# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

**Deemed to be University**

**(Declared under Distinct Category by Ministry of Education, Govt. of India)**

**NAAC Accredited with A++ Grade**

## Project Report

**on**

# Development of Petrol Management System

A project report submitted in partial fulfilment of the requirement for the degree of

**MASTER IN COMPUTER APPLICATION**

in

**COMPUTER SCIENCE AND ENGINEERING**


**Submitted By:**

Ashutosh Dubey
(0901CA221018)

**Industry Mentor:**

Mr. Vivek Sharma (Reliance Bp Private Limited)

**Faculty Mentor:**

Dr. R. S. Jadon (Professor)

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE
Gwalior – 474005 (MP) Estd.1957


January – June 2024

**Reimagining mobility**

# CERTIFICATE

Dear, Ashutosh Dubey

This is to certify that **Mr. Ashutosh Dubey** has successfully complete the project with us at **Reliance BP MOBILITY Private Limited,** under the designation of software Developer in the information technology department. His project commenced at 1st January 2024 and concluded on 16th April 2024, during which he exhibited commendable conduct and professionalism.

Throughout this project Mr. Ashutosh Dubey actively contributed to the development of the Module, a dynamic web application aimed at enhancing the Admin Module and functionality. His responsibility compassed backend development tasks, include efficient and clean code and integrated various sensor.

We highly recommended to Mr. Ashutosh Dubey to continue pursuing opportunities for skill development and professional growth in the field of software development.

**Reliance BP Mobility Limited**

M/S NEELKANTH SERVICES

Proprietor

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## CERTIFICATE

This is certified that **Mr. Ashutosh Dubey (0901CA221018)** has submitted the project report titled **Development of BP MOBILITY Petrol Management System** under the mentorship of **Mr. Vivek Sharma** (Owner of the NEELKANTH SERVICES), in partial fulfilment of the requirement for the award of degree of **Master IN Computer Application,** submitted in department of Computer Science and Engineering from **Madhav Institute of Technology and Science, Gwalior**.

25/4/24

Dr. R. S. Jadon
(Professor)
Computer Science and Engineering

25/4/24

Dr. Manish Dixit
(Professor and Head)
Computer Science and Engineering

Dr. Manish Dixit
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## DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Master of Computer Application in Computer Science and Engineering at **Madhav Institute of Technology & Science, Gwalior** is an authenticated and original record of my work under the mentorship of **Mr. Vivek Sharma** (Reliance Bp Private Limited).

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.

Ashutosh

Ashutosh Dubey
0901CA221018
2022-2024
Master of Computer Application
Computer Science and Engineering

# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

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## ACKNOWLEDGEMENT

The full semester project has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary project. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering**, for allowing me to explore this project. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

I would like to extend my heartfelt appreciation to **Mr. Vivek Sharma** (Reliance Bp Private Limited) for his exceptional mentorship, guidance, and assistance throughout the project. His valuable input and feedback during the course of the project have helped me enhance my knowledge and skills. His constant encouragement and support have been instrumental in the successful completion of this project.

I am sincerely thankful to my faculty coordinator. I am grateful to the guidance of **Dr. R. S. Jadon**, (Professor), Computer Science and Engineering, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.

Ashutosh

Ashutosh Dubey
0901CA221018
2022-2024
Master of Computer Application
Computer Science and Engineering



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# ABSTRACT

In this website, we handle all the bp system. We handle all the transaction and the staff timing, staff changing, roster and all the related work. Fuel inventory levels can be monitored and managed in real time with help of BP PMS. Fuel deliveries, consumption and losses are monitored, giving valuable information about stock levels and guaranteeing efficient inventory control. Fuel dispensing, payments and invoicing are just a few of the sales transaction that the system makes efficient. For smooth transactions, it integrates with point to sale system and accept a number of payment methods. In this project also used the sensor they indicated the how much fuel left in stock and also, they website manage the fuel filling machine. All facts of gas station operations can be effectively managed with the help of the BP Petrol Management System. The system enables business to improve customer satisfaction, streaming operations, and spur growth in the fiercely competitive fuel industry by offering services like fuel inventory management, customer relationship management and compliance reporting.

I include many languages like HTML, CSS, JAVASCRIPT & PHP and sensor to make this project.

