database before uploading the image.</p>

                                                    <br>

<form name="imageForm" id="imageForm" method="post">

<div class="form-row">

<div class="form-group col-md-3" style="display:inline-block">

 <label for="itemImageItemNumber">Item Number<span
class="requiredIcon">*</span></label>
```

```
<input type="text" class="form-control" name="itemImageItemNumber"
id="itemImageItemNumber" autocomplete="off">

<div id="itemImageItemNumberSuggestionsDiv" class="customListDivWidth"></div>

        </div>

<div class="form-group col-md-4">

<label for="itemImageItemName">Item Name</label>

<input type="text" class="form-control" name="itemImageItemName"
id="itemImageItemName" readonly>

                </div>

                        </div>

                                <br>

 <div class="form-row">

<div class="form-group col-md-7">

<label for="itemImageFile">Select Image ( <span class="blueText">jpg</span>, <span
class="blueText">jpeg</span>, <span class="blueText">gif</span>, <span
class="blueText">png</span> only )</label>

<input type="file" class="form-control-file btn btn-dark" id="itemImageFile"
name="itemImageFile">

                </div>

                        </div>

                        <br>

<button type="button" id="updateImageButton" class="btn btn-primary">Upload
Image</button>

<button type="button" id="deleteImageButton" class="btn btn-danger">Delete
Image</button>

<button type="reset" class="btn">Clear</button>

                                                </form>

                                        </div>

                                </div>

                        </div>
```

```
                    </div>
                </div>
<div class="tab-pane fade" id="v-pills-purchase" role="tabpanel" aria-labelledby="v-pills-purchase-tab">
                    <div class="card card-outline-secondary my-4">
                     <div class="card-header">Purchase Details</div>
                     <div class="card-body">
                         <div id="purchaseDetailsMessage"></div>
                         <form>
                          <div class="form-row">
                              <div class="form-group col-md-3">
<label for="purchaseDetailsItemNumber">Item Number<span class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="purchaseDetailsItemNumber" name="purchaseDetailsItemNumber" autocomplete="off">
<div id="purchaseDetailsItemNumberSuggestionsDiv" class="customListDivWidth"></div>
                              </div>
                              <div class="form-group col-md-3">
<label for="purchaseDetailsPurchaseDate">Purchase Date<span class="requiredIcon">*</span></label>
<input type="text" class="form-control datepicker" id="purchaseDetailsPurchaseDate" name="purchaseDetailsPurchaseDate" readonly value="2018-05-24">
                              </div>
                              <div class="form-group col-md-2">
<label for="purchaseDetailsPurchaseID">Purchase ID</label>
<input type="text" class="form-control invTooltip" id="purchaseDetailsPurchaseID" name="purchaseDetailsPurchaseID" title="This will be auto-generated when you add a new record" autocomplete="off">
<div id="purchaseDetailsPurchaseIDSuggestionsDiv" class="customListDivWidth"></div>
                              </div>
```

```
                                    </div>
                                    <div class="form-row">
                                        <div class="form-group col-md-4">
<label for="purchaseDetailsItemName">Item Name<span
class="requiredIcon">*</span></label>
<input type="text" class="form-control invTooltip" id="purchaseDetailsItemName"
name="purchaseDetailsItemName" readonly title="This will be auto-filled when you enter
the item number above">
                                        </div>
                                        <div class="form-group col-md-2">
<label for="purchaseDetailsCurrentStock">Current Stock</label>
<input type="text" class="form-control" id="purchaseDetailsCurrentStock"
name="purchaseDetailsCurrentStock" readonly>
                                        </div>
                                        <div class="form-group col-md-4">
<label for="purchaseDetailsVendorName">Vendor Name<span
class="requiredIcon">*</span></label>
<select id="purchaseDetailsVendorName" name="purchaseDetailsVendorName"
class="form-control chosenSelect">
<?php
    require('model/vendor/getVendorNames.php');
    ?>
    </select>
        </div>
    </div>
        <div class="form-row">
            <div class="form-group col-md-2">
<label for="purchaseDetailsQuantity">Quantity<span
class="requiredIcon">*</span></label>
```

```
<input type="number" class="form-control" id="purchaseDetailsQuantity"
name="purchaseDetailsQuantity" value="0">

                </div>

                        <div class="form-group col-md-2">

 <label for="purchaseDetailsUnitPrice">Unit Price<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" id="purchaseDetailsUnitPrice"
name="purchaseDetailsUnitPrice" value="0">

                                                </div>

                                                <div class="form-group col-md-2">

<label for="purchaseDetailsTotal">Total Cost</label>

<input type="text" class="form-control" id="purchaseDetailsTotal"
name="purchaseDetailsTotal" readonly>

                                                </div>

                                        </div>

<button type="button" id="addPurchase" class="btn btn-success">Add Purchase</button>

<button type="button" id="updatePurchaseDetailsButton" class="btn btn-
primary">Update</button>

<button type="reset" class="btn">Clear</button>

                                        </form>

                                </div>

                                </div>

                        </div>

 <div class="tab-pane fade" id="v-pills-vendor" role="tabpanel" aria-labelledby="v-pills-
vendor-tab">

        <div class="card card-outline-secondary my-4">

                <div class="card-header">Vendor Details</div>

                        <div class="card-body">

  <!-- Div to show the ajax message from validations/db submission -->
```

```
<div id="vendorDetailsMessage"></div>

<form>

<div class="form-row">

<div class="form-group col-md-6">

<label for="vendorDetailsVendorFullName">Full Name<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" id="vendorDetailsVendorFullName"
name="vendorDetailsVendorFullName" placeholder="">

</div>

<div class="form-group col-md-2">

<label for="vendorDetailsStatus">Status</label>

<select id="vendorDetailsStatus" name="vendorDetailsStatus" class="form-control
chosenSelect">

<?php include('inc/statusList.html'); ?>

</select>

</div>

<div class="form-group col-md-3">

<label for="vendorDetailsVendorID">Vendor ID</label>

<input type="text" class="form-control invTooltip" id="vendorDetailsVendorID"
name="vendorDetailsVendorID" title="This will be auto-generated when you add a new
vendor" autocomplete="off">

<div id="vendorDetailsVendorIDSuggestionsDiv" class="customListDivWidth"></div>

</div>

</div>

<div class="form-row">

<div class="form-group col-md-3">

<label for="vendorDetailsVendorMobile">Phone (mobile)<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control invTooltip" id="vendorDetailsVendorMobile"
name="vendorDetailsVendorMobile" title="Do not enter leading 0">
```

```
                    </div>
                    <div class="form-group col-md-3">
<label for="vendorDetailsVendorPhone2">Phone 2</label>
<input type="text" class="form-control invTooltip" id="vendorDetailsVendorPhone2"
name="vendorDetailsVendorPhone2" title="Do not enter leading 0">
                    </div>
                    <div class="form-group col-md-6">
<label for="vendorDetailsVendorEmail">Email</label>
<input type="email" class="form-control" id="vendorDetailsVendorEmail"
name="vendorDetailsVendorEmail">
                    </div>
                </div>
                <div class="form-group">
<label for="vendorDetailsVendorAddress">Address<span
class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="vendorDetailsVendorAddress"
name="vendorDetailsVendorAddress">
                </div>
                <div class="form-group">
<label for="vendorDetailsVendorAddress2">Address 2</label>
<input type="text" class="form-control" id="vendorDetailsVendorAddress2"
name="vendorDetailsVendorAddress2">
                </div>
                <div class="form-row">
                    <div class="form-group col-md-6">
<label for="vendorDetailsVendorCity">City</label>
<input type="text" class="form-control" id="vendorDetailsVendorCity"
name="vendorDetailsVendorCity">
                    </div>
```

```
                                        <div class="form-group col-md-4">
 <label for="vendorDetailsVendorDistrict">District</label>
 <select id="vendorDetailsVendorDistrict" name="vendorDetailsVendorDistrict"
class="form-control chosenSelect">
<?php include('inc/districtList.html'); ?>
        </select>
                                        </div>
                                    </div>
<button type="button" id="addVendor" name="addVendor" class="btn btn-success">Add
Vendor</button>
<button type="button" id="updateVendorDetailsButton" class="btn btn-
primary">Update</button>
<button type="button" id="deleteVendorButton" class="btn btn-danger">Delete</button>
 <button type="reset" class="btn">Clear</button>
                                    </form>
                                </div>
                            </div>
                        </div>
<div class="tab-pane fade" id="v-pills-sale" role="tabpanel" aria-labelledby="v-pills-sale-
tab">
<div class="card card-outline-secondary my-4">
                <div class="card-header">Sale Details</div>
                    <div class="card-body">
                        <div id="saleDetailsMessage"></div>
                        <form>
                         <div class="form-row">
                            <div class="form-group col-md-3">
<label for="saleDetailsItemNumber">Item Number<span
class="requiredIcon">*</span></label>
```

```
<input type="text" class="form-control" id="saleDetailsItemNumber"
name="saleDetailsItemNumber" autocomplete="off">

<div id="saleDetailsItemNumberSuggestionsDiv" class="customListDivWidth"></div>

                                        </div>

                                        <div class="form-group col-md-3">

<label for="saleDetailsCustomerID">Customer ID<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" id="saleDetailsCustomerID"
name="saleDetailsCustomerID" autocomplete="off">

<div id="saleDetailsCustomerIDSuggestionsDiv" class="customListDivWidth"></div>

                                        </div>

                                        <div class="form-group col-md-4">

<label for="saleDetailsCustomerName">Customer Name</label>

<input type="text" class="form-control" id="saleDetailsCustomerName"
name="saleDetailsCustomerName" readonly>

                                        </div>

                                        <div class="form-group col-md-2">

<label for="saleDetailsSaleID">Sale ID</label>

<input type="text" class="form-control invTooltip" id="saleDetailsSaleID"
name="saleDetailsSaleID" title="This will be auto-generated when you add a new record"
autocomplete="off">

<div id="saleDetailsSaleIDSuggestionsDiv" class="customListDivWidth"></div>

                                        </div>

                                    </div>

                                    <div class="form-row">

                                        <div class="form-group col-md-5">

<label for="saleDetailsItemName">Item Name</label>

<!--<select id="saleDetailsItemNames" name="saleDetailsItemNames" class="form-control
chosenSelect"> -->

                                                <?php
```

```
//require('model/item/getItemDetails.php');

                                                    ?>

            <!-- </select> -->

<input type="text" class="form-control invTooltip" id="saleDetailsItemName"
name="saleDetailsItemName" readonly title="This will be auto-filled when you enter the
item number above">

                                                    </div>

                                                    <div class="form-group col-md-3">

 <label for="saleDetailsSaleDate">Sale Date<span class="requiredIcon">*</span></label>

<input type="text" class="form-control datepicker" id="saleDetailsSaleDate" value="2018-
05-24" name="saleDetailsSaleDate" readonly>

                                                    </div>

                                                </div>

                                                <div class="form-row">

                                                    <div class="form-group col-md-2">

 <label for="saleDetailsTotalStock">Total Stock</label>

 <input type="text" class="form-control" name="saleDetailsTotalStock"
id="saleDetailsTotalStock" readonly>

                                                    </div>

                                                    <div class="form-group col-md-2">

 <label for="saleDetailsDiscount">Discount %</label>

 <input type="text" class="form-control" id="saleDetailsDiscount"
name="saleDetailsDiscount" value="0">

                                                    </div>

                                                    <div class="form-group col-md-2">

 <label for="saleDetailsQuantity">Quantity<span class="requiredIcon">*</span></label>

 <input type="number" class="form-control" id="saleDetailsQuantity"
name="saleDetailsQuantity" value="0">

                                                    </div>
```

```
                                        <div class="form-group col-md-2">
<label for="saleDetailsUnitPrice">Unit Price<span class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="saleDetailsUnitPrice"
name="saleDetailsUnitPrice" value="0">
                                        </div>
                                        <div class="form-group col-md-3">
<label for="saleDetailsTotal">Total</label>
<input type="text" class="form-control" id="saleDetailsTotal" name="saleDetailsTotal">
                                        </div>
                                    </div>
                                    <div class="form-row">
                                        <div class="form-group col-md-3">
<div id="saleDetailsImageContainer"></div>
                                        </div>
                                    </div>
<button type="button" id="addSaleButton" class="btn btn-success">Add Sale</button>
<button type="button" id="updateSaleDetailsButton" class="btn btn-
primary">Update</button>
<button type="reset" id="saleClear" class="btn">Clear</button>
                                    </form>
                                </div>
                            </div>
                        </div>
<div class="tab-pane fade" id="v-pills-customer" role="tabpanel" aria-labelledby="v-pills-
customer-tab">
                            <div class="card card-outline-secondary my-4">
                                <div class="card-header">Customer Details</div>
                                <div class="card-body">
```

```
<!-- Div to show the ajax message from validations/db submission -->
                <div id="customerDetailsMessage"></div>
                                        <form>
                                         <div class="form-row">
                                                <div class="form-group col-md-6">
<label for="customerDetailsCustomerFullName">Full Name<span
class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="customerDetailsCustomerFullName"
name="customerDetailsCustomerFullName">
                                                </div>
                                                <div class="form-group col-md-2">
<label for="customerDetailsStatus">Status</label>
<select id="customerDetailsStatus" name="customerDetailsStatus" class="form-control
chosenSelect">
<?php include('inc/statusList.html'); ?>
                </select>
                </div>
                                                <div class="form-group col-md-3">
<label for="customerDetailsCustomerID">Customer ID</label>
<input type="text" class="form-control invTooltip" id="customerDetailsCustomerID"
name="customerDetailsCustomerID" title="This will be auto-generated when you add a new
customer" autocomplete="off">
<div id="customerDetailsCustomerIDSuggestionsDiv" class="customListDivWidth"></div>
                                                </div>
                                        </div>
                                        <div class="form-row">
                                                <div class="form-group col-md-3">
<label for="customerDetailsCustomerMobile">Phone (mobile)<span
class="requiredIcon">*</span></label>
```

```
<input type="text" class="form-control invTooltip" id="customerDetailsCustomerMobile"
name="customerDetailsCustomerMobile" title="Do not enter leading 0">

                                        </div>

                                        <div class="form-group col-md-3">

<label for="customerDetailsCustomerPhone2">Phone 2</label>

<input type="text" class="form-control invTooltip" id="customerDetailsCustomerPhone2"
name="customerDetailsCustomerPhone2" title="Do not enter leading 0">

                                        </div>

                                        <div class="form-group col-md-6">

<label for="customerDetailsCustomerEmail">Email</label>

<input type="email" class="form-control" id="customerDetailsCustomerEmail"
name="customerDetailsCustomerEmail">

                                        </div>

                                    </div>

                                    <div class="form-group">

<label for="customerDetailsCustomerAddress">Address<span
class="requiredIcon">*</span></label>

<input type="text" class="form-control" id="customerDetailsCustomerAddress"
name="customerDetailsCustomerAddress">

                                    </div>

                                    <div class="form-group">

<label for="customerDetailsCustomerAddress2">Address 2</label>

<input type="text" class="form-control" id="customerDetailsCustomerAddress2"
name="customerDetailsCustomerAddress2">

                                    </div>

                                    <div class="form-row">

                                        <div class="form-group col-md-6">

<label for="customerDetailsCustomerCity">City</label>

<input type="text" class="form-control" id="customerDetailsCustomerCity"
name="customerDetailsCustomerCity">
```

```
                                    </div>

                                    <div class="form-group col-md-4">

<label for="customerDetailsCustomerDistrict">District</label>

<select id="customerDetailsCustomerDistrict" name="customerDetailsCustomerDistrict"
class="form-control chosenSelect">

                <?php include('inc/districtList.html'); ?>

                                    </select>

                                    </div>

                                </div>

<button type="button" id="addCustomer" name="addCustomer" class="btn btn-
success">Add Customer</button>

<button type="button" id="updateCustomerDetailsButton" class="btn btn-
primary">Update</button>

<button type="button" id="deleteCustomerButton" class="btn btn-danger">Delete</button>

<button type="reset" class="btn">Clear</button>

                                </form>

                            </div>

                        </div>

                    </div>

<div class="tab-pane fade" id="v-pills-search" role="tabpanel" aria-labelledby="v-pills-
search-tab">

        <div class="card card-outline-secondary my-4">

<div class="card-header">Search Inventory<button id="searchTablesRefresh"
name="searchTablesRefresh" class="btn btn-warning float-right btn-
sm">Refresh</button></div>

                            <div class="card-body">

                                <ul class="nav nav-tabs" role="tablist">

                                    <li class="nav-item">

<a class="nav-link active" data-toggle="tab" href="#itemSearchTab">Item</a>
```

```
                                    </li>
                                    <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#customerSearchTab">Customer</a>
                                    </li>
                                    <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#saleSearchTab">Sale</a>
                                    </li>
                                    <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#purchaseSearchTab">Purchase</a>
                                    </li>
                                    <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#vendorSearchTab">Vendor</a>
                                    </li>
                                </ul>
                                <!-- Tab panes -->
                                <div class="tab-content">
<div id="itemSearchTab" class="container-fluid tab-pane active">
                                    <br>
<p>Use the grid below to search all details of items</p>
<!-- <a href="#" class="itemDetailsHover" data-toggle="popover" id="10">wwwee</a> -->
<div class="table-responsive" id="itemDetailsTableDiv"></div>
                                    </div>
<div id="customerSearchTab" class="container-fluid tab-pane fade">
                                    <br>
 <p>Use the grid below to search all details of customers</p>
<div class="table-responsive" id="customerDetailsTableDiv"></div>
                                    </div>
```

```
<div id="saleSearchTab" class="container-fluid tab-pane fade">
                                                    <br>
<p>Use the grid below to search sale details</p>
<div class="table-responsive" id="saleDetailsTableDiv"></div>
                                                </div>
<div id="purchaseSearchTab" class="container-fluid tab-pane fade">
                                                    <br>
<p>Use the grid below to search purchase details</p>
        <div class="table-responsive" id="purchaseDetailsTableDiv"></div>
                                                </div>
<div id="vendorSearchTab" class="container-fluid tab-pane fade">
                                                    <br>
        <p>Use the grid below to search vendor details</p>
<div class="table-responsive" id="vendorDetailsTableDiv"></div>
                                                </div>
                                            </div>
                                        </div>
                                    </div>
                                </div>
<div class="tab-pane fade" id="v-pills-reports" role="tabpanel" aria-labelledby="v-pills-
reports-tab">
<div class="card card-outline-secondary my-4">
<div class="card-header">Reports<button id="reportsTablesRefresh"
name="reportsTablesRefresh" class="btn btn-warning float-right btn-
sm">Refresh</button></div>
        <div class="card-body">
                    <ul class="nav nav-tabs" role="tablist">
                                                <li class="nav-item">
```

```
<a class="nav-link active" data-toggle="tab" href="#itemReportsTab">Item</a>
                                        </li>
                                        <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#customerReportsTab">Customer</a>
                                        </li>
                                        <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#saleReportsTab">Sale</a>
                                        </li>
                                        <li class="nav-item">
a class="nav-link" data-toggle="tab" href="#purchaseReportsTab">Purchase</a>
                                        </li>
                                        <li class="nav-item">
<a class="nav-link" data-toggle="tab" href="#vendorReportsTab">Vendor</a>
                                        </li>
                                    </ul>
                                    <!-- Tab panes for reports sections -->
                                    <div class="tab-content">
<div id="itemReportsTab" class="container-fluid tab-pane active">
                                            <br>
<p>Use the grid below to get reports for items</p>
<div class="table-responsive" id="itemReportsTableDiv"></div>
                                        </div>
<div id="customerReportsTab" class="container-fluid tab-pane fade">
                                            <br>
<p>Use the grid below to get reports for customers</p>
<div class="table-responsive" id="customerReportsTableDiv"></div>
                                        </div>
```

```
<div id="saleReportsTab" class="container-fluid tab-pane fade">
                                                    <br>
<!-- <p>Use the grid below to get reports for sales</p> -->
                                                    <form>
                                                     <div class="form-row">
 <div class="form-group col-md-3">
<label for="saleReportStartDate">Start Date</label>
<input type="text" class="form-control datepicker" id="saleReportStartDate" value="2018-
05-24" name="saleReportStartDate" readonly>
                                                                    </div>
<div class="form-group col-md-3">
<label for="saleReportEndDate">End Date</label>
<input type="text" class="form-control datepicker" id="saleReportEndDate" value="2018-
05-24" name="saleReportEndDate" readonly>
                                                                    </div>
                                                    </div>
<button type="button" id="showSaleReport" class="btn btn-dark">Show Report</button>
<button type="reset" id="saleFilterClear" class="btn">Clear</button>
                                                    </form>
                                                    <br><br>
<div class="table-responsive" id="saleReportsTableDiv"></div>
                                                </div>
<div id="purchaseReportsTab" class="container-fluid tab-pane fade">
                                                    <br>
<!-- <p>Use the grid below to get reports for purchases</p> -->
                                                    <form>
                                                     <div class="form-row">
<div class="form-group col-md-3">
```

```
<div id="saleReportsTab" class="container-fluid tab-pane fade">
                                                    <br>
<!-- <p>Use the grid below to get reports for sales</p> -->
                                                    <form>
                                                     <div class="form-row">
 <div class="form-group col-md-3">
<label for="saleReportStartDate">Start Date</label>
<input type="text" class="form-control datepicker" id="saleReportStartDate" value="2018-
05-24" name="saleReportStartDate" readonly>
                                                                    </div>
<div class="form-group col-md-3">
<label for="saleReportEndDate">End Date</label>
<input type="text" class="form-control datepicker" id="saleReportEndDate" value="2018-
05-24" name="saleReportEndDate" readonly>
                                                                    </div>
                                                    </div>
<button type="button" id="showSaleReport" class="btn btn-dark">Show Report</button>
<button type="reset" id="saleFilterClear" class="btn">Clear</button>
                                                    </form>
                                                    <br><br>
<div class="table-responsive" id="saleReportsTableDiv"></div>
                                                </div>
<div id="purchaseReportsTab" class="container-fluid tab-pane fade">
                                                    <br>
<!-- <p>Use the grid below to get reports for purchases</p> -->
                                                    <form>
                                                     <div class="form-row">
<div class="form-group col-md-3">
```

```
<label for="purchaseReportStartDate">Start Date</label>

<input type="text" class="form-control datepicker" id="purchaseReportStartDate"
value="2018-05-24" name="purchaseReportStartDate" readonly>

                                                    </div>

<div class="form-group col-md-3">

<label for="purchaseReportEndDate">End Date</label>

<input type="text" class="form-control datepicker" id="purchaseReportEndDate"
value="2018-05-24" name="purchaseReportEndDate" readonly>

                                                    </div>

                                                </div>

<button type="button" id="showPurchaseReport" class="btn btn-dark">Show
Report</button>

<button type="reset" id="purchaseFilterClear" class="btn">Clear</button>

                                                </form>

                                                <br><br>

<div class="table-responsive" id="purchaseReportsTableDiv"></div>

                                            </div>

<div id="vendorReportsTab" class="container-fluid tab-pane fade">

                                                <br>

<p>Use the grid below to get reports for vendors</p>

<div class="table-responsive" id="vendorReportsTableDiv"></div>

                                            </div>

                                        </div>

                                    </div>

                                </div>

                            </div>

                        </div>
```

```
            </div>
        </div>
<?php
        require 'inc/footer.php';
?>
    </body>
</html>
```

login.php

```
<?php
        session_start();
        // Check if user is already logged in
        if(isset($_SESSION['loggedIn'])){
                header('Location: index.php');
                exit();
        }
        require_once('inc/config/constants.php');
        require_once('inc/config/db.php');
        require_once('inc/header.html');
?>
    <body>
<?php
// Variable to store the action (login, register, passwordReset)
$action = '';
        if(isset($_GET['action'])){
                $action = $_GET['action'];
                if($action == 'register'){
```

```
?>
                    <div class="container">
                     <div class="row justify-content-center">
                     <div class="col-sm-12 col-md-5 col-lg-5">
                          <div class="card">
                           <div class="card-header">
                                Register
                           </div>
                           <div class="card-body">
                                <form action="">
                                <div id="registerMessage"></div>
                                 <div class="form-group">
<label for="registerFullName">Name<span class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="registerFullName" name="registerFullName">
<!-- <small id="emailHelp" class="form-text text-muted"></small> -->
                                </div>
                                 <div class="form-group">
<label for="registerUsername">Username<span class="requiredIcon">*</span></label>
<input type="email" class="form-control" id="registerUsername" name="registerUsername"
autocomplete="on">
                                </div>
                                <div class="form-group">
<label for="registerPassword1">Password<span class="requiredIcon">*</span></label>
<input type="password" class="form-control" id="registerPassword1"
name="registerPassword1">
                                </div>
                                <div class="form-group">
```

```
?>
                    <div class="container">
                     <div class="row justify-content-center">
                     <div class="col-sm-12 col-md-5 col-lg-5">
                          <div class="card">
                           <div class="card-header">
                                Register
                           </div>
                           <div class="card-body">
                                <form action="">
                                <div id="registerMessage"></div>
                                 <div class="form-group">
<label for="registerFullName">Name<span class="requiredIcon">*</span></label>
<input type="text" class="form-control" id="registerFullName" name="registerFullName">
<!-- <small id="emailHelp" class="form-text text-muted"></small> -->
                                </div>
                                 <div class="form-group">
<label for="registerUsername">Username<span class="requiredIcon">*</span></label>
<input type="email" class="form-control" id="registerUsername" name="registerUsername"
autocomplete="on">
                                </div>
                                <div class="form-group">
<label for="registerPassword1">Password<span class="requiredIcon">*</span></label>
<input type="password" class="form-control" id="registerPassword1"
name="registerPassword1">
                                </div>
                                <div class="form-group">
```

```
<label for="registerPassword2">Re-enter password<span
class="requiredIcon">*</span></label>

<input type="password" class="form-control" id="registerPassword2"
name="registerPassword2">

                                        </div>

<a href="login.php" class="btn btn-primary">Login</a>

 <button type="button" id="register" class="btn btn-success">Register</button>

<a href="login.php?action=resetPassword" class="btn btn-warning">Reset Password</a>

<button type="reset" class="btn">Clear</button>

                                        </form>

                                    </div>

                                   </div>

                                   </div>

                                 </div>

                                </div>

<?php

require 'inc/footer.php';

echo '</body></html>';

exit();

        } elseif($action == 'resetPassword'){

?>

                                <div class="container">

                                 <div class="row justify-content-center">

                                 <div class="col-sm-12 col-md-5 col-lg-5">

                                        <div class="card">

                                         <div class="card-header">

                                              Reset Password

                                        </div>
```

```
                    <div class="card-body">
                        <form action="">
                        <div id="resetPasswordMessage"></div>
                         <div class="form-group">
<label for="resetPasswordUsername">Username</label>
<input type="text" class="form-control" id="resetPasswordUsername"
name="resetPasswordUsername">
                        </div>
                        <div class="form-group">
<label for="resetPasswordPassword1">New Password</label>
<input type="password" class="form-control" id="resetPasswordPassword1"
name="resetPasswordPassword1">
                        </div>
                        <div class="form-group">
<label for="resetPasswordPassword2">Confirm New Password</label>
<input type="password" class="form-control" id="resetPasswordPassword2"
name="resetPasswordPassword2">
                        </div>
<a href="login.php" class="btn btn-primary">Login</a>
<a href="login.php?action=register" class="btn btn-success">Register</a>
<button type="button" id="resetPasswordButton" class="btn btn-warning">Reset
Password</button>
<button type="reset" class="btn">Clear</button>
                        </form>
                    </div>
                </div>
                </div>
            </div>
        </div>
```

```
<?php
                    require 'inc/footer.php';
                    echo '</body></html>';
                    exit();
                }
        }
?>
        <!-- Default Page Content (login form) -->
    <div class="container">
     <div class="row justify-content-center">
          <div class="col-sm-12 col-md-5 col-lg-5">
               <div class="card">
                <div class="card-header">
                     Login
                </div>
                <div class="card-body">
                     <form action="">
                     <div id="loginMessage"></div>
                      <div class="form-group">
                           <label for="loginUsername">Username</label>
<input type="text" class="form-control" id="loginUsername" name="loginUsername">
                      </div>
                      <div class="form-group">
                           <label for="loginPassword">Password</label>
<input type="password" class="form-control" id="loginPassword" name="loginPassword">
                      </div>
<button type="button" id="login" class="btn btn-primary">Login</button>
```

```
<?php
                require 'inc/footer.php';
                echo '</body></html>';
                exit();
            }
        }
?>
        <!-- Default Page Content (login form) -->
    <div class="container">
     <div class="row justify-content-center">
          <div class="col-sm-12 col-md-5 col-lg-5">
              <div class="card">
               <div class="card-header">
                    Login
               </div>
               <div class="card-body">
                    <form action="">
                    <div id="loginMessage"></div>
                     <div class="form-group">
                          <label for="loginUsername">Username</label>
<input type="text" class="form-control" id="loginUsername" name="loginUsername">
                     </div>
                     <div class="form-group">
                          <label for="loginPassword">Password</label>
<input type="password" class="form-control" id="loginPassword" name="loginPassword">
                     </div>
<button type="button" id="login" class="btn btn-primary">Login</button>
```

```
<a href="login.php?action=register" class="btn btn-success">Register</a>
<a href="login.php?action=resetPassword" class="btn btn-warning">Reset Password</a>
<button type="reset" class="btn">Clear</button>
                    </form>
                </div>
            </div>
            </div>
    </div>
  </div>
<?php
        require 'inc/footer.php';
?>
 </body>
</html>
```

insertCustomer.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        if(isset($_POST['customerDetailsCustomerFullName'])){
                $fullName = htmlentities($_POST['customerDetailsCustomerFullName']);
                $email = htmlentities($_POST['customerDetailsCustomerEmail']);
                $mobile = htmlentities($_POST['customerDetailsCustomerMobile']);
                $phone2 = htmlentities($_POST['customerDetailsCustomerPhone2']);
                $address = htmlentities($_POST['customerDetailsCustomerAddress']);
                $address2 = htmlentities($_POST['customerDetailsCustomerAddress2']);
                $city = htmlentities($_POST['customerDetailsCustomerCity']);
```

```
$district = htmlentities($_POST['customerDetailsCustomerDistrict']);

$status = htmlentities($_POST['customerDetailsStatus']);

if(isset($fullName) && isset($mobile) && isset($address)) {

// Validate mobile number

if(filter_var($mobile, FILTER_VALIDATE_INT) === 0 || filter_var($mobile,
FILTER_VALIDATE_INT)) {

// Valid mobile number

} else {

// Mobile is wrong

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid phone number</div>';

exit();

}

// Validate second phone number only if it's provided by user

if(!empty($phone2)){

if(filter_var($phone2, FILTER_VALIDATE_INT) === false) {

// Phone number 2 is not valid

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid mobile number 2</div>';

exit();

}

}

// Validate email only if it's provided by user

if(!empty($email)) {

if (filter_var($email, FILTER_VALIDATE_EMAIL) === false) {

// Email is not valid

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid email</div>';

exit();
```

```
                }

            }

            // Validate address

if($address == ''){

                // Address 1 is empty

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Address 1</div>';

                exit();

            }

            // Check if Full name is empty or not

if($fullName == ''){

                // Full Name is empty

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Full Name.</div>';

                exit();

            }


            // Start the insert process

$sql = 'INSERT INTO customer(fullName, email, mobile, phone2, address, address2, city,
district, status) VALUES(:fullName, :email, :mobile, :phone2, :address, :address2, :city,
:district, :status)';

            $stmt = $conn->prepare($sql);

$stmt->execute(['fullName' => $fullName, 'email' => $email, 'mobile' => $mobile, 'phone2'
=> $phone2, 'address' => $address, 'address2' => $address2, 'city' => $city, 'district' =>
$district, 'status' => $status]);

echo '<div class="alert alert-success"><button type="button" class="close" data-
dismiss="alert">&times;</button>Customer added to database</div>';

        } else {

            // One or more fields are empty
```

```
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter all fields marked with a (*)</div>';
                    exit();
                }
        }
?>
```

insertItem.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        $initialStock = 0;
        $baseImageFolder = '../../data/item_images/';
        $itemImageFolder = '';
        if(isset($_POST['itemDetailsItemNumber'])){
                $itemNumber = htmlentities($_POST['itemDetailsItemNumber']);
                $itemName = htmlentities($_POST['itemDetailsItemName']);
                $discount = htmlentities($_POST['itemDetailsDiscount']);
                $quantity = htmlentities($_POST['itemDetailsQuantity']);
                $unitPrice = htmlentities($_POST['itemDetailsUnitPrice']);
                $status = htmlentities($_POST['itemDetailsStatus']);
                $description = htmlentities($_POST['itemDetailsDescription']);
                // Check if mandatory fields are not empty
if(!empty($itemNumber) && !empty($itemName) && isset($quantity) &&
isset($unitPrice)){
                        // Sanitize item number
$itemNumber = filter_var($itemNumber, FILTER_SANITIZE_STRING);
```

```
                    // Validate item quantity. It has to be a number
if(filter_var($quantity, FILTER_VALIDATE_INT) === 0 || filter_var($quantity,
FILTER_VALIDATE_INT)){
                        // Valid quantity
                    } else {
                        // Quantity is not a valid number
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid number for quantity</div>';
                        exit();
                    }
                    // Validate unit price. It has to be a number or floating point value
if(filter_var($unitPrice, FILTER_VALIDATE_FLOAT) === 0.0 || filter_var($unitPrice,
FILTER_VALIDATE_FLOAT)){
                        // Valid float (unit price)
                    } else {
                        // Unit price is not a valid number
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid number for unit price</div>';
                        exit();
                    }
                    // Validate discount only if it's provided
if(!empty($discount)){
        if(filter_var($discount, FILTER_VALIDATE_FLOAT) === false){
                            // Discount is not a valid floating point number
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid discount amount</div>';
                            exit();
                        }
                    }
```

```
                    // Create image folder for uploading images
                    $itemImageFolder = $baseImageFolder . $itemNumber;
                    if(is_dir($itemImageFolder)){
                        // Folder already exist. Hence, do nothing
                    } else {
                        // Folder does not exist, Hence, create it
                        mkdir($itemImageFolder);
                    }

                    // Calculate the stock values
$stockSql = 'SELECT stock FROM item WHERE itemNumber=:itemNumber';
                    $stockStatement = $conn->prepare($stockSql);
                    $stockStatement->execute(['itemNumber' => $itemNumber]);
                    if($stockStatement->rowCount() > 0){
                        //$row = $stockStatement->fetch(PDO::FETCH_ASSOC);
                        //$quantity = $quantity + $row['stock'];
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Item already exists in DB. Please click the
<strong>Update</strong> button to update the details. Or use a different Item
Number.</div>';
                        exit();
                    } else {
// Item does not exist, therefore, you can add it to DB as a new item
        // Start the insert process
$insertItemSql = 'INSERT INTO item(itemNumber, itemName, discount, stock, unitPrice,
status, description) VALUES(:itemNumber, :itemName, :discount, :stock, :unitPrice, :status,
:description)';
        $insertItemStatement = $conn->prepare($insertItemSql);
```

```
$insertItemStatement->execute(['itemNumber' => $itemNumber, 'itemName' => $itemName,
'discount' => $discount, 'stock' => $quantity, 'unitPrice' => $unitPrice, 'status' => $status,
'description' => $description]);

echo '<div class="alert alert-success"><button type="button" class="close" data-
dismiss="alert">&times;</button>Item added to database.</div>';

                    exit();

                }

            } else {

// One or more mandatory fields are empty. Therefore, display a the error message

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter all fields marked with a (*)</div>';

                exit();

            }

        }

?>
```

insertSales.php

```
<?php

    require_once('../../inc/config/constants.php');

    require_once('../../inc/config/db.php');

    if(isset($_POST['saleDetailsItemNumber'])){

        $itemNumber = htmlentities($_POST['saleDetailsItemNumber']);

        $itemName = htmlentities($_POST['saleDetailsItemName']);

        $discount = htmlentities($_POST['saleDetailsDiscount']);

        $quantity = htmlentities($_POST['saleDetailsQuantity']);

        $unitPrice = htmlentities($_POST['saleDetailsUnitPrice']);

        $customerID = htmlentities($_POST['saleDetailsCustomerID']);

        $customerName = htmlentities($_POST['saleDetailsCustomerName']);
```

```
$saleDate = htmlentities($_POST['saleDetailsSaleDate']);

// Check if mandatory fields are not empty

if(!empty($itemNumber) && isset($customerID) && isset($saleDate) && isset($quantity)
&& isset($unitPrice)){

// Sanitize item number

$itemNumber = filter_var($itemNumber, FILTER_SANITIZE_STRING);

// Validate item quantity. It has to be a number

if(filter_var($quantity, FILTER_VALIDATE_INT) === 0 || filter_var($quantity,
FILTER_VALIDATE_INT)){

// Valid quantity

} else {

// Quantity is not a valid number

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid number for quantity</div>';

exit();

}

// Check if customerID is empty

if($customerID == ''){

    echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a Customer ID.</div>';

exit();

}

// Validate customerID

if(filter_var($customerID, FILTER_VALIDATE_INT) === 0 || filter_var($customerID,
FILTER_VALIDATE_INT)){

// Valid customerID

} else {

// customerID is not a valid number
```

```
echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Please enter a valid Customer ID</div>';
                exit();
            }
            // Check if itemNumber is empty
if($itemNumber == ''){
    echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Please enter Item Number.</div>';
                exit();
            }
            // Check if unit price is empty
if($unitPrice == ''){
    echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Please enter Unit Price.</div>';
                exit();
            }
            // Validate unit price. It has to be a number or floating point value
if(filter_var($unitPrice, FILTER_VALIDATE_FLOAT) === 0.0 || filter_var($unitPrice, FILTER_VALIDATE_FLOAT)){
                // Valid float (unit price)
            } else {
                // Unit price is not a valid number
echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Please enter a valid number for unit price</div>';
                exit();
            }
            // Validate discount only if it's provided
if(!empty($discount)){
if(filter_var($discount, FILTER_VALIDATE_FLOAT) === false){
```

```
                    // Discount is not a valid floating point number
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid discount amount</div>';
                    exit();
                }
            }
            // Calculate the stock values
$stockSql = 'SELECT stock FROM item WHERE itemNumber = :itemNumber';
            $stockStatement = $conn->prepare($stockSql);
            $stockStatement->execute(['itemNumber' => $itemNumber]);
            if($stockStatement->rowCount() > 0){
                // Item exits in DB, therefore, can proceed to a sale
                $row = $stockStatement->fetch(PDO::FETCH_ASSOC);
                $currentQuantityInItemsTable = $row['stock'];
                if($currentQuantityInItemsTable <= 0) {
// If currentQuantityInItemsTable is <= 0, stock is empty! that means we can't make a sell.
Hence abort.
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Stock is empty. Therefore, can\'t make a sale. Please select
a different item.</div>';
                    exit();
                } elseif ($currentQuantityInItemsTable < $quantity) {
// Requested sale quantity is higher than available item quantity. Hence abort
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Not enough stock available for this sale. Therefore, can\'t
make a sale. Please select a different item.</div>';
                    exit();
                }
                else {
```

```
// Has at least 1 or more in stock, hence proceed to next steps

$newQuantity = $currentQuantityInItemsTable - $quantity;

                                        // Check if the customer is in DB

$customerSql = 'SELECT * FROM customer WHERE customerID = :customerID';

        $customerStatement = $conn->prepare($customerSql);

        $customerStatement->execute(['customerID' => $customerID]);

if($customerStatement->rowCount() > 0){

        // Customer exits. That means both customer, item, and stocks are available. Hence
start INSERT and UPDATE

        $customerRow = $customerStatement->fetch(PDO::FETCH_ASSOC);

        $customerName = $customerRow['fullName'];

                        // INSERT data to sale table

$insertSaleSql = 'INSERT INTO sale(itemNumber, itemName, discount, quantity, unitPrice,
customerID, customerName, saleDate) VALUES(:itemNumber, :itemName, :discount,
:quantity, :unitPrice, :customerID, :customerName, :saleDate)';

$insertSaleStatement = $conn->prepare($insertSaleSql);

$insertSaleStatement->execute(['itemNumber' => $itemNumber, 'itemName' => $itemName,
'discount' => $discount, 'quantity' => $quantity, 'unitPrice' => $unitPrice, 'customerID' =>
$customerID, 'customerName' => $customerName, 'saleDate' => $saleDate]);

                // UPDATE the stock in item table

$stockUpdateSql = 'UPDATE item SET stock = :stock WHERE itemNumber =
:itemNumber';

$stockUpdateStatement = $conn->prepare($stockUpdateSql);

$stockUpdateStatement->execute(['stock' => $newQuantity, 'itemNumber' =>
$itemNumber]);

echo '<div class="alert alert-success"><button type="button" class="close" data-
dismiss="alert">&times;</button>Sale details added to DB and stocks updated.</div>';

                                        exit();