# सार

इस वेबसाइट में, हम सभी बीपी सिस्टम को संभालते हैं। हम सभी लेन-देन और कर्मचारियों के समय, कर्मचारियों को बदलने, रोस्टर और सभी संबंधित कार्यों को संभालते हैं। बीपी पीएमएस की मदद से वास्तविक समय में ईंधन इन्वेंट्री स्तर की निगरानी और प्रबंधन किया जा सकता है। ईंधन वितरण, खपत और नुकसान की निगरानी की जाती है, स्टॉक स्तर के बारे में बहुमूल्य जानकारी दी जाती है और कुशल इन्वेंट्री नियंत्रण की गारंटी दी जाती है। ईंधन वितरण, भुगतान और चालान बिक्री लेनदेन के कुछ हिस्से हैं जिन्हें सिस्टम कुशल बनाता है। सुचारू लेनदेन के लिए, यह पॉइंट टू सेल सिस्टम के साथ एकीकृत होता है और कई भुगतान विधियों को स्वीकार करता है। इस परियोजना में सेंसर का भी उपयोग किया गया, जिससे पता चलता है कि स्टॉक में कितना ईंधन बचा है और साथ ही, वे वेबसाइट ईंधन भरने वाली मशीन का प्रबंधन भी करते हैं। बीपी पेट्रोल प्रबंधन प्रणाली की मदद से गैस स्टेशन संचालन के सभी तथ्यों को प्रभावी ढंग से प्रबंधित किया जा सकता है। यह प्रणाली व्यवसाय को ईंधन इन्वेंट्री प्रबंधन, ग्राहक संबंध प्रबंधन और अनुपालन रिपोर्टिंग जैसी सेवाएं प्रदान करके ग्राहकों की संतुष्टि, स्ट्रीमिंग संचालन में सुधार करने और अत्यधिक प्रतिस्पर्धी ईंधन उद्योग में विकास को बढ़ावा देने में सक्षम बनाती है।

मैंने इस प्रोजेक्ट को बनाने के लिए HTML, CSS, JAVASCRIPT और PHP और सेंसर जैसी कई भाषाओं को शामिल कियाहै।

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# CHAPTER 1

# INTRODUCTION

# CHAPTER 1: INTRODUCTION

Success in the fast-paced petroleum industry of today depends on the effective management of gas stations. Introducing the all-inclusive software solution called BP Petrol Management System (BP PMS), which is intended to improve customer service and streamline operations. Businesses are better equipped to succeed in the cut throat fuel industry thanks to BP PMS, which offers real-time inventory management, smooth transactions, and regulatory compliance. They easily maintenance the all the work to relative the system like staff, transport, sells.

## 1.1 Problem of identification:

1.2.1 Given the complexity of the petroleum industry, pinpointing the exact requirements and difficulties that gas stations and fuel distribution networks face can be a difficult undertaking. Due to their complexity, it can be challenging to identify the precise areas that need attention and development.

1.2.2 Inventory management is one of the main problems. Businesses may find it difficult to optimize inventory levels without real-time visibility into fuel stock levels, deliveries, and consumption patterns. This could result in excess inventory costs or stockouts that negatively affect customer satisfaction.

1.2.3 Furthermore, the possibility of equipment failure greatly impacts the operations of gas stations. In the absence of equipment management protocols and proactive maintenance, businesses run the risk of disruptions that could negatively impact operations, profitability and safety.

1.2.4 It manages all the staff time, regulation and payroll through this website it easily to maintenance.

## 1.2 Parent Organization:

### Reliance bp mobility private limited:

Dependency As a leading supplier of petroleum solutions, BP Mobility Limited is committed to breaking new ground in ways that promote efficiency and sustainability in the energy industry. With an emphasis on quality and a global presence, we are dedicated to providing innovative solutions that will transform the petroleum industry going forward.

Reliance BP Mobility Limited, a joint venture between two energy industry titans, Reliance Industries Limited and BP, is ideally positioned to spearhead the transition to a cleaner, more sustainable energy

future. From production and refining to distribution and exploration, our portfolio offers a broad range of petroleum solutions.

Our work at Reliance BP Mobility Limited is driven by innovation. By adopting cutting-edge technologies and industry best practices, we consistently work to stay ahead of the curve and make sure that our solutions are at the forefront of the petroleum industry.

Because of our client-centric philosophy, we put the needs of our customers first. We are dedicated to providing customized solutions that go above and beyond the expectations of our clients, who come to us with specific needs spanning a variety of industries. Reliance BP Mobility Limited is committed to supporting our clients in thriving in the ever-changing energy market, whether that means creating cutting-edge energy solutions, improving fuel distribution networks, or streamlining refinery operations.