                                } else {
```

```
echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Customer does not exist.</div>';
                                        exit();
                                    }
                                }
echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Item already exists in DB. Please click the <strong>Update</strong> button to update the details. Or use a different Item Number.</div>';
                                    exit();
                                } else {
        // Item does not exist, therefore, you can't make a sale from it
echo '<div class="alert alert-success"><button type="button" class="close" data-dismiss="alert">&times;</button>Item does not exist in DB.</div>';
                                    exit();
                                }
                            } else {
// One or more mandatory fields are empty. Therefore, display a the error message
echo '<div class="alert alert-danger"><button type="button" class="close" data-dismiss="alert">&times;</button>Please enter all fields marked with a (*)</div>';
                                exit();
                            }
                        }
?>
```

insertPurchase.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
```

```
        if(isset($_POST['purchaseDetailsItemNumber'])){
$purchaseDetailsItemNumber = htmlentities($_POST['purchaseDetailsItemNumber']);
$purchaseDetailsPurchaseDate = htmlentities($_POST['purchaseDetailsPurchaseDate']);
$purchaseDetailsItemName = htmlentities($_POST['purchaseDetailsItemName']);
$purchaseDetailsQuantity = htmlentities($_POST['purchaseDetailsQuantity']);
$purchaseDetailsUnitPrice = htmlentities($_POST['purchaseDetailsUnitPrice']);
$purchaseDetailsVendorName = htmlentities($_POST['purchaseDetailsVendorName']);
                $initialStock = 0;
                $newStock = 0;
                // Check if mandatory fields are not empty
if(isset($purchaseDetailsItemNumber) && isset($purchaseDetailsPurchaseDate) &&
isset($purchaseDetailsItemName) && isset($purchaseDetailsQuantity) &&
isset($purchaseDetailsUnitPrice)){
                        // Check if itemNumber is empty
if($purchaseDetailsItemNumber == ''){
        echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Item Number.</div>';
                                exit();
                        }
                        // Check if itemName is empty
if($purchaseDetailsItemName == ''){
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Item Name.</div>';
                                exit();
                        }
                        // Check if quantity is empty
if($purchaseDetailsQuantity == ''){
        echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Quantity.</div>';
```

```
                exit();

            }

            // Check if unit price is empty

if($purchaseDetailsUnitPrice === ''){

    echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Unit Price.</div>';

                exit();

            }

            // Sanitize item number

$purchaseDetailsItemNumber = filter_var($purchaseDetailsItemNumber,
FILTER_SANITIZE_STRING);

            // Validate item quantity. It has to be an integer

if(filter_var($purchaseDetailsQuantity, FILTER_VALIDATE_INT) === 0 ||
filter_var($purchaseDetailsQuantity, FILTER_VALIDATE_INT)){

                // Valid quantity

            } else {

                // Quantity is not a valid number

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid number for quantity.</div>';

                exit();

            }

            // Validate unit price. It has to be an integer or floating point value

if(filter_var($purchaseDetailsUnitPrice, FILTER_VALIDATE_FLOAT) === 0.0 ||
filter_var($purchaseDetailsUnitPrice, FILTER_VALIDATE_FLOAT)){

                // Valid unit price

            } else {

                // Unit price is not a valid number

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid number for unit price.</div>';
```

```
                exit();
            }
            // Check if the item exists in item table and
// calculate the stock values and update to match the new purchase quantity
$stockSql = 'SELECT stock FROM item WHERE itemNumber=:itemNumber';
$stockStatement = $conn->prepare($stockSql);
$stockStatement->execute(['itemNumber' => $purchaseDetailsItemNumber]);
if($stockStatement->rowCount() > 0){
                // Get the vendorId for the given vendorName
    $vendorIDsql = 'SELECT * FROM vendor WHERE fullName = :fullName';
    $vendorIDStatement = $conn->prepare($vendorIDsql);
    $vendorIDStatement->execute(['fullName' => $purchaseDetailsVendorName]);
    $row = $vendorIDStatement->fetch(PDO::FETCH_ASSOC);
    $vendorID = $row['vendorID'];
// Item exits in the item table, therefore, start the inserting data to purchase table
    $insertPurchaseSql = 'INSERT INTO purchase(itemNumber, purchaseDate,
itemName, unitPrice, quantity, vendorName, vendorID) VALUES(:itemNumber,
:purchaseDate, :itemName, :unitPrice, :quantity, :vendorName, :vendorID)';
    $insertPurchaseStatement = $conn->prepare($insertPurchaseSql);
    $insertPurchaseStatement->execute(['itemNumber' => $purchaseDetailsItemNumber,
'purchaseDate' => $purchaseDetailsPurchaseDate, 'itemName' =>
$purchaseDetailsItemName, 'unitPrice' => $purchaseDetailsUnitPrice, 'quantity' =>
$purchaseDetailsQuantity, 'vendorName' => $purchaseDetailsVendorName, 'vendorID' =>
$vendorID]);
// Calculate the new stock value using the existing stock in item table
    $row = $stockStatement->fetch(PDO::FETCH_ASSOC);
    $initialStock = $row['stock'];
    $newStock = $initialStock + $purchaseDetailsQuantity;
```

```
                    // Update the new stock value in item table
$updateStockSql = 'UPDATE item SET stock = :stock WHERE itemNumber =
:itemNumber';

$updateStockStatement = $conn->prepare($updateStockSql);

$updateStockStatement->execute(['stock' => $newStock, 'itemNumber' =>
$purchaseDetailsItemNumber]);

echo '<div class="alert alert-success"><button type="button" class="close" data-
dismiss="alert">&times;</button>Purchase details added to database and stock values
updated.</div>';

                    exit();

                } else {

// Item does not exist in item table, therefore, you can't make a purchase from it

// to add it to DB as a new purchase

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Item does not exist in DB. Therefore, first enter this item
to DB using the <strong>Item</strong> tab.</div>';

                    exit();

                }

            } else {

// One or more mandatory fields are empty. Therefore, display a the error message

echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter all fields marked with a (*)</div>';

                exit();

            }

        }

?>
```

insertVendor.php

```
<?php

    require_once('../../inc/config/constants.php');

    require_once('../../inc/config/db.php');
```

```
if(isset($_POST['vendorDetailsStatus'])){
        $fullName = htmlentities($_POST['vendorDetailsVendorFullName']);
        $email = htmlentities($_POST['vendorDetailsVendorEmail']);
        $mobile = htmlentities($_POST['vendorDetailsVendorMobile']);
        $phone2 = htmlentities($_POST['vendorDetailsVendorPhone2']);
        $address = htmlentities($_POST['vendorDetailsVendorAddress']);
        $address2 = htmlentities($_POST['vendorDetailsVendorAddress2']);
        $city = htmlentities($_POST['vendorDetailsVendorCity']);
        $district = htmlentities($_POST['vendorDetailsVendorDistrict']);
        $status = htmlentities($_POST['vendorDetailsStatus']);
        if(isset($fullName) && isset($mobile) && isset($address)) {
            // Validate mobile number
if(filter_var($mobile, FILTER_VALIDATE_INT) === 0 || filter_var($mobile,
FILTER_VALIDATE_INT)) {
                // Valid mobile number
            } else {
                // Mobile is wrong
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid phone number.</div>';
                exit();
            }
            // Check if mobile phone is empty
if($mobile == ''){
        // Mobile phone 1 is empty
    echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter mobile phone number.</div>';
                exit();
```

```
                }
                // Validate second phone number only if it's provided by user
if(!empty($phone2)){
    if(filter_var($phone2, FILTER_VALIDATE_INT) === false) {
                // Phone number 2 is not valid
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid mobile number 2.</div>';
                        exit();
                    }
                }
                // Validate email only if it's provided by user
if(!empty($email)) {
    if (filter_var($email, FILTER_VALIDATE_EMAIL) === false) {
            // Email is not valid
echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter a valid email.</div>';
                        exit();
                    }
                }
                // Validate address, address2 and city
                // Validate address
if($address == ''){
            // Address 1 is empty
    echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter Address.</div>';
                        exit();
                }
```

```
                    // Start the insert process

$sql = 'INSERT INTO vendor(fullName, email, mobile, phone2, address, address2, city,
district, status) VALUES(:fullName, :email, :mobile, :phone2, :address, :address2, :city,
:district, :status)';

        $stmt = $conn->prepare($sql);

        $stmt->execute(['fullName' => $fullName, 'email' => $email, 'mobile' => $mobile,
'phone2' => $phone2, 'address' => $address, 'address2' => $address2, 'city' => $city, 'district'
=> $district, 'status' => $status]);

        echo '<div class="alert alert-success"><button type="button" class="close" data-
dismiss="alert">&times;</button>Vendor added to database</div>';

                } else {

                    // One or more fields are empty

        echo '<div class="alert alert-danger"><button type="button" class="close" data-
dismiss="alert">&times;</button>Please enter all fields marked with a (*)</div>';

                    exit();

                }


        }
?>
```

populateCustomerDetails.php

```
<?php

        require_once('../../inc/config/constants.php');

        require_once('../../inc/config/db.php');

        // Execute the script if the POST request is submitted

        if(isset($_POST['customerID'])){

                $customerID = htmlentities($_POST['customerID']);

$customerDetailsSql = 'SELECT * FROM customer WHERE customerID = :customerID';

                $customerDetailsStatement = $conn->prepare($customerDetailsSql);
```

```
            $customerDetailsStatement->execute(['customerID' => $customerID]);
            // If data is found for the given item number, return it as a json object
            if($customerDetailsStatement->rowCount() > 0) {
                $row = $customerDetailsStatement->fetch(PDO::FETCH_ASSOC);
                echo json_encode($row);
            }
            $customerDetailsStatement->closeCursor();
        }
?>
```

populateItemDetails.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        // Execute the script if the POST request is submitted
        if(isset($_POST['itemNumber'])){
            $itemNumber = htmlentities($_POST['itemNumber']);
$itemDetailsSql = 'SELECT * FROM item WHERE itemNumber = :itemNumber';
            $itemDetailsStatement = $conn->prepare($itemDetailsSql);
            $itemDetailsStatement->execute(['itemNumber' => $itemNumber]);
            // If data is found for the given item number, return it as a json object
            if($itemDetailsStatement->rowCount() > 0) {
                $row = $itemDetailsStatement->fetch(PDO::FETCH_ASSOC);
                echo json_encode($row);}
            $itemDetailsStatement->closeCursor();
        }
?>
```

populatePurchaseDetails.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        // Execute the script if the POST request is submitted
        if(isset($_POST['purchaseDetailsPurchaseID'])){
                $purchaseID = htmlentities($_POST['purchaseDetailsPurchaseID']);
$purchaseDetailsSql = 'SELECT * FROM purchase WHERE purchaseID = :purchaseID';
                $purchaseDetailsStatement = $conn->prepare($purchaseDetailsSql);
                $purchaseDetailsStatement->execute(['purchaseID' => $purchaseID]);
                // If data is found for the given purchaseID, return it as a json object
                if($purchaseDetailsStatement->rowCount() > 0) {
                        $row = $purchaseDetailsStatement->fetch(PDO::FETCH_ASSOC);
                        echo json_encode($row);
                }
                $purchaseDetailsStatement->closeCursor();
        }
?>
```

populateSalesDetails.php

```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        // Execute the script if the POST request is submitted
        if(isset($_POST['saleDetailsSaleID'])){
                $saleID = htmlentities($_POST['saleDetailsSaleID']);
```

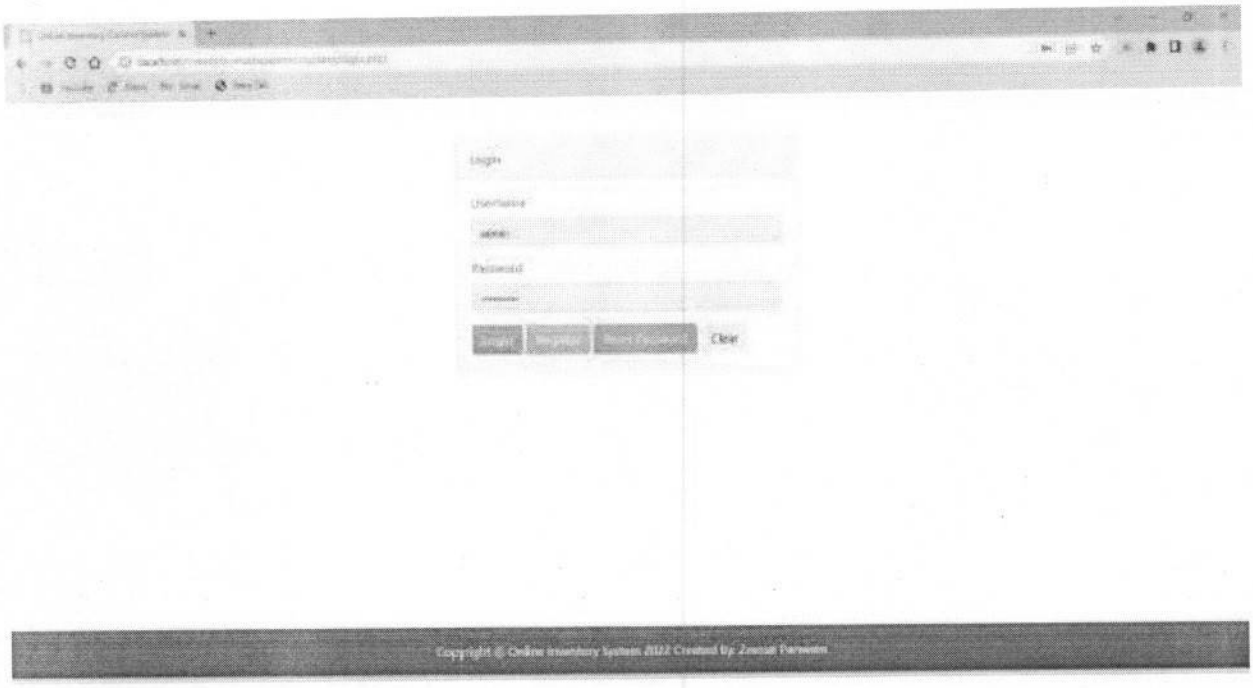
```
            $saleDetailsSql = 'SELECT * FROM sale WHERE saleID = :saleID';
            $saleDetailsStatement = $conn->prepare($saleDetailsSql);
            $saleDetailsStatement->execute(['saleID' => $saleID]);
            // If data is found for the given saleID, return it as a json object
            if($saleDetailsStatement->rowCount() > 0) {
                $row = $saleDetailsStatement->fetch(PDO::FETCH_ASSOC);
                echo json_encode($row);
            }
            $saleDetailsStatement->closeCursor();
        }
?>
```

populateVendorDetails.php

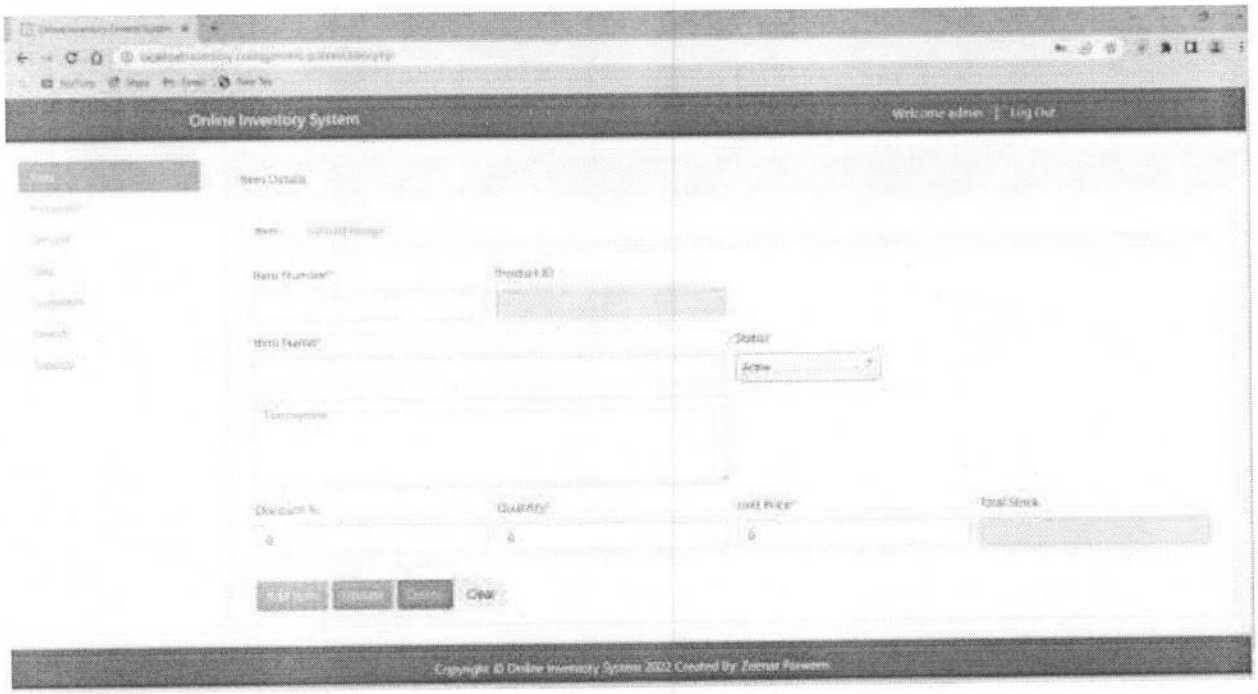
```
<?php
        require_once('../../inc/config/constants.php');
        require_once('../../inc/config/db.php');
        if(isset($_POST['vendorDetailsVendorID'])){
            $vendorID = htmlentities($_POST['vendorDetailsVendorID']);
$vendorDetailsSql = 'SELECT * FROM vendor WHERE vendorID = :vendorID';
            $vendorDetailsStatement = $conn->prepare($vendorDetailsSql);
            $vendorDetailsStatement->execute(['vendorID' => $vendorID]);
            if($vendorDetailsStatement->rowCount() > 0) {
                $row = $vendorDetailsStatement->fetch(PDO::FETCH_ASSOC);
                echo json_encode($row);
            }
            $vendorDetailsStatement->closeCursor();
        }
?>
```

SCREENSHORT OF THE PAGES

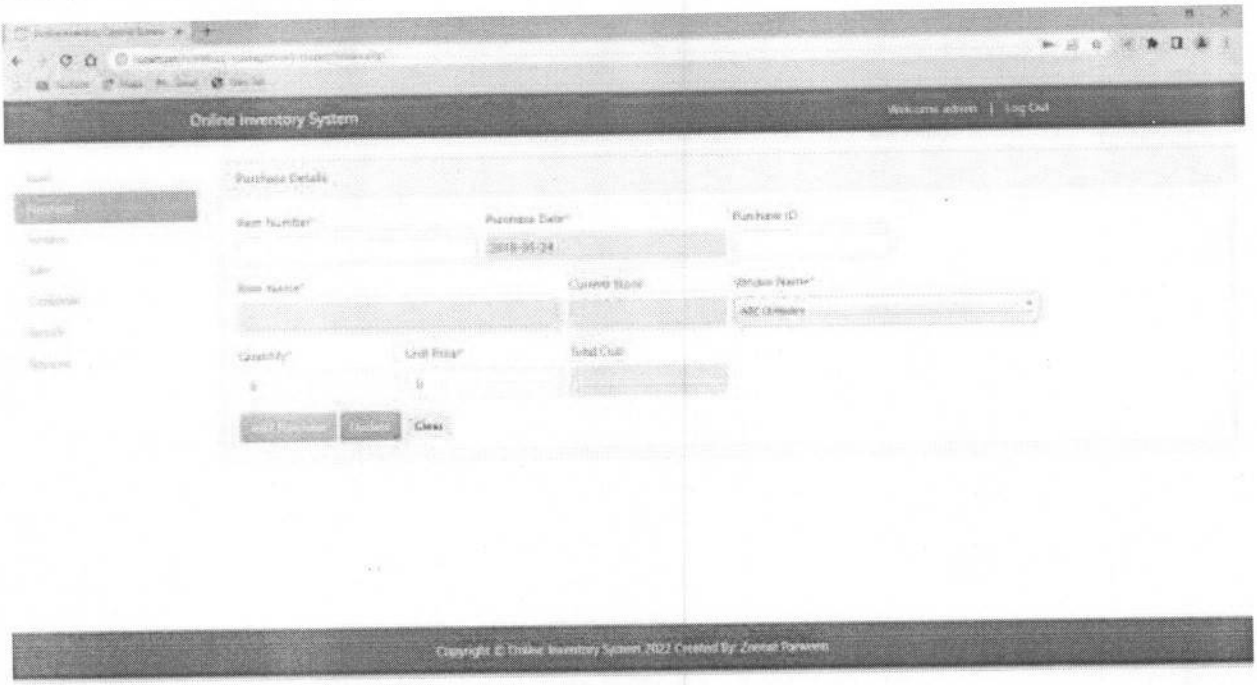
login Page :-



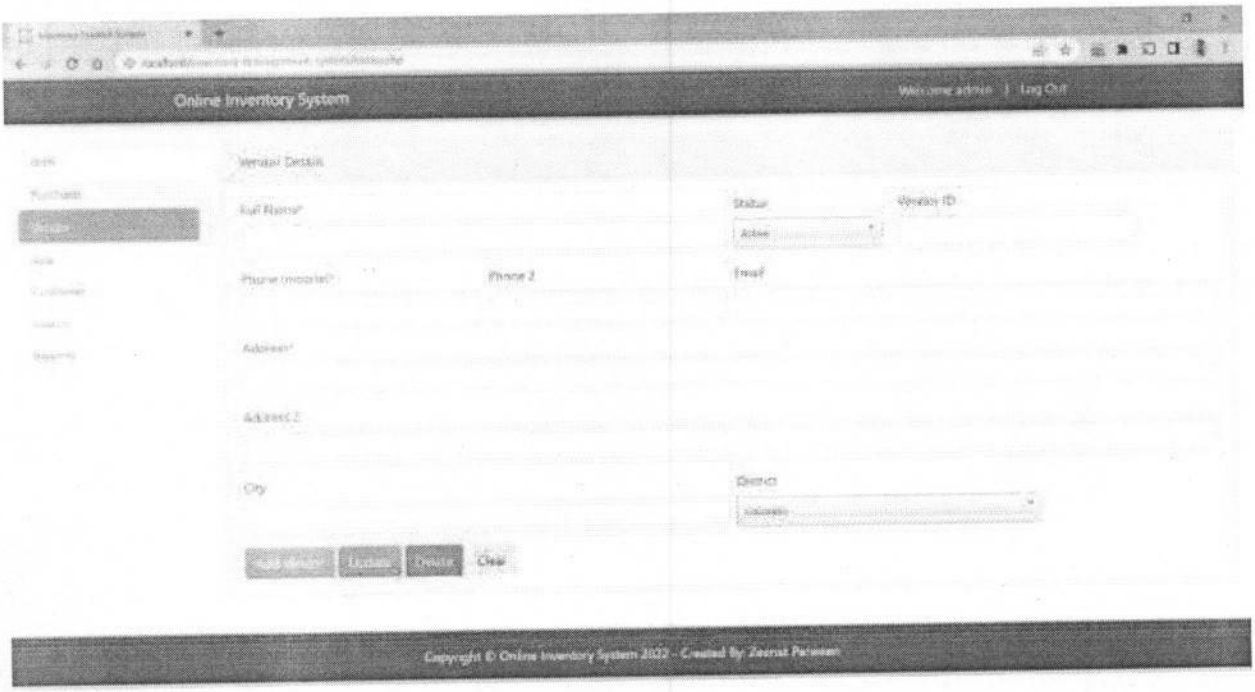
index Page :-



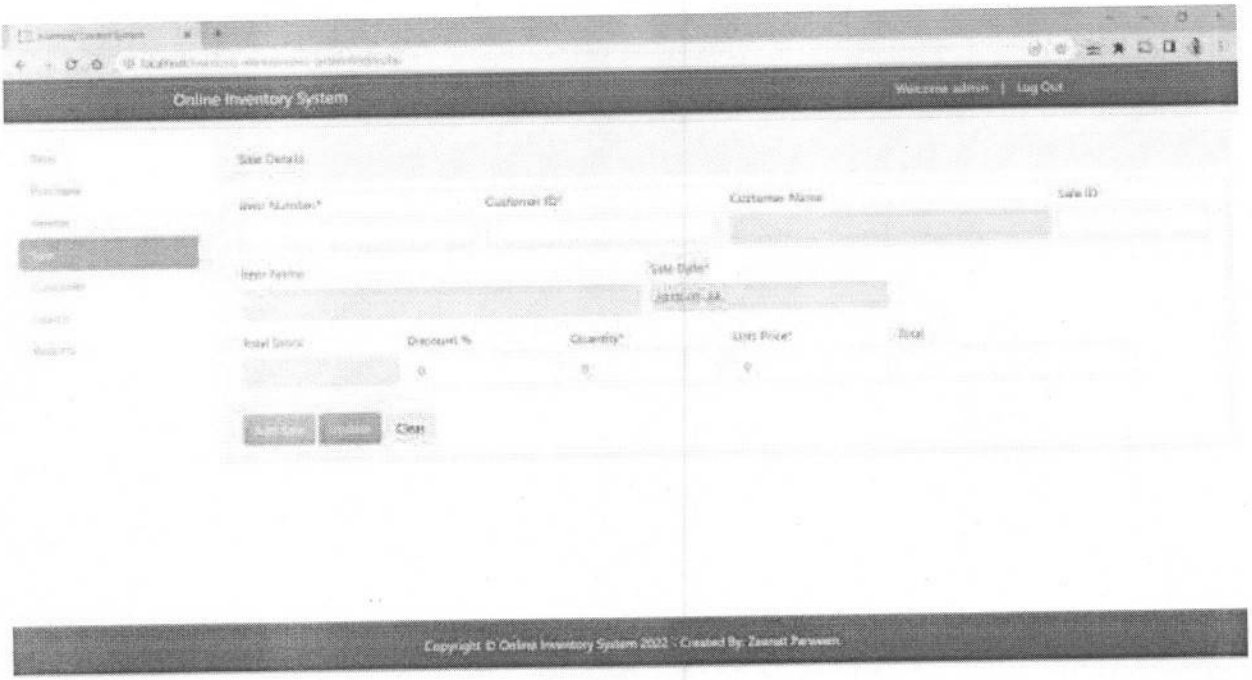
Add purchase details Page:-



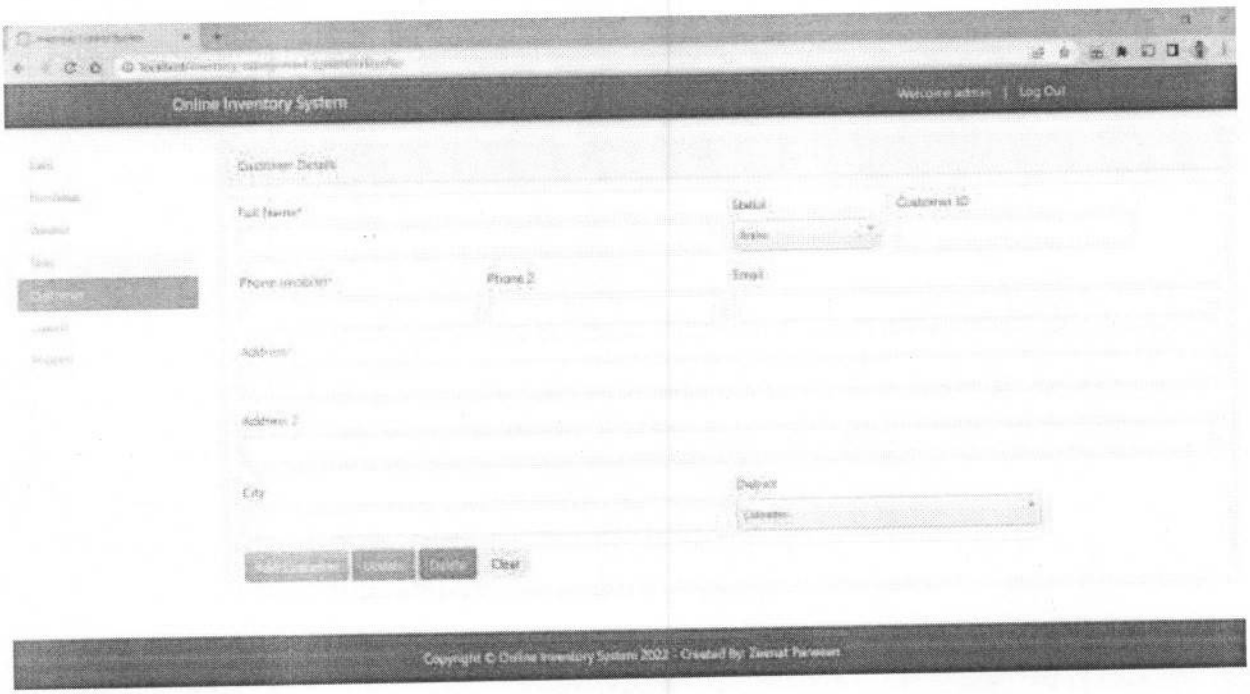
Add vendor details Page:-



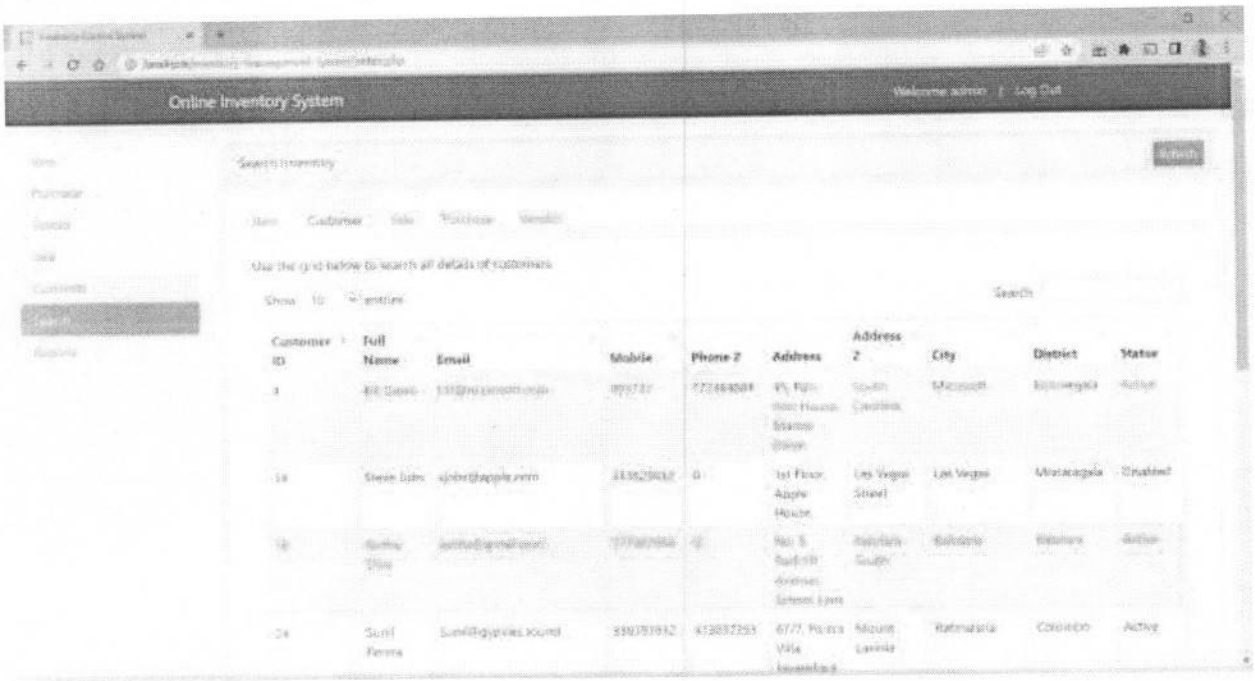
Add sales detail page: -

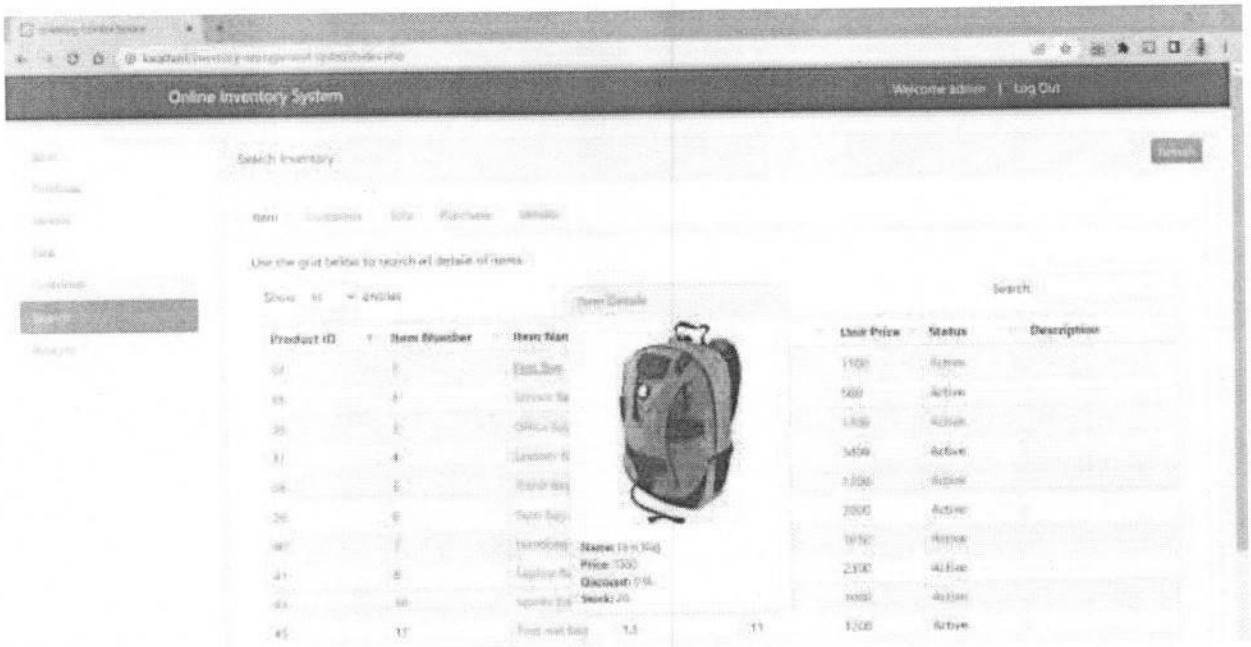


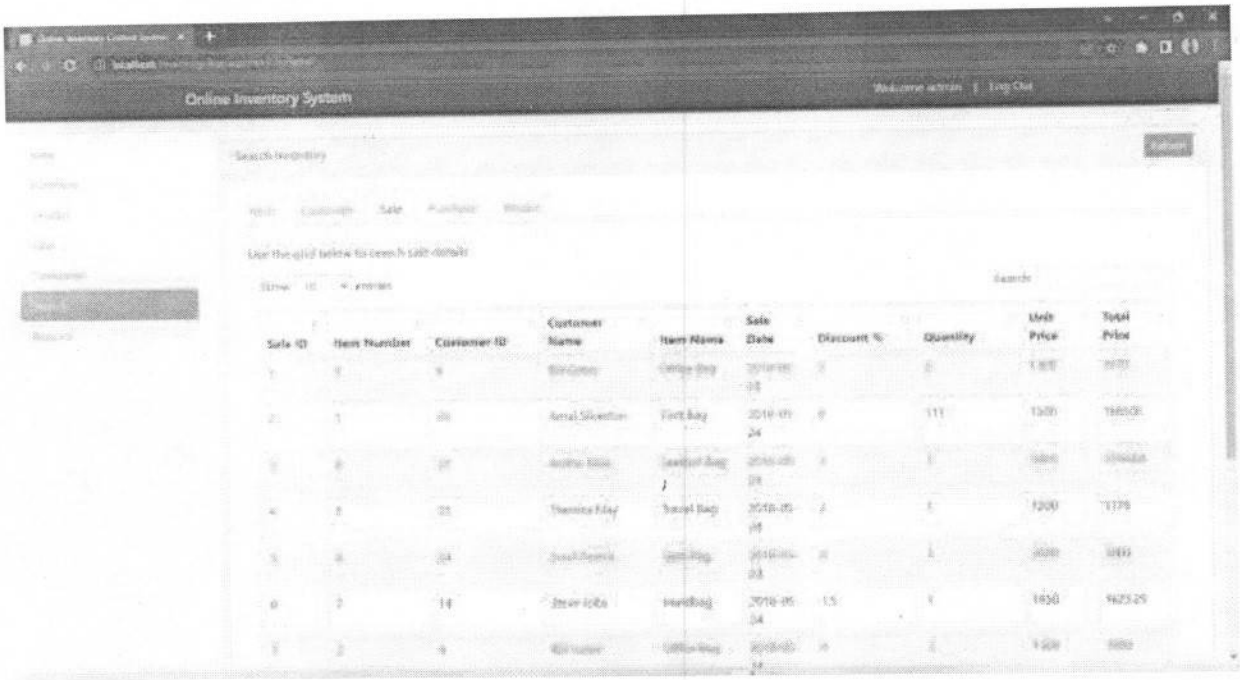
Add customer detail page:-

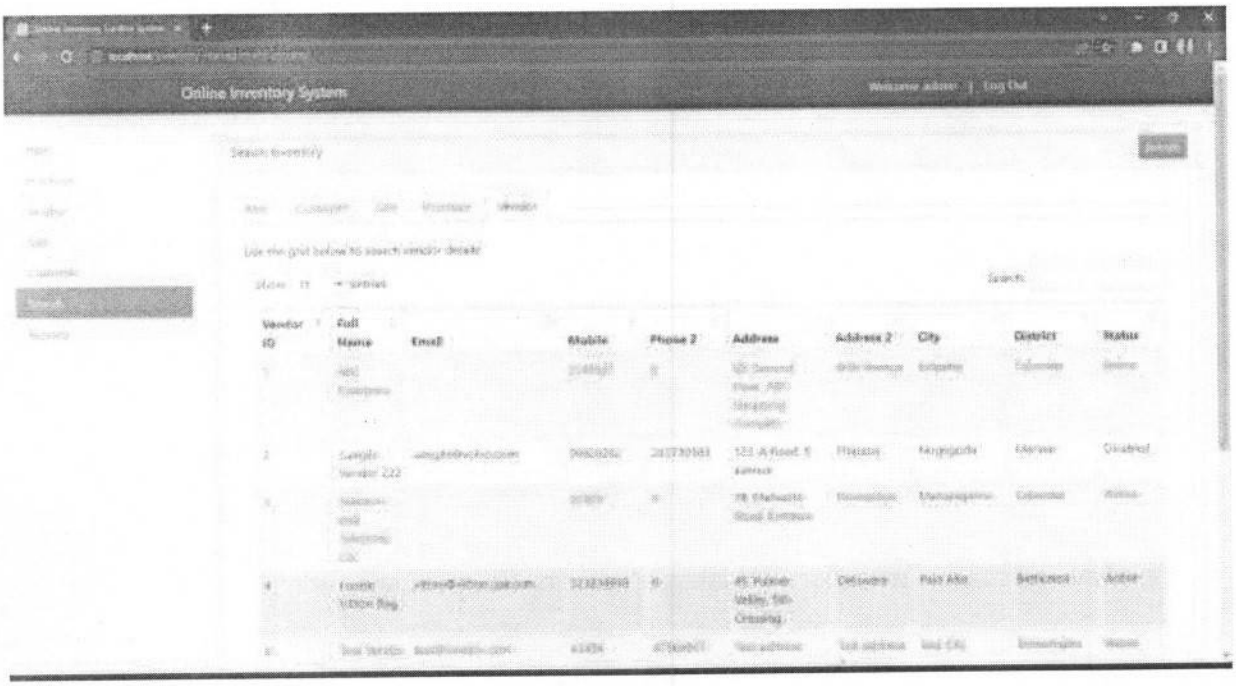


Search inventory page:-

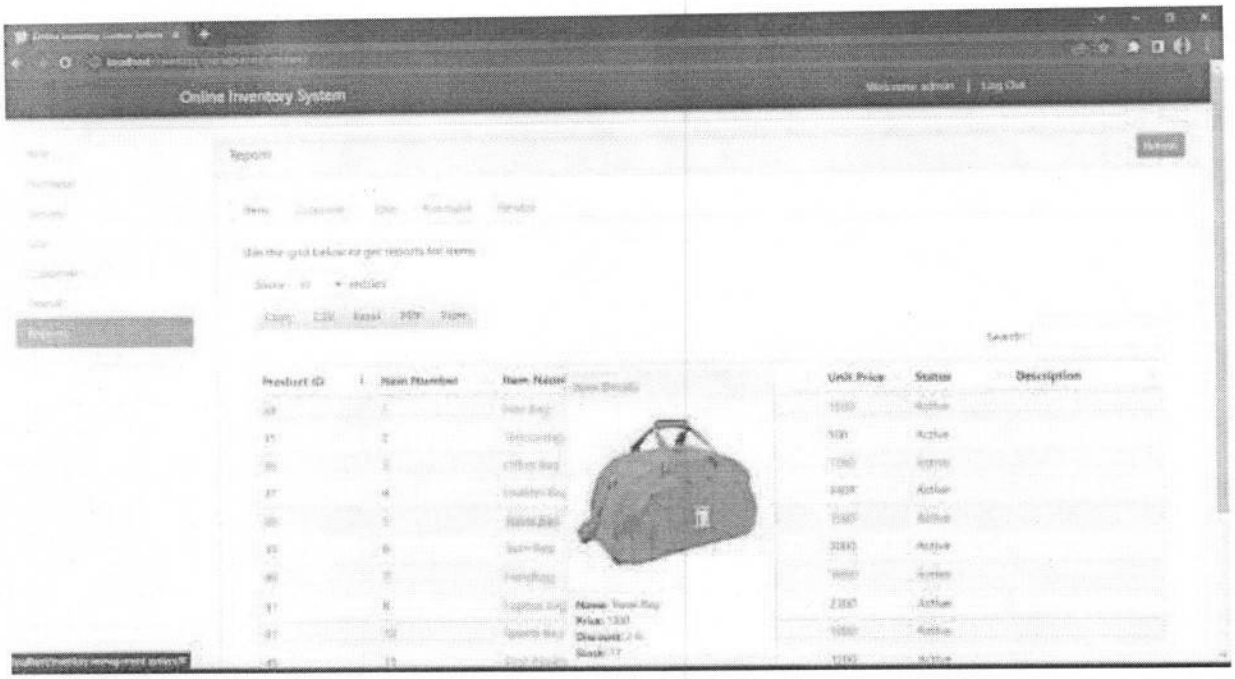


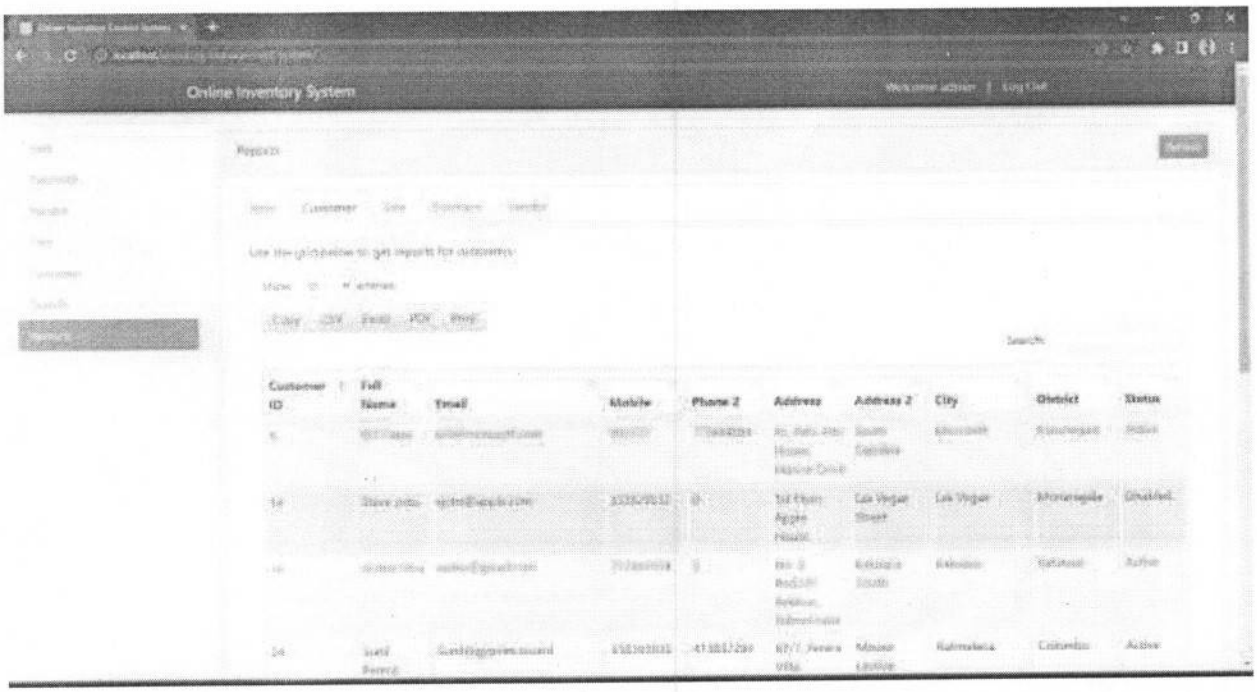



Online Inventory System
Welcome admin | Log Out
Search Inventory
Sale
Use the grid below to search sale details
Search:
Sale ID
Item Number
Customer ID
Customer Name
Item Name
Sale Date
Discount %
Quantity
Unit Price
Total Price


Online Inventory System
Welcome admin | Log Out
Search Inventory
Use the grid below to search vendor details
Search:
Vendor ID
Full Name
Email
Mobile
Phone 2
Address
Address 2
City
District
Status

Report pages :-





METHODOLOGY USED FOR TESTING

The aim of the testing process is to identify all defects existing in a software product. However, for more practical systems, even after satisfactorily carrying out the testing phase, it is not possible to guarantee that the software to error free. This is because of the fact that the input data domain of most software product is very large. It is not practical to test the software exhaustively with respect to each value that the input data may assume. Even with this practical limitation of the testing process, we should not underestimate the importance of testing we must remember that testing does expose many defects existing in a software product.