In conclusion, Reliance BP Mobility Limited is a reliable partner dedicated to promoting sustainability and innovation in the energy industry, not just a supplier of petroleum. In the quickly evolving world of today, we are positioned to be the go-to option for businesses looking for revolutionary petroleum solutions thanks to our knowledge, commitment, and customer-focused attitude.

## 1.3 About of software and hardware are requirements:

To ensure the optimal performance and reliability of the BP Management Module, careful consideration of both hardware and software specifications is imperative. Below are the recommended specifications for deploying and operating the BPMS effectively:

**a. Hardware Specifications:**

i. **CPU**: Quad-core processor or higher to handle concurrent requests efficiently.
ii. **RAM**: Minimum 8 GB RAM.
iii. **Storage**: SSD storage for improved data access speed and responsiveness.
iv. **Internet**: Reliable internet connection to facilitate remote access and software updates
v. **Network**: Network infrastructure capable of handling data transfer and communication between servers and client devices.

**b. Software Specifications**:

i. **Operating System**: Linux (Ubuntu) or Windows Server depending on organizational choices and combability.
ii. **Web Server**: Apache HTTP Server or Nginx for web application hosting.

iii. **Database**: MySQL as the relational database management system (RDBMS) used to hold application information and adult data.

iv. **Programming Language and Frameworks**: Choose a suitable programming language and web application framework for developing the LMS.

v. **Authentication and Authorization**: Implementation of secure authentication mechanisms using JSON Web Tokens (JWT) to ensure authorized access to the LMS.

These hardware and software specifications lay the foundation for a robust and reliable BP Management Module, capable of meeting organizational audit requirements effectively and efficiently. By adhering to these recommendations, organizations can ensure the seamless operation and performance of their BP Management System.

# CHAPTER 2

# SYSTEM ANALYSIS

# CHAPTER 2: SYSTEM ANALYSIS

## 2.1. Problem Analysis

Within the field of petroleum management, current systems frequently face a multitude of inefficiencies and difficulties that impede seamless operations and sound decision-making. Resolving these concerns is essential to maximizing the use of available resources, guaranteeing adherence to legal requirements, and reducing the risks related to the handling and distribution of petroleum products.

a. **Ineffective Resource Management:** A lot of petroleum management system don't have the integrated features needed to manage resources like crude oil, refined products, and storage facilities in an efficient manner. Because of this fragmentation, inventory tracking, procurement planning, and utilization optimization become inefficient, raising operating costs and lowering profitability.

b. **Data Silos and Manual Processes:** Traditional petroleum management systems frequently rely on disjointed data silos and manual processes, which makes it challenging to obtain real-time insights and information. This impairs the ability to make decisions and makes it more difficult to react quickly to changes in the market, interruptions in the supply chain, and other important events.

c. **Challenges with Compliance and Regulation:** Safety, environmental preservation, and operational integrity are the main goals of industry standards and regulatory requirements that apply to petroleum operations. Organizations run the risk of non-compliance fines and reputational harm because many current systems are unable to keep up with the rapidly changing regulations and may not have the necessary features for tracking compliance, reporting incidents, and conducting audits.

d. **Limited Visibility and Analytics**: Organizations are unable to obtain meaningful insights into their petroleum operations due to inadequate data visibility and analytics capabilities. Organizations may find it difficult to spot trends, streamline procedures, and reach well-informed strategic decisions in the absence of comprehensive analytics tools, which could lead to lost opportunities for cost and efficiency savings.

In summary, ineffective resource management, manual procedures, problems with compliance and regulations, a lack of visibility and analytics, and security concerns are some of the difficulties that come with using traditional petroleum management systems. The adoption of cutting-edge, integrated, and secure petroleum management solutions is necessary to meet these challenges. These solutions help businesses make data-driven decisions, improve compliance, optimize resource utilization, and streamline operations.

## 2.2. Feasibility Study

A thorough feasibility study is essential to determining the Petroleum Management System (PMS) project's viability and likelihood of success. This assessment examines a number of factors to ascertain whether the suggested system is technically, financially, and operationally feasible. An overview of the PMS project's feasibility study can be found below.