TESTING: -

A program consists of subjecting the program to a set of test inputs and observing if the program behaves as expected. If the program fails to behave as expected, then the conditions under which failure occurs are noted for later debugging and correction.

UNIT TESTING: -

Unit testing is undertaken when a module has been coded and successfully reviewed.

BLACK – BOX TESTING: -

In black – box testing, test cases are designed from an examination o the input / output values only and no knowledge of design or code is required. The following are the two main approaches to designing black – box test cases.

- Equivalence class partitioning
- Boundary value analysis

WHITE – BOX TESTING

Each testing strategy is based on some heuristic. One white – box testing strategy is said to be stronger than another strategy, if all type of errors detected by the first testing strategy (say B) are also detected by the second testing strategy (say A), and the second strategy additionally detects some more types of errors.

CONCLUSION

The package was designed in such a way that future modifications can be done easily. The following conclusion can be deduced from the development of the project.

- Automation of the entire system improves the efficiency
- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- Updating of information becomes so easier.
- System security, data security and reliability are the striking features.
- The System has adequate scope for modification in future if it is necessary.

FUTURE SCOPE OF THE PROJECT: -

We have tried to cover up most of the needs of a user, but in future we would like to implement more features so that user can feel more comfortable working on this application.

BIBLIOGRAPHY: -

Books Name

- Python in a Nutshell
  By Alex Martelli
  Oreilly Publications
- Fundamental of Database System
  4th Edition Pearson Education
  By Ramez Elmasri
- Fundamentals of Software Engineering
  By R S Pressman & Rajib Mall

WEBSITES

www.google.com

www.geeksforseek.com

www.javapoint.com

www.tutorialpoint.com

Sample Project Report (2022-2023)

Department of Bengali

কাজী নজরুল বিশ্ববিদ্যালয়

নাম - সোমনাথ বাউরী

রেজিস্ট্রেশন নং - KNU20104000767 (2020-21)

রোল নং - ১০৪২০০৬১১১০০৩০৫৯

সেমিস্টার - ষষ্ঠ সেমিস্টার

কলেজ - দেশবন্ধু মহা বিদ্যালয়

বিভাগ - বাংলা প্রোগ্রাম

বিষয়- প্রকল্পপত্র রচনা ও উপস্থাপনা

তত্ত্বাবধায়ক ও নির্দেশদাতা:- ড . দেবলীনা চৌধুরী

সূচি পত্র

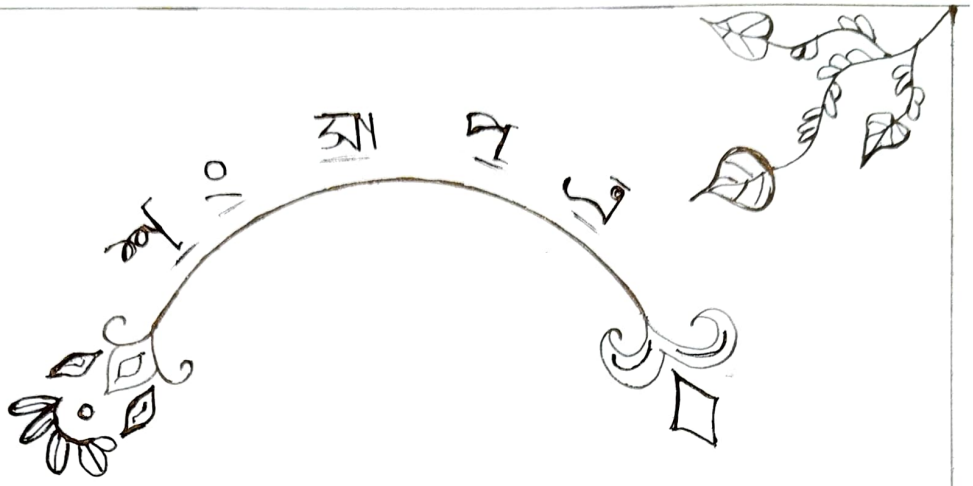
কৃতজ্ঞতা স্বীকার

আমি সোমনাথ বাউরী, দেশবন্ধু মহাবিদ্যালয়ের ষষ্ঠ সেমিস্টারের বাংলা প্রোগ্রামের একজন শিক্ষার্থী এবং আমি এই. স্বীকার করছি যে, — "নারায়ন গঙ্গোপাধ্যায়"-এর অত্যন্ত জনপ্রিয় গল্প, যদিও অবশ্যই পড়ু (টোপ) গল্পের মূল বক্তব্য আলোচনা নিয়ে যেসব ব্যক্তির পরামর্শ, নির্দেশনা, আন্তরিক ও অনুযোগীতার হাত বাড়িয়ে দিয়েছেন তাদের প্রতি আমার শ্রদ্ধা ও কৃতজ্ঞতা জানাই। এ প্রসঙ্গে বিশেষভাবে যার নাম প্রথমেই উল্লেখ করতে হয় তিনি আমাদের কলেজের বাংলা বিভাগের শিক্ষিকা ড. দ. দেবলীনা চৌধুরী তাঁর আন্তরিক আন্তরিক ও মূল্যবান পরামর্শ, নির্দেশের প্রকল্পটি রূপায়ন করা অন্তর হয়েছে, তাকে আমি আমার আন্তরিক শ্রদ্ধা জানাই

কৃতজ্ঞতা জানাই যেসব লেখক লেখিকাদের যাদের বিভিন্ন পুস্তক ও পত্রিকা আমার প্রকল্পের কাজে সাহায্য করেছে।

১১. ৫. ২০২৬
তারিখ

Somnath Bauri
প্রকল্প রূপায়নকারীর স্বাক্ষর



এই মর্মে সোমনাথ বাউরী ---------- কর্তৃক রূপায়িত "নারায়ণ গঙ্গোপাধ্যায়ের" অত্যন্ত প্রিয় গল্পের মূলবক্তব্য আলোচনা শীর্ষক প্রকল্পটি আমার প্রত্যক্ষ তত্ত্বাবধানে সুসম্পন্ন হয়েছে এবং এর সাথে সাথে এটিও সংযুক্ত করা হল যে প্রকল্পকর্মটি সম্পূর্ণরূপে মৌলিক।

এই প্রকল্পকর্মটি বঙ্গ সেমিস্টার বাংলা SEC প্রোগ্রামের চূড়ান্ত পরীক্ষার অঙ্গ হিসেবে 'প্রকল্পপত্র রচনা ও উপস্থাপনা' বিষয়ের জন্য প্রস্তুত করা হয়েছে।

আমি তার জীবনের সার্বাঙ্গীন সাফল্য কামনা করি।

31/05/2023
তারিখ

Chowdhury
তত্ত্বাবধায়কের স্বাক্ষর

ছোট গল্পের সংজ্ঞা :-

গল্পের প্রতি মানুষের আকর্ষণ সেই আদিযুগ থেকে। একজন গল্প বলেছে, অন্যজন গল্প শুনেছে। গল্প শুনে মানুষ কখনও দুঃখ পেয়েছে, কখনও আনন্দ পেয়েছে, কখনও দীর্ঘশ্বাস ফেলেছে কখনও বা ক্রোধে জ্বলে উঠেছে। তবুও মানুষ গল্প শুনে, শুনতে ভালবাসে। আগে মানুষ স্বর্গের দেবদেবীদের নিয়ে গল্প বলত। কিন্তু সেই দেবতারা এবং মানবজগতের মধ্যে ওতপ্রোত ভাবে জড়িত। মানুষের রাগ, ঘৃণা, লোভ, স্নেহ, ভালোবাসা দেবদেবীর অভিশাপ - আশীর্বাদের রূপ কাহিনীতে স্থান লাভ করত। সুতরাং, গল্পের ইতিহাস অনেক পুরোনো। উপ. মহাকাব্য, আখ্যানকাব্য, পুরাণকথা, উপকথা, রূপকথা, ফোকটেলস, ফেয়ারিটেলস, এমনকী উপন্যাস, নাটক, বড় গল্প, ছোট গল্প - সবেরই মূলে তো গল্প। তবু সাহিত্যের বিচারে যা ছোটগল্প নামাঙ্কিত তার পরিসর সংক্ষিপ্ত এবং বয়সের দিক থেকেও সে অপরাপর বিভাগগুলির তুলনায় নবীন।

আধুনিক গদ্যসাহিত্যের সবচেয়ে জনপ্রিয় এবং নবতম রূপটি হলো ছোট গল্প। এডগার অ্যালান পো'র মতে ছোটগল্প হলো এমন এক 'Prose-tale' যা একটি অধিবেশনে

শেষ করা যায় না। ওয়েবস্টার ডিকশনারী এবং এনসাইক্লোপিডিয়াতে ছোটগল্প সম্পর্কে বলা হয়েছে — "A short story usually Representing the crisis of a single Problem". অর্থাৎ ছোটগল্পে থাকবে একটি চরিত্র বা ঘটনা বা ভাবের বা বলা যায় একমুখিনতা ছোট-গল্পের এক প্রধান বৈশিষ্ট্য। নারায়ণ গঙ্গোপাধ্যায় ছোট গল্প সম্পর্কে বলেছেন "ছোট-গল্প লেখকের আত্ম প্রতীতিজাত একটি সংহত গদ্যকাহিনী যার একতম বক্তব্য কোনও ঘটনা, চরিত্র, পরিবেশ অবলম্বন করে এক সংকটের মধ্য দিয়ে সমগ্রতা লাভে ক্ষরতে করবে।"

ছোটগল্পের বৈশিষ্ট্য :

ক.) ছোটগল্প একটিমাত্র ঘটনা বা ভাবকে অবলম্বন করে রচিত হবে। ভাবের একমুখিনতার জন্য ছোট গল্প অন্যেরে অদ্বিতীয় তুলনীয়।

খ.) ছোটগল্পের আয়তন হবে স্বল্প এবং আয়োজন স্বল্পবিস্তৃত।

গ.) ছোটগল্পের ~~শু~~ বক্তব্য হবে যাবে একেবারে প্রথম পংক্তি থেকেই। এডগার অ্যালান পো'র মতে "from the very initial sentence"।

ঘ.) ছোটগল্পের মধ্যে লেখকের ব্যক্তিত্ব, জীবনদর্শন, অভিজ্ঞতা প্রতিফলিত হবে।

ঙ.) আদর্শ ছোটগল্পে একটি মাত্র সংঘাত-মুহূর্ত থাকবে। এদিক থেকে একাঙ্ক নাটকের সঙ্গে ছোটগল্পের তুলনা করা যায়।

চ.) ছোটগল্পে অনাবশ্যক তথ্যের বর্ণনায় সুযোগ ~~র~~ যেমন নেই, তেমনই এর ভাষাকেও হতে হবে সংযত ও বিষয়ানুগ।

ছ.) এর প্রতিটি সংলাপ হবে ভাবগর্ভ, বাক্যগুলি হবে ইঙ্গিতময় ও উদ্ধৃতিযোগ্য।

রবীন্দ্রনাথ ঠাকুর তাঁর 'সোনারতরী' কাব্যের 'বর্ষাযাপন' কবিতায় ছোটগল্পের চরিত্রটি সুন্দর ভাবে তুলে ধরেছেন —

"ঘোর প্রাণ, ঘোর ব্যথা, ঘোরতর ঘোরতর দুঃখ কথা
নিতান্তই অল্প অল্প;
অহরহ বিস্মৃতিরাশি প্রত্যহ ফেলিছে গ্রাসি
তাহি দু-চারিটি অশ্রুজল।
নাহি বর্ণনার ছটা ঘটনার ঘনঘটা,
নাহি তত্ত্ব নাহি উপদেশ।
অন্তরে অতৃপ্ত রবে, সাঙ্গ করি মনে হবে
শেষ হয়ে হইল না শেষ।"

উপরি-উক্ত বক্তব্যটি স্বীকার করে রমীন্দ্রনাথ রায় তাঁর 'ঘোর চাষের কথা' গ্রন্থে মন্তব্য করেছেন – "ঘোরচাষ লঘু পক্ষ প্রক্রিয়তি, তার পাখায় দ্রুতলয়ের ছন্দ – সে ভারমুক্ত, লঘুছন্দ, অনাবশ্যকের বোঝা তার নেই।.... ঘোরচাষের একটি ঘটনায়, একটি চরিত্রের বিশেষ অনুভবে, একটি আপাতিকতার বিদ্যুৎদীপ্তির যে চকিত চেতনা ঘটে, তারই আলোয় জীবনের একটি গভীর সত্য ব্যঞ্জিত হয়ে ওঠে। উপন্যাসের বৈশিষ্ট্য কথা বিস্তারে; ঘোরচাষের বৈশিষ্ট্য কথা – অনুক্তিতে;

উপন্যাসের বৈশিষ্ট্য বর্ণনায়, ছোটগল্পের বৈশিষ্ট্য স্বল্পভাষী বক্তব্যে; উপন্যাস আস্বাদনে সময়ের বিস্তারের পরিতৃপ্তি, আর ছোটগল্পের আস্বাদনে আলো অন্ধকার ক্ষিপ্রতা ও অতৃপ্ত পিপাসা।"

সারাংশ

'টোপ' গল্প সম্পর্কে সমালোচক বলেছেন - "নিজের অহংকে চরিতার্থ করার জন্য মানুষ কত নির্মম হতে পারে তারই উদাহরণ হল 'টোপ' গল্পটি। প্রকৃতপক্ষে টোপ গল্পে উচ্চ ও মধ্যবিত্তের মানসিক দ্বন্দ্ব মূল্যবোধের সমস্যা নিপুণভাবে ধরা পড়েছে।"

'টোপ' গল্পটি নারায়ণ গঙ্গোপাধ্যায়ের সব থেকে বেশি জনপ্রিয় গল্প। টোপের বিষয় ভাবনায় রোমাঞ্চকর চমৎকারিত্ব আমাদের তীব্র আকর্ষণ করে। 'টোপ' গল্পের একটা কাহিনী আছে, গল্পের মূল বিষয় শিকার কিন্তু শিকারী রাজাবাহাদুর ও তার পার্শ্বচরেরা এবং অরণ্যের গভীর গম্ভীর ভয়াল পরিবেশে। আসলে কাহিনি অত্যন্ত বিস্তারিত নয়, ঘটনার উজ্জ্বল রঙেও দীপ্ত নয়, তবে লেখক যেন পরিবেশ বর্ণনার মাধ্যমে কাহিনিকে একটা সুতোয় বাঁধতে সচেষ্ট হয়েছেন।

লেখক প্রথমেই স্বীকার করেছেন 'টোপ' গল্পটি হল 'এক অরণ্যক ইতিহাস'। একটি বিচিত্র শিকার কাহিনি, তবে এক অদ্ভুত

বিলাসী রাজাবাহাদুরের শিকার কাহিনি বর্ণিত হওয়ায় যথার্থ ছোটো গল্পের ~~রূ~~ ঘটনাও সঙ্গে অনুপস্থিত। গল্পের লেখকের কাছে একদিন সকালে একটি পার্সেল আসে। পার্সেলটি হল একজোড়া বাঘের চামড়ার জুতো এবং প্রেরক হলেন রামগঙ্গা এস্টেটের রাজাবাহাদুর এন. আর. চৌধুরী। রাজাবাহাদুর তার এস্টেটের একটি অরণ্যে বাস করেন এবং তিনি অত্যন্ত শিকার বিলাসী। কথক রাজাবাহাদুরের সঙ্গে একবার শিকারের সহযাত্রী হয়। কলকাতা থেকে এসে অরণ্যের সৌন্দর্য্য অতি লেখকের ভালো লেগে যায়, তরাই অঞ্চল যেখানে খুব দিনে হিংস্র জন্তুর বাস। রাজাবাহাদুরের পক্ষে উপর থেকে সোজাসুজি শিকার করা সম্ভব নয়। তাই নানা উপায় ~~অবল~~ অবলম্বন করেন তিনি। রাজাবাহাদুর একরাতে পাহাড়ের খাড় থেকে সমান লোহার অদ্ভুত আঁকশির মতো খানিকটা বাড়িয়ে সেখান থেকে টোপ ঝুলিয়ে কয়েক ফুট নীচে নামান; সঙ্গে কথকের রুদ্ধশ্বাস প্রতীক্ষা – কখন বড়ো জাতের বাঘ সেই টোপ গিলতে আসবে। অবশেষে একসময় এক

যার ও রাজাবাহাদুরের রাইফেলের অব্যর্থ গুলিতে শেষ হয়েছে পর্ব অনেক টোপের পালা। তবে গল্পের কথক কোনো টোপের খুলি দেখে জানতে শিশুর সম্পর্ক বোঝেনি। বোঝা যায় শিকারীদের টোপ হিসাবে ব্যবহার করা হয়েছে; তার অর্থটাও বুঝে পারেনি যে জুতো জোড়া তাকে তা নিহত বাঘেরই চামড়ার উপহার। গল্পটি এখানেই শেষ।

টোপ গল্পের কাহিনির শেষে চমক। সেখানে ছাগশিশু বা অন্য কোনো জন্তুর মাংসেই বাঘ-শিকার টোপ করা যায়। সেখানে মানব-শিশুকে শিকার টোপ করে বাঘ শিকার নিলামেই গল্পের টোপ চমক এবং রাজা-বাহাদুরের অমানবিকতার আচরণের রূপেই গল্পের আমানবিক নৃশংসতা নিহিত আছে।

গল্পের প্রধান চরিত্র রামগড়ের এস্টেটের রাজা বাহাদুর এন. আর. চৌধুরী আর কথক প্রধান পার্শ্বচরিত্র। রাজা-বাহাদুর নিজের প্রশংসা শুনে খুব খুশি হন, নিজের শিকারের অভিজ্ঞতা কথকের কাছে প্রকাশ করাই তাঁর একান্ত বাসনা। যদিও অন্যপাশের বেশ অবস্থায়

না এলে শিকারের প্রতি টান থাকে না। মানুষ মারতেও তাঁর হাত কাঁপে না। শিকারের রোমাঞ্চ-তম কৌশল নিয়েও ব্যবহারিক কাজেই মানুষ ছাড়া এ সব কাজের অস্তিত্ব থাকে না, শিকারের নামে দেশী শিকারকে বাধ্য করার চেষ্টা করা এবং উল্লাসের জীবন যাপন এও এক আত্মতৃপ্তির অধিকার।

কোনো হীন কৌশল-সফল ও ব্যর্থ হলে তার প্রত্যাখ্যানটিকে পৃথিবী থেকে সরিয়ে দেওয়া ছিল রায়বাহাদুরের মতো জমিদারের জীবনযাপন পদ্ধতি— "চুপ একটা রাইফেলের নল আমার বুকে ঠেকালেন রায়বাহাদুর। তার পরেই আমার চারদিকে পৃথিবীটা পাল্টে যেতে যেতে হাওয়ার ছোঁয়া একটা বুদ্বুদের মতো শূন্যে মিলিয়ে গেল। রায়বাহাদুর ঘোড়াটা না টিপলে হয়তো ছুটে নীচেই পড়ে যেতাম তখনই।" রায়বাহাদুরের মধ্যে সন্দেহ থাকার ফলে যে গর্ব বোধ করেন তা তাঁর কথার মধ্যে দিয়েই পাওয়া যায় — "আমার সৌভাগ্য - ওদের ঈর্ষা, ও আমি পরোয়া করি না, লোকে বাঁচতে হলে যাদ দেখেই বাঁচি তাদের, অন্তত দেশটাতো ঝড় ঝাপটার আঘাতে অন্তত নিরাপদ।" এ জাতীয়

মানসিকতায়, তার অহম্ আর সুবিধাবাদী মধ্যবিত্ত স্বভাবের প্রচ্ছন্ন পরিচয় মেলে।

'টোপ' শব্দের মধ্যে মূল গল্পের কেন্দ্রবিন্দু স্পষ্ট হয়ে যায়, টোপ শব্দটির ব্যুৎপত্তিগত একটি অর্থ হল 'লোভ' বা 'সুযোগ'। মাছ ধরার যেমন টোপ থাকে তেমনি কোনো হিংস্র প্রাণীকে ধরার ফাঁদে পুরতে হলে তাকে অন্যান্য লোভের বস্তুর দিকে আকর্ষ করতে হয়, তবে সেই চেষ্টা সফল হবে। শিকারি এবং শিকার উভয়েরই দৃষ্টি টোপের দিকে। এই ব্যাখ্যায় টোপ রাজাবাহাদুর ও রয়্যাল বেঙ্গল টাইগার দুতরফেরই টোপটি মুখ্য স্থান পাওয়ার দাবি আবশ্যক। 'টোপ' গল্পের ক্লাইম্যাক্স রচিত হয়েছে একেবারে শেষে। রাজা বাহাদুর শিকারে ইয়ার জন্য যে টোপটি রেখেছো সুট নীচে নামিয়ে দেখে চকিতে- আলোয় সেই টোপের উপর।

নিখুঁত দৃষ্টিতেই তাকে গল্পের কাঙ্খিত চরম-মুহূর্ত — পুঁটলিটা যেন জীবন্ত অথচ কী বিশ্রী কিছু বুঝতে পারছি না। এ- নাকি মানুষের টোপ। টোপের দিকে তাকিয়ে আছে কয়েক।

রাজাবাহাদুরের 'টোপ' গল্পের মূল প্রতিপাদ্য হল অভুক্ত মানুষেরও একদল অন্যের বিলাস অস্ত্র, প্রভুত্বে অহংকারী মানুষের আদিম প্রবৃত্তি চরিতার্থতার জন্য নিরন্নদের শিকারের আবরণে অমানবিক আচরণ। কিন্তু এই প্রতিবাদী লেখক যে অনবদ্য ভঙ্গিতে উপস্থাপিত করেছেন তাতে তাঁর 'টোপ' গল্পটি অনন্যসাধারণভাবে শিল্প সার্থক হয়ে উঠেছে।

রাজাবাহাদুরের - চরিত্র

আধুনিক কবি বোদলেয়ার যেমন জুড়ে শুধু সেইসব মানুষকে দেখেছেন - রাজাবাহাদুর যেন খানিকটাই তাই লোভী, মানুষের হত্যাকারী সব মিলিয়ে 'দুর্ভিক্ষ পরিস্থিতি' উদাসীন এক অনবদ্য আত্মকেন্দ্রিক, শিকারের প্রতি নিয়ে তার অতৃপ্ত আত্মা, আমাদের লেখক শিল্পীসত্তায় পাপ - 'টোপ' গল্পে রক্তাক্ত ও ও নারকীয় উন্মত্ততায় লিপিবদ্ধ।

রাম গঙ্গা এস্টেটের জমিদারের জঙ্গলমহলের মালিক এন. আর. চৌধুরী রাজাবাহাদুরের নাম। তাঁর রাজরক্ত চুইয়ে পড়ে - হয়ত আকবরের সভাসদ আবদুর রহিমের মতো তোষামোদের বন্দনা তাঁকে মোহিত করে। কলকাতার 'গ্রেট ইস্টার্ন' তাকে ডাকছেন তাঁর বাংলোতে, বাংলায় অতিথিরূপে। একটি গুণীজনের অভাব প্রশংসা পাওয়া লোভ, অন্যের ভয় শিকারের নমুনার প্রদর্শনে সবাই অসাধ্যের ঐতিহাসিক রাজ-মহলের তাঁর মধ্যে বর্তমান। তাই বীর-কীর্তির নিদর্শন বাঘের চামড়া বা হাতির

মাথা অভিমুখে রাখেন। হিংস্রতা তার আদিম
প্রবৃত্তি তবু রয়েছে ও রক্তে। মৃদু কৌতুকে
রাইমোহন তাকে করে বলেন হয়তো
আমাকে বুঝতেন কত বড় অভিমান আপনি,
যে হিংস্র চরিত্রেই থেকে যা হিন্দু প্রাণী
কাপুরুষ ছেলেদের প্রতি পয়সা খদ্দর ছুঁড়ে
দেওয়ার প্রতিই থেকে। অথবা প্রথমে ছিলে
শিকারে না গেলাম নিজেকে তালি দেওয়াতেই
থেকে; যা অন্যান্য মানুষকে শুধু স্বভাব বা
প্রবৃত্তির বশে শিকার করাতেই থেকে, তবু
তার রক্তে ছিল আদিম হিংস্রতার বললেন—
আমের চোপ। কিন্তু ব্যবহার করছে করতে
চলেছেন প্রান্ত শিকারকে — যাদের চোখ হিসেবে।
তবে তার আগেই একটি দ্বন্দ্ব দেখা যাচ্ছে
ভেতরে ভেতরে কিছু একটা চলছে তার — দ্বন্দ্ব
বিবেকের সাথে। মানুষ ভেতরের শুভ প্রবৃত্তিকে
ফাঁকি দিতে — চাইছে। কিন্তু অন্যান্য শিকারের বাসনায়
শিকারকে ধরি দেন।

আবার প্রথমে আত্মত্যাগ ভয় করেছিলেন
তার বন্ধু ভালোবাসতেন কেবল নিজেকে — নিজের সম্মানকে
একটি নতুন ধারণা বাড়ানো চলছে। তাই তিনি হত্যাকারী
নাকি অন্যান্য ছেলের হত্যার পাপ — তাই। সব মিলিয়ে
তার প্রতি এক অস্বাভাবিক নিষ্ঠুর রূপ ফুটে উঠে

নামকরণ সম্বন্ধে কিছু কথা :-

সাহিত্যের আঙ্গিনার নামকরণ নিয়ে বিভিন্ন মতামত প্রচলিত আছে। কেউ বলেন, নামে কি আসে যায়, কেউ বলেন নামেই সব, কেউ বলেন নামের মধ্যেই ফুটে উঠতে হবে গল্পের বক্তব্য বা মুখ্য উপজীব্য।

সাধারণত দেখা যায় এই অন্যান্য ছোটগল্পের নামকরণ তার নায়ক বা নায়িকার বা প্রধান চরিত্রের নামে করা হয়ে থাকে, কিংবা গল্পের প্রধান বক্তব্য বা প্রধান ঘটনা কেন্দ্রিক হয়ে থাকে। তিনি নারায়ন গঙ্গোপাধ্যায়ের আলোচ্য গল্পটির নামকরণ সেই রকম গল্পের মূল ঘটনা কেন্দ্রিক।

একটি জীবন্ত মানবশিশুর 'টোপ' ফেলে বাঘ শিকার করা হলো - শুধুমাত্র এই কারণেই এই গল্পের এমন নামকরণ যে তা নয়, গুরুতর একটি তাৎপর্য ও নিহিত আছে এই নাম দেওয়ার মধ্যে, শুধু যে হিংস্র পশুকে মানবশিশু টোপ ফেলে শিকার করতে আগ্রহ আছে তার নিজের

মদগর্বী অহংবোধকে তৃপ্ত করার জন্য মোসাহেব 'শিকার' করার ও প্রয়োজন আছে, এস. আর. চৌধুরী, রাজা রামপ্রসাদ এস্টেট লেখক এই দৈনন্দিন আনুষঙ্গিক কখনো সোনার হাতঘড়ি কখনো চায়ের নেমন্তন্ন, কখনো বা বাঘ শিকারের সঙ্গী হবার 'আদর' আমন্ত্রণ এ সবও এক ধরনের টোপ।

মনোবিশ্লেষকরা মেগালোম্যানিয়া নামক একটি ব্যাধির কথা বলেন, যার লক্ষণ হচ্ছে নিজের অহংমন্যতাকে সবচেয়ে বেশি গুরুত্ব দিয়ে তাকে চরিতার্থ করার জন্য যে কোনো কাজ করতে দ্বিধা না করা, সে কাজ যতই অনুচিত, নীতিবিরুদ্ধ, অসামাজিক ঘৃণ্য, হাস্যকর, লজ্জাকর যাই কিছু হোক না কেন। রামপ্রসাদ এস্টেটের এই মালিকটি ও একজন মেগালোম্যানিয়াক — তাঁর 'ইগো' কে তৃপ্ত করার জন্য তিনি যে যে কোনো টোপ ফেলে যে কোনো শিকার করতে বা ধরতে দ্বিধাহীন, 'টোপ' নামের গূঢ় তাৎপর্য এটাই।

উপসংহার

প্রকল্পটি করতে গিয়ে গবেষক হিসেবে এক নতুন অভিজ্ঞতা লাভ সম্ভব হয়েছে। যথাযথ সময়ের মধ্যে নতুন প্রয়োগের মাধ্যমে আমি প্রকল্পটি সম্পন্ন করলাম। লেখক "নারায়ণ গঙ্গোপাধ্যায়ের" সম্বন্ধে অনেক তথ্য জানতে পেরেছি। টোপ গল্পের মাধ্যমে লেখকের এক বিশেষ জীবনদর্শন প্রতিফলিত হয়েছে। এর সাথে জানতে পারলাম — একজন রাজা কতটা নিষ্ঠুর ও লোভী হতে পারে, লেখক প্রকাশ করেছেন যে রাজার পরিচয় যেমন - নিষ্ঠুরতা, লোভী, স্বার্থপর, অহংকারী এবং রাগ আরো অনেককিছু।

সাহিত্যিক কীর্তি বা গল্পের চর্চার আগ্রহ আমার আরও বাড়ল, ভবিষ্যতে তার লেখা উপন্যাস যেমন - বৈতালিক, শিলালিপি, লালমাটি, সম্রাট ও শ্রেষ্ঠী, পদসঞ্চার ও তার উল্লেখযোগ্য - ছোটগল্প সংকলন বীতংস, দুঃশাসন, ভোগবতী নিয়ে গবেষণামূলক কাজ করা ইচ্ছা আছে। স্বাধীনভাবে নিজের সৃজনশীলতার প্রকাশ ঘটাতে পেরে আমি খুশি, শিক্ষক/শিক্ষিকার নির্দেশ ও সহযোগিতা আমাকে প্রকল্পটি করার সাহায্য করেছে. এই সময়কালের মধ্যে প্রকল্পটি সম্পূর্ণ করতে গিয়ে কিছু ভুল থেকে যাওয়ার জন্য আমি ক্ষমাপ্রার্থী.

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Sample Project Report (2022-2023)

Environmental Studies

Deshabandhu Mahavidyalaya

Chittaranjan

Project Report on: Local Problems

Sub: Environmental Studies

Under the Supervision of:-

Mrs. Deeppriya Roy Sarkar

Presented By:-

NAME: ANJANA BANERJEE

SEMESTER: 1ST

REGISTRATION NO: 1042211110039

SESSION: 2022-23

Deshabandhu Mahavidyalaya, Chittranjan

TO WHOM IT MAY CONCERN

This is to certify that **Miss. Anjana Banerjee**, a student of B.A./~~B. Sc/B. Com~~ 1st Semester ~~Hons.~~/Programme of Deshabandhu Mahavidyalaya, Chittaranjan, bearing Regn. No. **104221110039** of **2022-23** has prepared and submitted ~~his~~/her project report titled '**Local Problem**' for partial fulfilment of the syllabus of AECC curriculum (Environmental Studies) bearing the paper code: **AEE-101**, under my supervision.

I wish ~~him~~/her success in life.

Deeppriya Roy Sarkar

.....

Date: 17/01/23
Place: Chittaranjan

Mrs. Deeppriya Roy Sarkar
Dept. of Chemistry
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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teacher Mrs. Deepppriya Roy Sarkar as well as our Principal Dr. Pridip Santapa Kundu - gave me the golden opportunity to do this wonderful project on the topic 'Local Problems' which also helped me in doing a lot of research and I came to know about so many new things. I am really thankful to them.

Seemdly I would also like to thank my parents and Friends who helped me a lot in this project with-in the limited time forme.

Anjana Banerjee
(Signature of the student)

CONTENTS

প্রধান সমস্যা

পরিবেশ হল জীবজগতের চারপাশের আকাশ, বাতাস, জল মাটি আলো তাপ এবং অন্যান্য জড় ও সজীব বস্তু, পরিবেশ প্রাকৃতিক নিয়মে ভারসাম্য বজায় রেখে উদ্ভিদ ও প্রাণীদের আশ্রয় দেয়, তাদের ভার বহন করে, চলাফেরায় ও বংশ-বিস্তারে সাহায্য করে। কিন্তু গত কয়েক দশকে সেই পরিবেশই আধুনিক সভ্যতার নানা প্রয়োজনে সেটাতে গিয়ে ভয়ানকভাবে দূষিত হয়ে পড়ছে। পরিবেশের কাছে জীবনের জন্য সমর্ন হয়ে নীল আগামি গান। এরকম দূষিত পরিবেশে বসবাস করা না করলে শুধু মানবজাতি নয়, অন্যান্য জীবকুলও ধীরে ধীরে ধরাতল থেকে লুপ্ত হবে।

প্রাকৃতিক ও মানুষের সৃষ্টি কারণেই পরিবেশ দূষিত হয়। প্রাকৃতিক কারণগুলি হল — আলো বায়ু, বালঝড়, ইত্যাদি। আর মানব সৃষ্টি কারণগুলি হল- বিজ্ঞান আশ্রিত যন্ত্র সভ্যতা মানুষের দ্রুতহারে বংশবৃদ্ধি, বসতি স্থাপনের জন্য অরণ্যের উচ্ছেদ, আবহাওয়ার বিপরীত্য, কলকারখানার কাড়বাড়ন্ত, অনাবিক পারমাণবিক শক্তি প্রতিযোগীতা জমিতে ব্যাপক হারে কীটনাশক দ্রব্যের ব্যবহার। এসব কিছুতেই পৃথিবীর পরিবেশের স্বাভাবিকতা নষ্ট হচ্ছে।

জলদূষন

সংজ্ঞা :-

জল দূষন হল জলাশয়ের দূষন (উদ্যান, নদী, মহাসাগর, জলজ এবং ভূগর্ভস্থ জল)। পরিবেশগত অবনতি এই সম্পদ দূষন যখন দূষনকারী সরাসরি বা পরোক্ষভাবে ক্ষতিকারক যৌগ পানিতে বা জলে অপসারন হয় তখন তা পানি বা জলনিশ্রেনের মধ্যে মানব ব্যবহারের অনুপযোগী হয়ে উঠে তাকে এটাকেই বলে জলদূষন।

জলদূষন পুরো জীবমণ্ডলকে প্রভাবিত করে, এর মধ্যে উল্লেখযোগ্য হল জীবিত জীব ও উদ্ভিদ। এটি প্রধানত হয়ে সে পানী দূষন বিশ্বজুড়ে মৃত্যু এবং রোগের প্রধান কারন, সুইজারল্যান্ড জলদূষনের কারনেই প্রতিদিনই বিশ্বে প্রায় ৪৪০০ এরও বেশি লোকের মৃত্যু হয়।

শ্রেনীবিভাগ :-

জল মাধ্যম দ্বারা দূষিত হয় তাকে দূষন বলে। জল দূষনের শ্রেনীবিভাগ নিম্নে বর্ণিত হল—

i) প্রকৃতির ওপর ভিত্তি করে দূষককে দু ভাগে ভাগ করা যায়। যথা :-

a) তরল বর্জ্য পদার্থ
b) কঠিন বর্জ্য পদার্থ

iii) পচন অক্ষমতার ভিত্তিতে দূষণকে দুভাগে ভাগ করা যায়,
যথা—
a) পচনশীল বর্জ্য
b) অপচনশীল বর্জ্য

iiii) দূষকের উৎসের ভিত্তিতে দূষককে দুভাগে ভাগ করা যায়,
যথা—
a) প্রাকৃতিক দূষক
b) মনুষ্যসৃষ্ট দূষক

কারণ :-

জলদূষণের বিভিন্ন কারণগুলি নিম্নে বর্ণিত হল—

i) শিল্প ও কারখানা :-

প্রেট্রো রাসায়নিক শিল্প, পলিথিন ও প্লাস্টিক শিল্প, অ্যালকালি শিল্প, খনিজ তেল পরিশোধন শিল্প বিভিন্ন রকম যানবাহন নির্মাণ, ছোট ও মাঝারি ইলেকট্রিক্যাল এবং ইলেকট্রনিক্স শিল্প প্রচুর পরিমাণ দূষিতকারক পদার্থ যেমন অ্যামোনিয়াম ক্লোরাইড, আয়রনাইড এবং বিভিন্ন ভারী ধাতব, পারদ, সিসা ইত্যাদি জাল মিশে জলকে দূষিত করে।

ii) গৃহস্থালীর আবর্জনা :-

গ্রাম এবং শহর এলাকার বিভিন্ন আবর্জনা বর্জ্য পদার্থ যেমন - দৈনন্দিন রান্না বস্তু, গৃহস্থালীর কাজে ব্যবহৃত জল বিভিন্ন প্রক্রিয়ায় নিম্নে যায় মল মূত্র জীবানু ব্যবহার ও জলকে দূষিত করে।

iv) তেজস্ক্রিয় পদার্থ থেকে জলদূষণ :-

পারমানবিক চুল্লি কেন্দ্র, বৈজ্ঞানিক পরিষেবাগারে ব্যবহৃত তেজস্ক্রিয় পদার্থগুলো সমুদ্র বা নদীতে ফেলাই মারা মলে জল দূষন ঘটে।

iv) খনিজ তেল থেকে জল দূষন :-

দুর্ঘটনাগ্রস্ত তেলবাহী জাহাজ থেকে অথবা সমুদ্রে অবস্থিত তেলের খনি থেকে এমনকি সমুদ্র বন্দর থেকে খনিজ তেল মিশে জল দূষন ঘটায়।

v) আর্সেনিক দূষন :-

মাটির নীচের স্তর থেকে অনিয়ন্ত্রিতভাবে অতিরিক্ত জল তুলে নেওয়ার মলে মাটির নিচে থাকা জায়গায় আর্সেনিক বাতাসের সাথে মিলে বিক্রিয়া করে মারাত্মক যৌগ তৈরি করে জলকে দূষিত করে।

জলদূষন রোধের উপায় :-

i) আইন প্রয়োগ ও বলবৎ :-

জল (প্রতিরোধ ও দূষন) আইন ১৯৭৪-১৯৭৮ (সংশোধিত) জল দূষন আইন প্রয়োগ করে দূষনকারীর বিরুদ্ধে কঠোর ব্যবস্থা নিলে জল দূষন নিয়ন্ত্রন সম্ভব।

iii) প্রযুক্তিগত উপায় :-

দূষিত পানি পরিশোধন করতে হবে। উন্নত প্রযুক্তির সাহায্যে আবর্জনা প্রতিক্রিয়াকরণ প্লান্ট কলকারখানা, হাসপাতাল পৌর সংস্থা ও অন্যান্য প্রতিষ্ঠান থেকে নির্গত দূষিত জলকে পরিশোধন করার পর নদ নদী বা সমুদ্রে নিষ্কাশন করতে হবে। গৃহস্থলী ও পৌর আবর্জনাকে প্লান্টে জৈবানুমুক্ত করলে জলদূষিত হয় না।

বায়ুদূষণ

সংজ্ঞা :-

WHO-এর মতে (1961) পৃথিবীর বায়ুমণ্ডলের মধ্যে অনিষ্টকর অর্থাৎ ক্ষতিকারক পদার্থের সমাবেশ যখন মানুষ ও তার পরিবেশকে ক্ষতি করে সেই অবস্থাকে বায়ুদূষণ বলে।

কারণ :-

বায়ুদূষণের বিভিন্ন কারণগুলি নিম্নে আলোচনা করা হল :-

i) যানবাহন ও কলকারখানার ধোঁয়া :-

বিভিন্ন যানবাহন যেমন- ট্রাক, বাস, মটরসাইকেল প্রভৃতি থেকে নির্গত ধোঁয়া এবং বিভিন্ন কলকারখানা থেকে নির্গত বিষাক্ত ধোঁয়া বায়ুতে মিশে বায়ুদূষণ ঘটায়।

iii) গাছ কেটে ফেলা :-

মানুষের বিভিন্ন প্রয়োজনে গাছ কেটে ফেলার ফলে বায়ুতে কার্বন ডাই অক্সাইডের পরিমান বেড়ে যায় ফলে বায়ু দূষিত হয়।

iv) কার্বন ডাই অক্সাইড :-

বায়ুমণ্ডলে এই গ্যাসের পরিমান সামান্য বেড়ে গেলে পরিবেশের ভারসাম্য বিঘ্নিত হয় এবং পরিবেশ দূষিত হয় জীবজগতের অস্তিত্ব বিপন্ন করে তোলা।

বায়ুদূষন রোধের উপায় :-

বায়ুদূষন রোধের উপায়গুলি নিম্নরূপ :-

i) কলকারখানা উৎপাদন করে এমন যানবাহন ব্যবহার বন্ধ করতে হবে।

ii) ইটের ভাটা লোকালয় থেকে দূরে স্থাপন করতে হবে।

iii) কম জ্বালানি ব্যবহার হয় এমন উন্নত প্রযুক্তি উদ্ভাবন করতে হবে।

iv) রান্নাঘরে বায়ু চলাচলের ভালো ব্যবস্থা তৈরি করতে হবে।

v) বন সৃষ্টি ও রক্ষন করা।

মাটি দূষণ

সংজ্ঞা ঃ

মৃত্তিকাতে যখন অতিরিক্ত কীটনাশক, জৈব পদার্থ, অজৈব রাসায়নিক যৌগিক পদার্থ ও তেজস্ক্রিয় পদার্থ ইত্যাদি মিশ্রিত হয়ে মৃত্তিকার উর্বরতা কমে গিয়ে স্বাভাবিক উদ্ভিদ জীববৈচিত্র্য, ফসল উৎপাদন ইত্যাদিতে প্রতিবন্ধকতা বা সৃষ্টি হয়, তখন তাকে মৃত্তিকা অবনমন বলে।

কারণ ঃ-

i) অতিরিক্ত পশুচারণ ঃ-

প্রধানত পৃথিবীর নাতিশীতোষ্ণ তৃণভূমিগুলিতে অতিরিক্ত পশুচারণে মৃত্তিকা বিভিন্ন অবনমন শিকার হয়েছে। যেমন মৃত্তিকার ক্ষয়, মৃত্তিকার অম্লত্ব ও লবণত্ব বৃদ্ধি। এছাড়া হিমালয় পাদদেশ সংলগ্ন অঞ্চলে, আন্দিজ পার্বত্য অঞ্চলেও অতিরিক্ত পশুচারণে নানা সমস্যার সৃষ্টি হয়েছে।

ii) মৃত্তিকাতে অজৈব রাসায়নিক যৌগের প্রভাব ঃ-

বর্তমানে কৃষিকাজে অত্যন্ত বেশি যান্ত্রিকীকরণ হওয়ায় ও কৃষিকাজে জৈব সারের ব্যবহার কমিয়ে অতিরিক্ত রাসায়নিক সার প্রয়োগ করার ফলে মৃত্তিকার গুণমানের ব্যাপক অবনমন হয়েছে।

iii) মৃত্তিকাতে তেজস্ক্রিয় পদার্থের মিশ্রণ :-

বিশ্বের উন্নত ও উন্নয়নশীল দেশসমূহের মৃত্তিকাতে বিভিন্ন তেজস্ক্রিয় পদার্থের মিশ্রণে মৃত্তিকার অবনমন হচ্ছে। যেমন – জাপান, আমেরিকাতে এই সমস্যা বেশি।

iv) অন্যান্য কারণ :-

i) খনিজ আহরণ; ii) রাস্তাঘাট নির্মাণ; iii) ইটভাটা নির্মাণ; iv) বহুমুখী নদী পরিকল্পনা; v) বনহনন vi) অবৈজ্ঞানিক জলসেচ ইত্যাদি কারণও ভূমির অবনমনের জন্য দায়ী।

মাটিদূষণ রোধের উপায়

মৃত্তিকা রোধের দুটি পদ্ধতি গ্রহণ করা হয় – i) কৃষিজ পদ্ধতি ii) কারিগরি পদ্ধতি।

i) কৃষিজ পদ্ধতি :-

কৃষিকাজের সময় মৃত্তিকার গভীর কর্ষণে মৃত্তিকার ক্ষয় হয়। বিভিন্ন কৃষিজ পদ্ধতি অবলম্বন করে মৃত্তিকা রোধের সম্ভব। যেমন– a) শস্য ব্যবস্থাপনা b) ধাপ চাষ c) সমোন্নতি সঞ্চয়ন d) ফালি চাষ e) আলচিহ্ন

ii) কারিগরী পদ্ধতি :-

বিভিন্ন কারিগরী পদ্ধতি অবলম্বন করেও মৃত্তিকা ক্ষয় রোধ করে মৃত্তিকা রোধ সম্ভব। যেমন– i) কৃত্রিম দেয়াল তৈরি ii) বায়ুপ্রবাহজনিত ভূমিক্ষয় রোধ।

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I would like to mention seme seurces which pruped to be helpedful in making this presentation some of them are as follows :-

www . google . com
www . youtube . com
www . google Images

D. Ray Sarkar
17/01/23

Sample Project Report (2022-2023)

Department of Geography

KAZI NAZRUL UNIVERSITY

ASANSOL

Project on Georeferencing

Submitted by: AHANA SINGHA

Registration no: 104211220023

Session: 2021-22

Stream: B.Sc. 3rd Semester Geography Honours

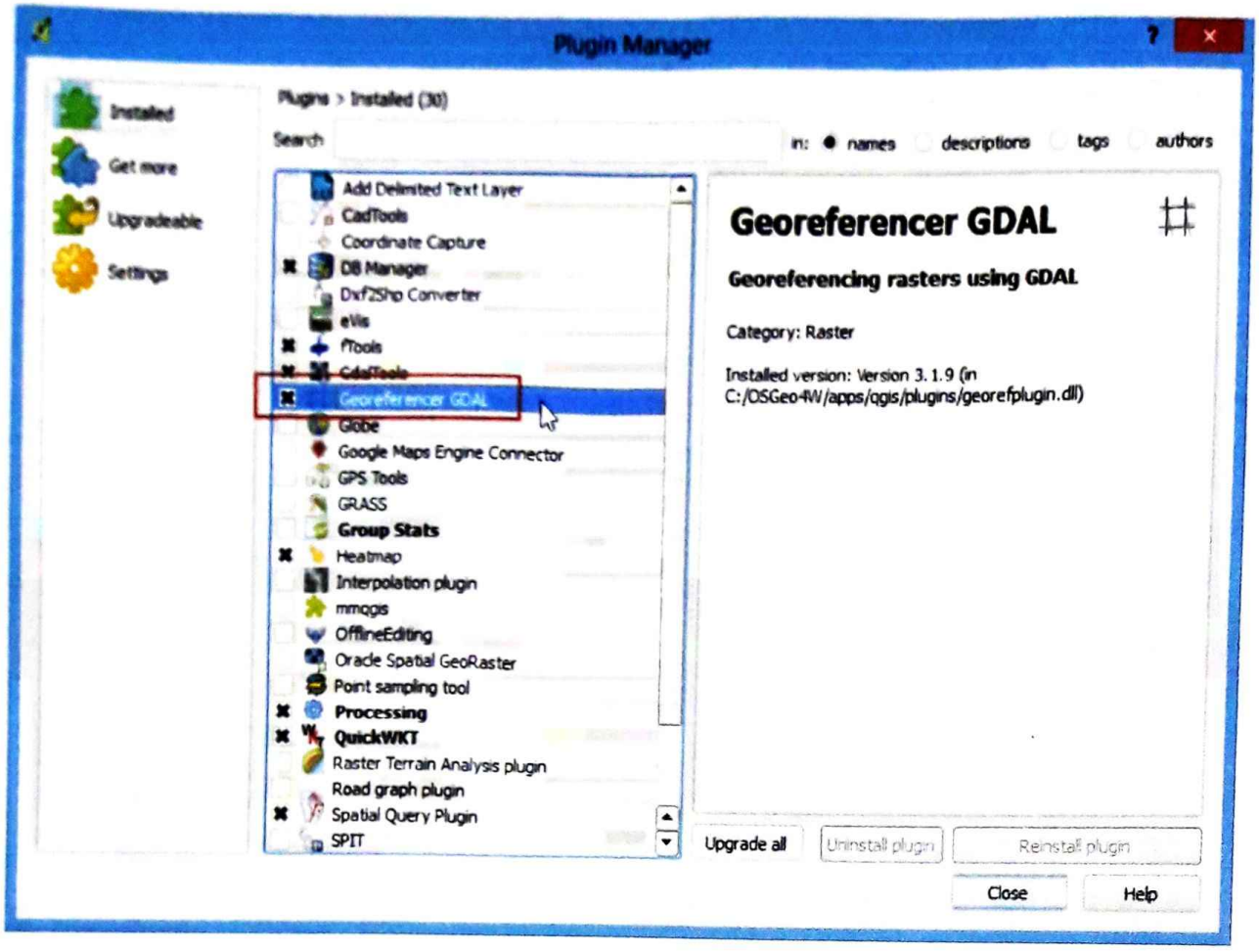
Procedure Of GeoreferencingTopo Sheets and Scanned Maps :

GeoreferencingTopo Sheets and Scanned Maps

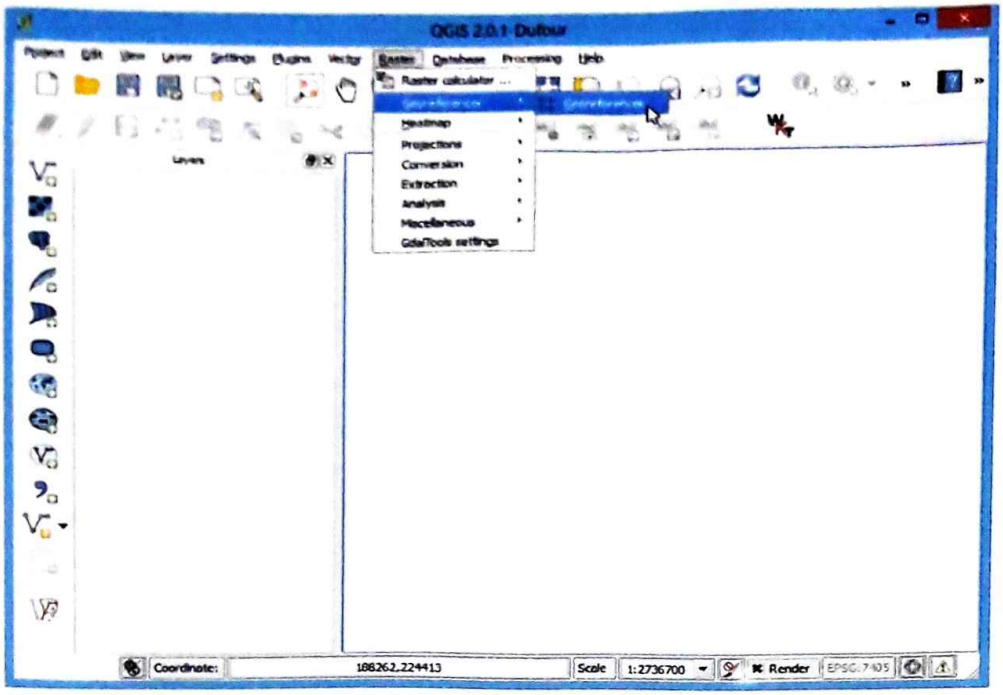
Most GIS projects require georeferencing some raster data. *Georeferencing* is the process of assigning real-world coordinates to each pixel of the raster. Many times these coordinates are obtained by doing field surveys - collecting coordinates with a GPS device for few easily identifiable features in the image or map. In some cases, where you are looking to digitize scanned maps, you can obtain the coordinates from the markings on the map image itself. Using these sample coordinates or GCPs (Ground Control Points), the image is warped and made to fit within the chosen coordinate system.

Procedure

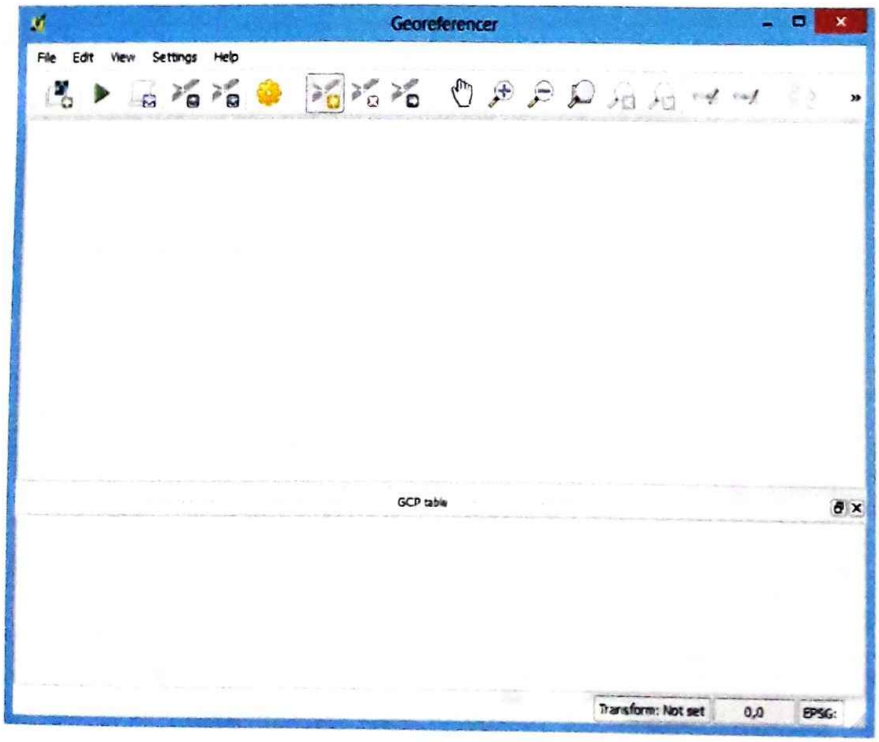
1.Georeferencing in QGIS is done via the 'Georeferencer GDAL' plugin.



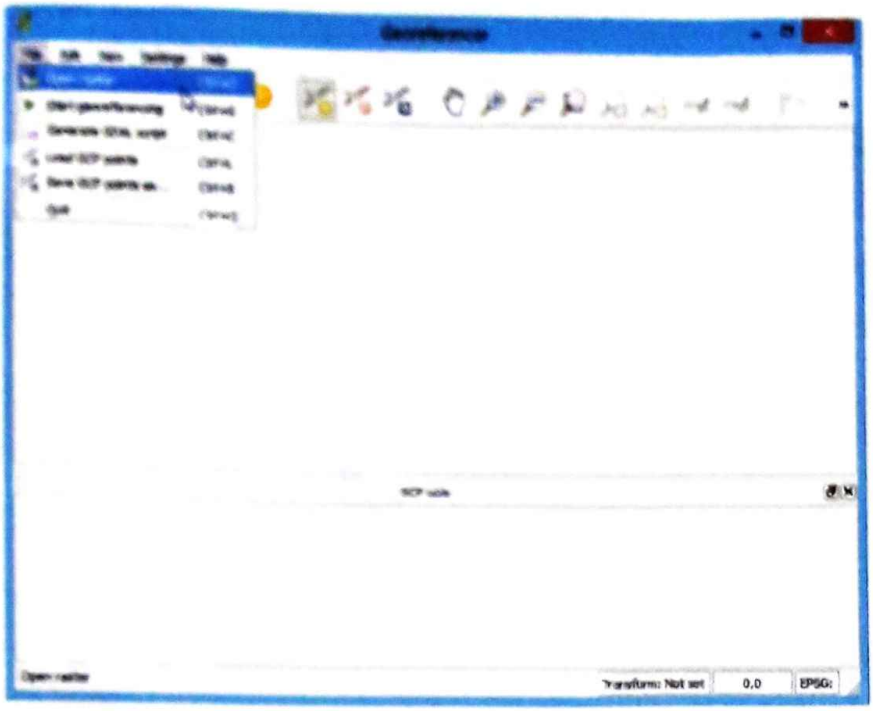
2. The plugin is installed in the Raster menu. Click on Raster ▸ Georeferencer ▸ Georeferencer to open the plugin.



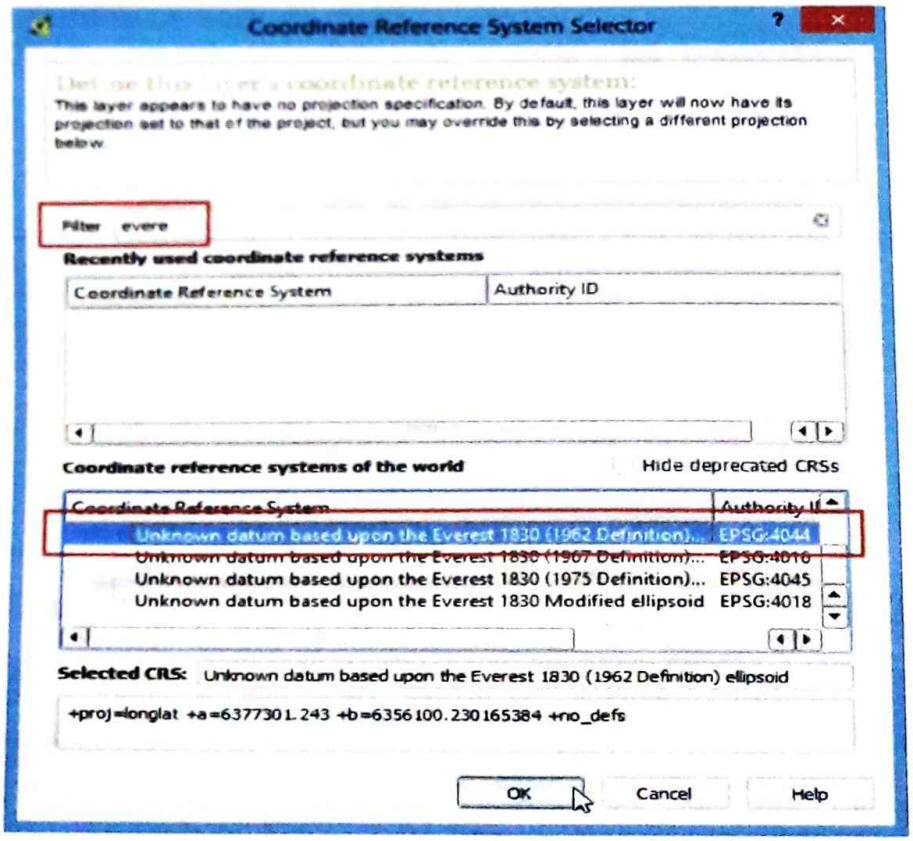
3. The plugin window is divided into 2 sections. The top section where the raster will be displayed and the bottom section where a table showing your GCPs will appear.



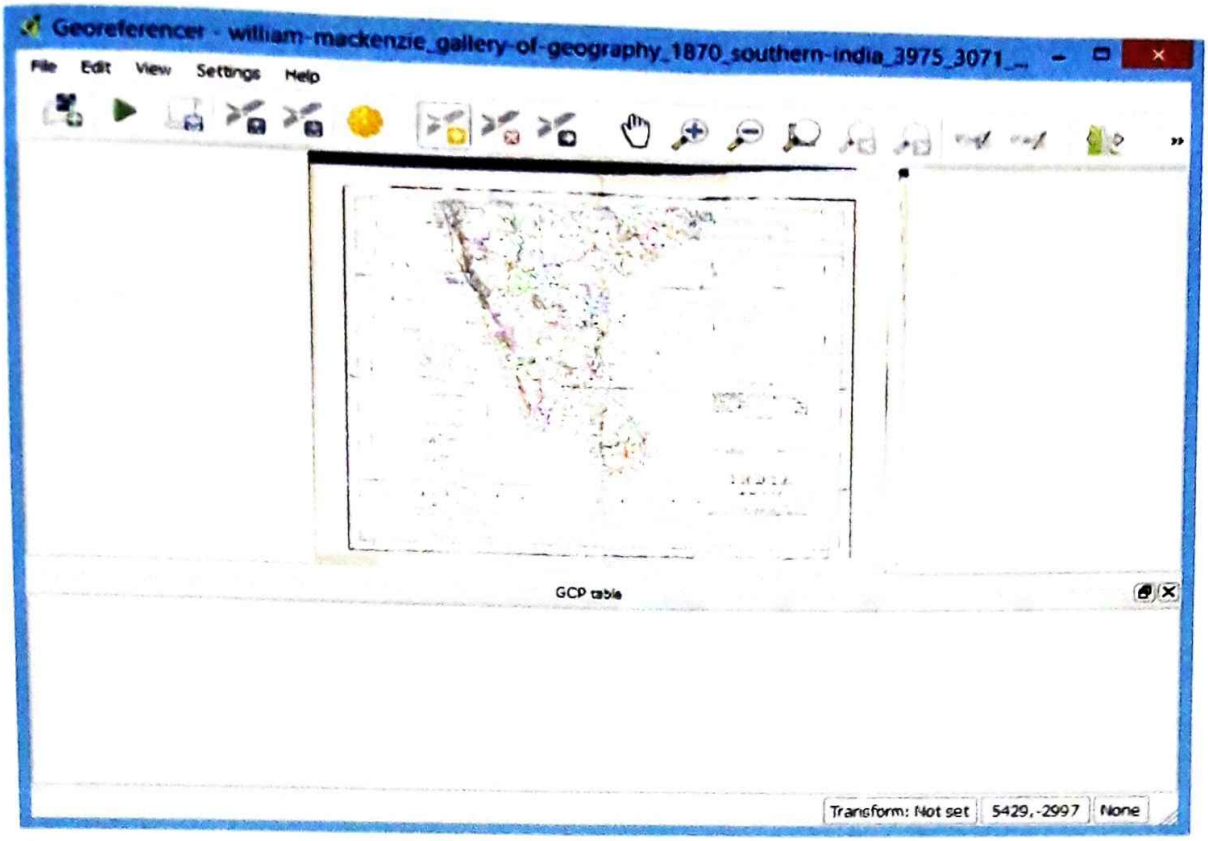
4. Now we will open our JPG image. Go to File ▸ Open Raster. Browse to the downloaded image of the scanned map and click Open.



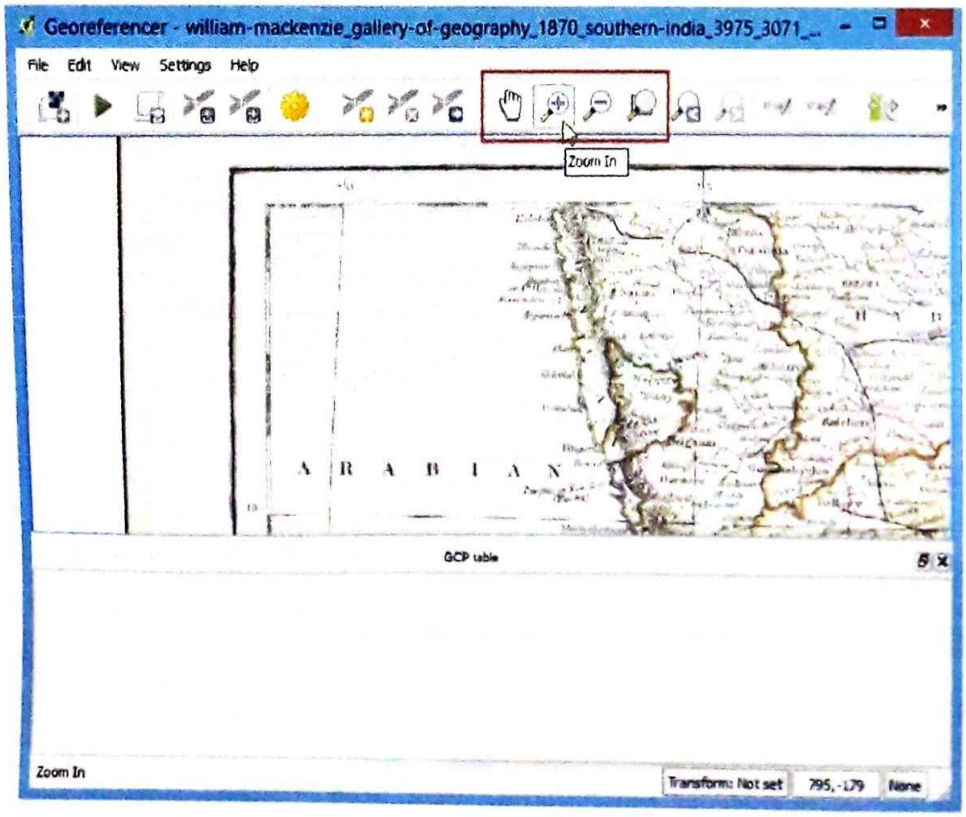
5. In the next screen, you will asked to choose the raster's coordinate reference system (CRS). This is to specify the projection and datum of your control points. If you have collected the ground control points using a GPS device, you would have the WGS84 CRS.



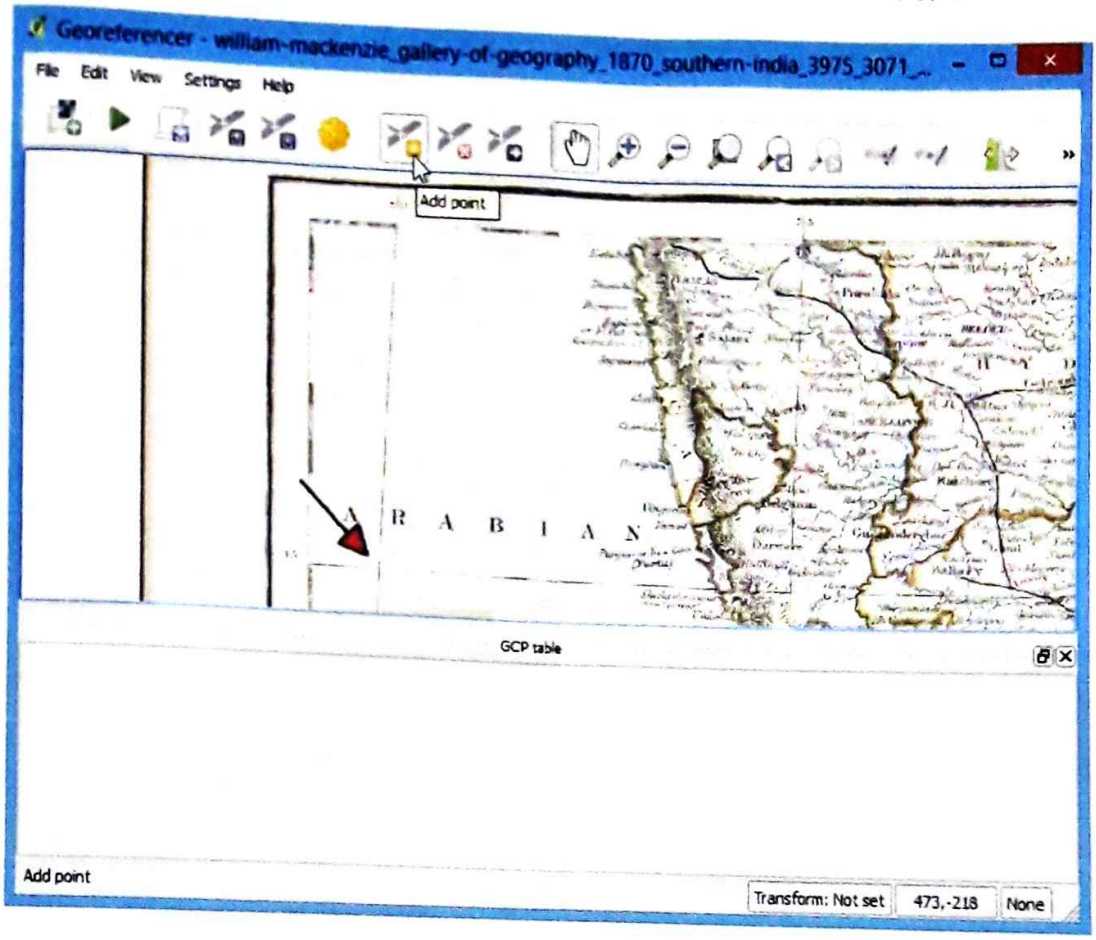
6. You will see the image will be loaded on the top section.



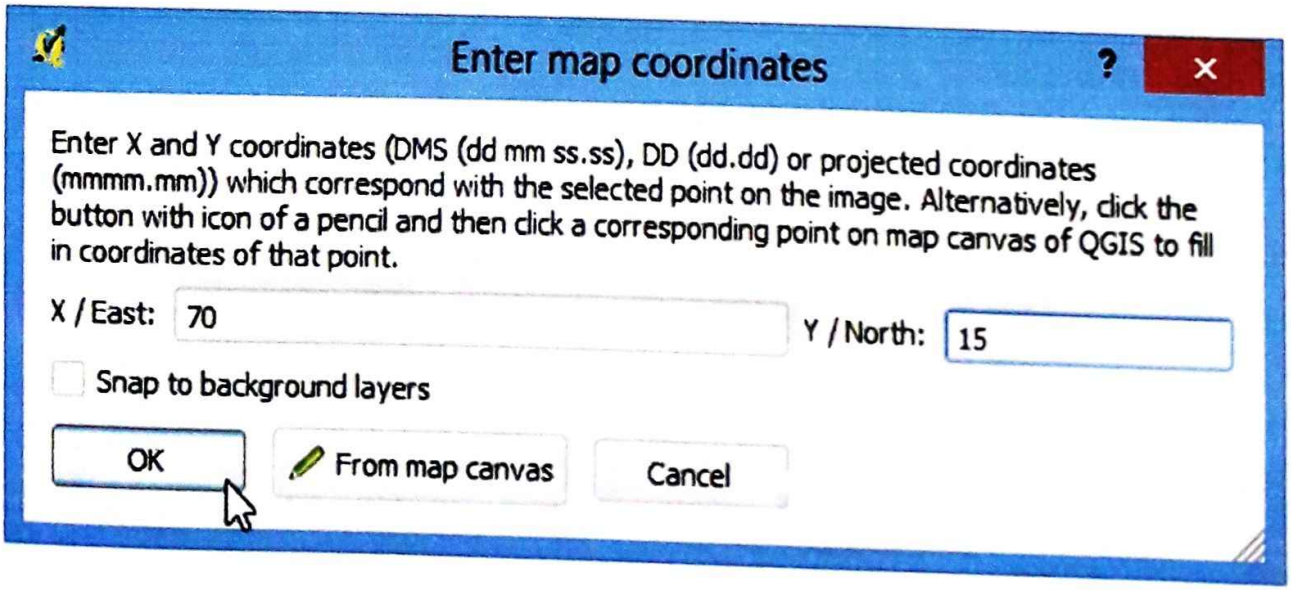
7. You can use the zoom/pan controls in the toolbar to learn more about the map.



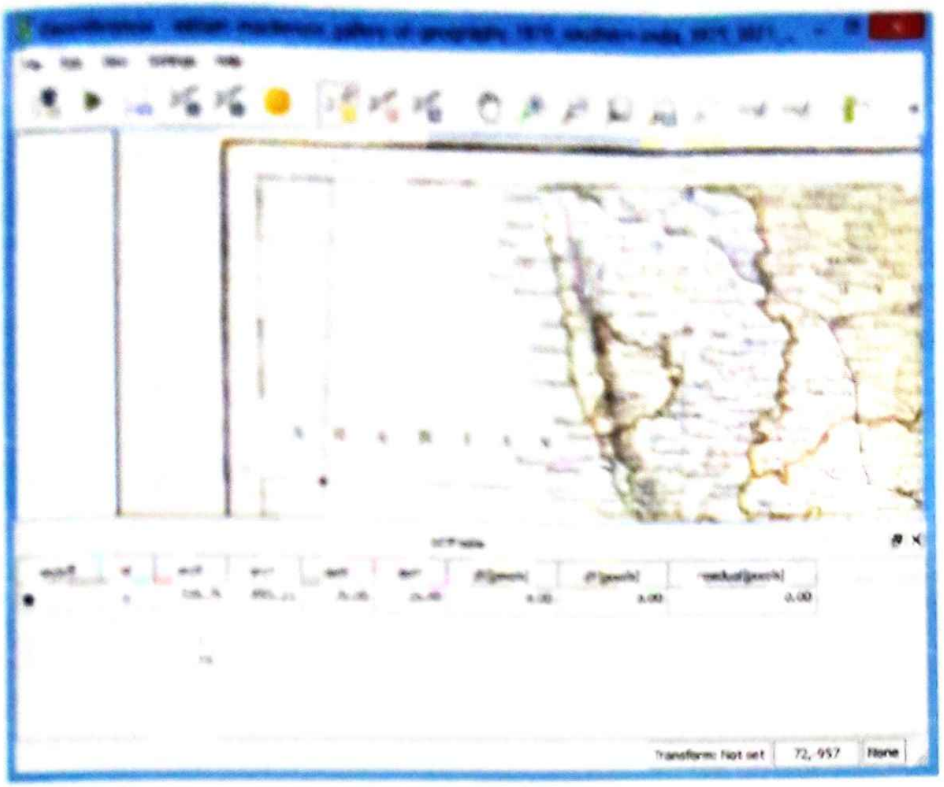
8. Now we need to assign coordinates to some points on this map. If you look closely, you will see coordinate grid with markings. Using this grid, you can determine the X and Y coordinates of the points where the grids intersect. Click on Add Point in the toolbar.



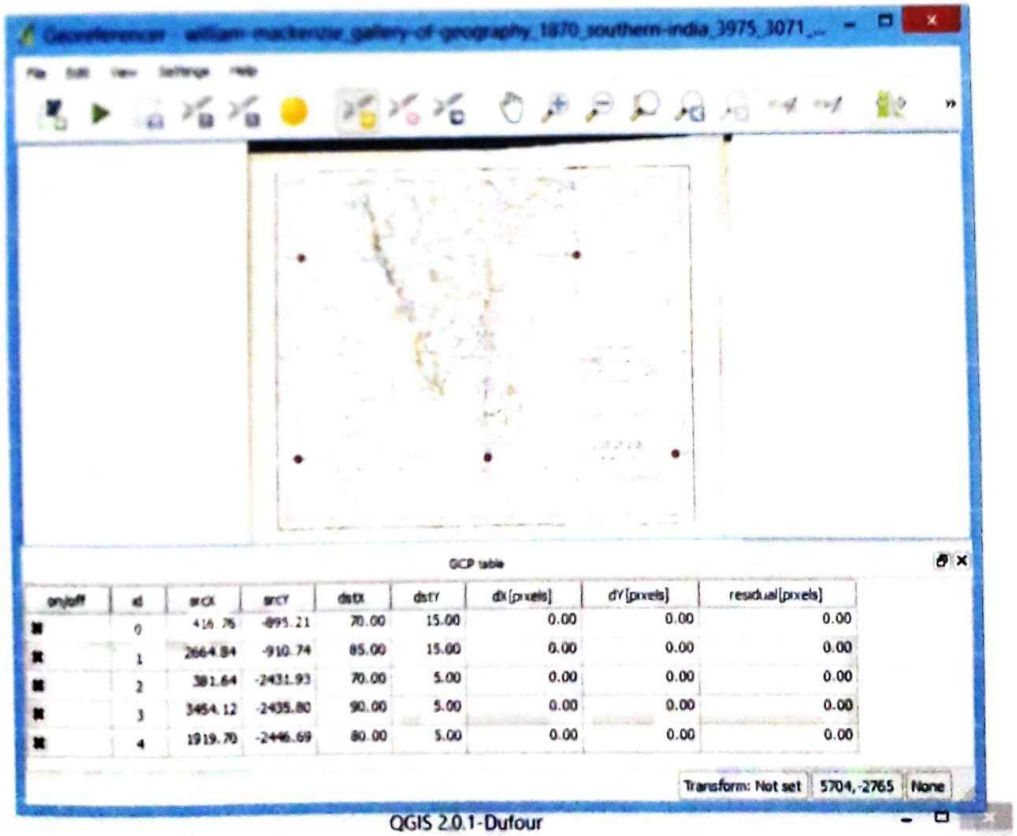
9. In the pop-up window, enter the coordinates. Remember that X=longitude and Y=latitude. Click OK.



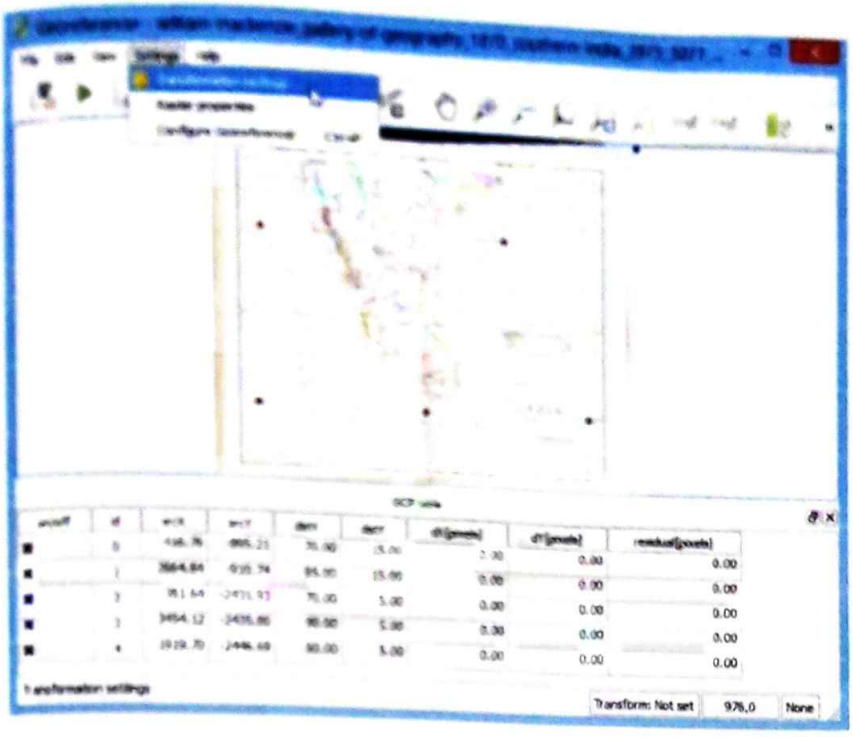
10. You will notice the GCP table now has a row with details of your first GCP.



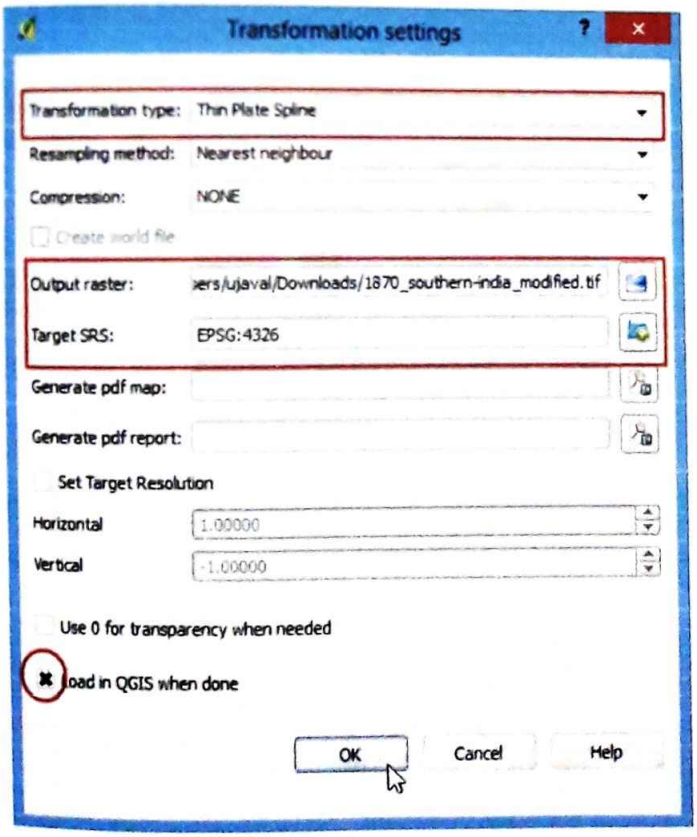
11. Similarly, add at least 4 GCPs covering the entire image. The more points you have, the more accurate your image is registered to the target coordinates.



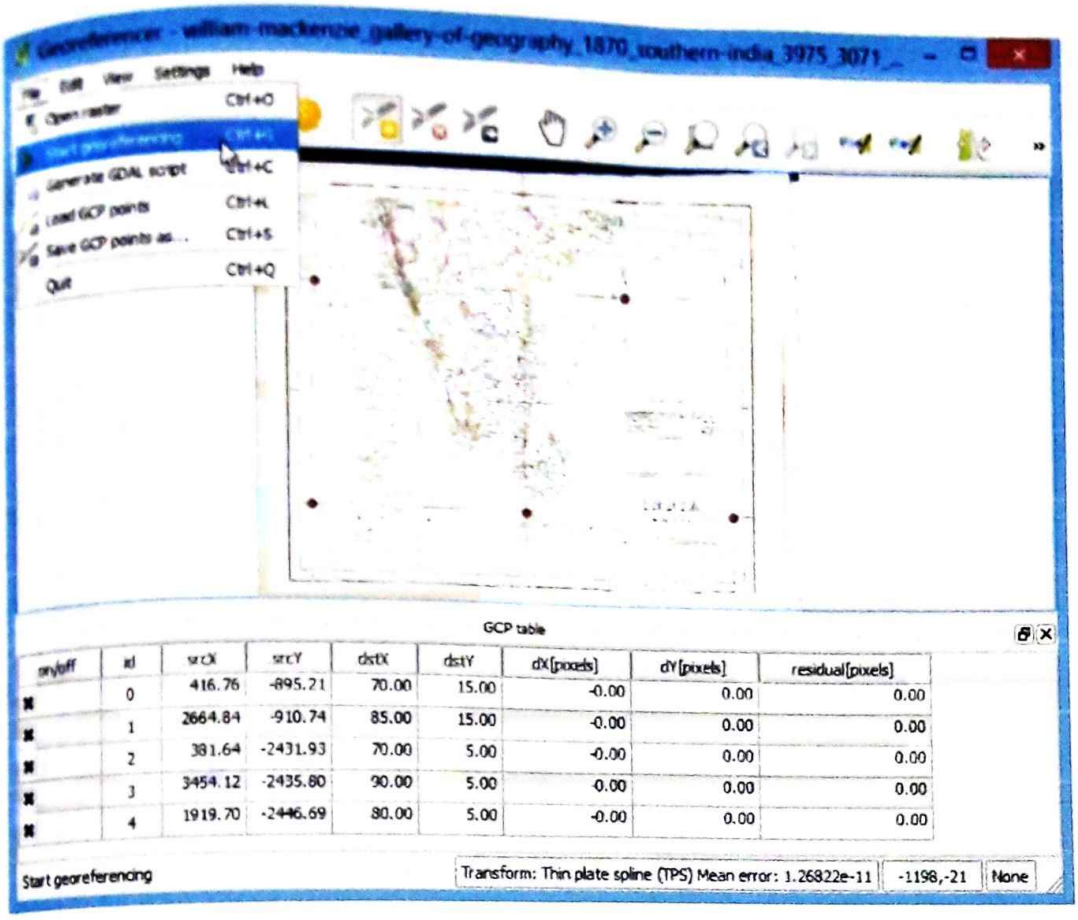
12. Once you have enough points, go to Settings -> Transformation settings.



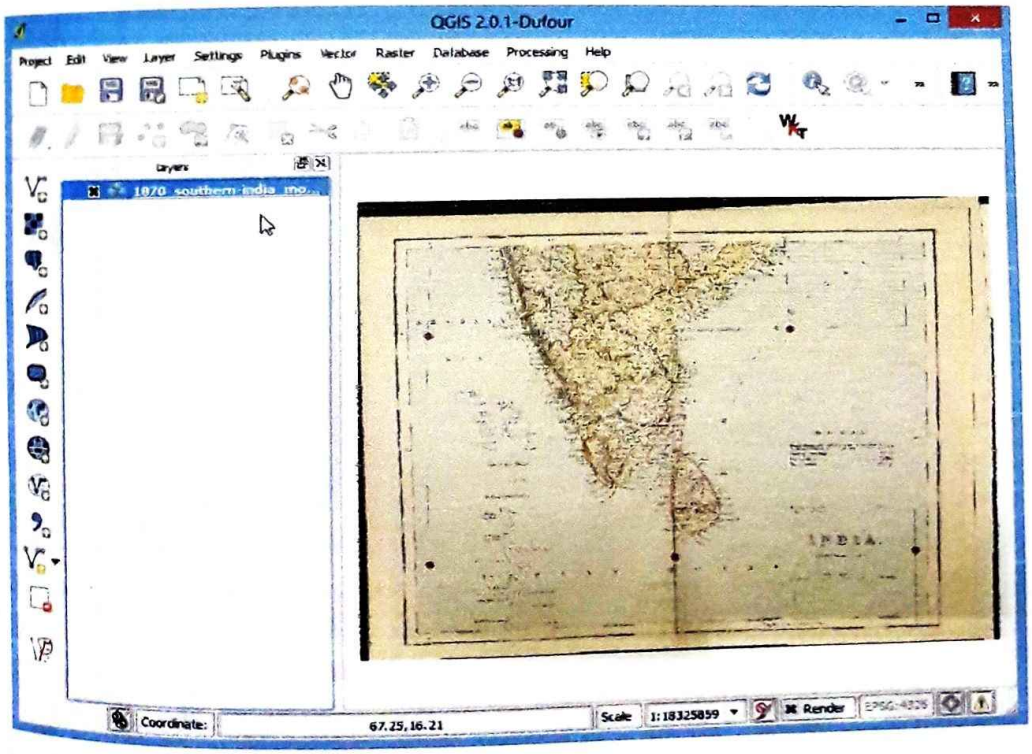
13. In the Transformation settings dialog, choose the Transformation type as Thin Plate Spline. Name your output raster as 1870_southern_india_modified.tif. Choose EPSG:4326 as the target SRS so the resulting image is in a widely compatible datum. Make sure the Load in QGIS when done option is checked. CLickOK.



14. Back in the Georeferencerwindow, go to File › Start georeferencing. This will start the process of warping the image using the GCPs and creating the target raster.



15. Once the process finishes, you will see the georeferenced layer loaded in QGIS.



16. The georeferencing is now complete. But as always, it's a good practice to verify your work. How do we check if our georeferencing is accurate? In this case, load the country boundaries shapefile from a trusted source like the Natural Earth dataset and compare them. You will notice they match up pretty nicely. There is some error and it can be further improved by taking more control points, changing transformation parameters and trying a different datum.