**a. Economic Feasibility:** The process of determining whether the benefits of implementing the PMS outweigh the costs associated with its development, deployment, and maintenance is known as economic feasibility. It involves estimating project costs, such as software development, infrastructure setup, employee training, and continuing support, and comparing them to projected benefits like cost savings, increased productivity, and improved regulatory compliance.

i. **Cost Savings**: By streamlining the petroleum inventory management procedures, the PMS will save labor expenses and maximize resource use.

ii. **Enhanced Efficiency**: By automating repetitive tasks and streamlining workflows, operational efficiency will be increased, lowering costs and raising output.

iii. **Compliance Assurance:** By facilitating adherence to industry best practices and regulatory standards, the system will reduce the risk of fines and legal repercussions for non-compliance.

iv. **Decision Support:** Having access to real-time data analytics and reporting tools will enable stakeholders to take well-informed decisions that will propel the expansion and success of the company.

v. **Lower Inventory Holding Costs:** The PMS is anticipated to reduce inventory holding costs by 15% over time, resulting in significant cost savings through optimized inventory management and demand forecasting.

For the PMS to be considered economically feasible, it is necessary to make sure that the projected benefits outweigh the project costs. To achieve economic viability, careful cost control and precise benefit estimation are essential. Furthermore, it is crucial to follow the 180-day schedule in order to avoid delays that might affect the project's overall viability and economic viability.

**b. Technical feasibility:** Technical viability assesses the availability and practicality of the technology needed for the Petroleum Management System (PMS) project. This assessment entails analyzing the PMS module's technical requirements, determining its compatibility with current systems, and assessing the availability of qualified resources.

i. **Compatibility with Current System**: The enterprise software development community has long-established and extensively utilized the technologies chosen for the PMS, including Php, JavaScript, MySQL. Their strong functionality, scalability, and compatibility with contemporary infrastructure guarantee a smooth integration with the current systems and technologies used by the petroleum industry.

ii. **The Availability of Skilled Resources**: Because of the industry's demand and popularity for these technologies, there is a large pool of skilled professionals with expertise in Php, JavaScript, MYSQL. The hiring and training of developers is further made easier by a wealth of online resources, documentation, and community support, which guarantees that the project will have access to the talent pool required for the successful implementation and upkeep of the PMS module.

By evaluating technical viability, one can be sure that the selected technologies are compatible with the infrastructure, long-term scalability, and project requirements. Given that the chosen technologies are compatible, robust, and have a large pool of trained personnel at their disposal, the PMS project is well-positioned to attain technical viability and successfully tackle the technological obstacles that come with petroleum management systems.

**c. Behavioral Feasibility:** The Petroleum Management System (PMS) project employs a number of crucial tactics in order to minimize resistance to change and prioritize user acceptance:

**i. User-Centric Interface**: The PMS has an intuitive user interface that makes petroleum management tasks easier for users of all skill levels. Because of its familiar navigation patterns and ease of use, the interface lowers learning curves and improves usability.

**ii. Training and Support**: To enable users to make the most of the PMS, a wealth of training materials and support resources are offered. These resources, which guarantee that users have the knowledge necessary to utilize the system effectively, include user manuals, video tutorials, and assistance materials.

**iii. Continuous Improvement**: To collect user feedback on a regular basis, the PMS is equipped with feedback mechanisms. The PMS seeks to continuously enhance user satisfaction and experience by actively listening to user suggestions and implementing enhancements based on user needs.

**iv. User Engagement:** To collect user feedback on a regular basis, the PMS is equipped with feedback mechanisms. The PMS seeks to continuously enhance user satisfaction and experience by actively listening to user suggestions and implementing enhancements based on user needs.

The PMS project attempts to encourage user acceptance and confidence in the system by concentrating on the user experience and addressing the human aspects of technology adoption. By using a behavioral feasibility approach, users can quickly become accustomed to the new system and optimize its benefits for processes related to petroleum management.

**d. Operational Feasibility**: For the Petroleum Management System (PMS) to be effectively adopted and used, operational viability is essential. The operational feasibility of the PMS project is influenced by the following factors:

i. **Seamless Integration**: The PMS module easily interfaces with the organization's IT infrastructure's current tools and systems, such as financial platforms and inventory management systems. By guaranteeing compatibility and data consistency across multiple platforms, this simplifies processes and boosts productivity.

ii. **Role-Based Access Control**: Organizations can define user roles and permissions according to their responsibilities by using the PMS's powerful role-based access control features. By guaranteeing that users only have access to pertinent petroleum management data and functionalities, this fine-grained access control improves security and compliance.

iii. **Comprehensive Reporting and Analytics**: Organizations can obtain important insights into petroleum inventory, sales, and distribution processes by utilizing the PMS's robust reporting and analytics features. By utilizing real-time data through customizable reports and dashboards, decision-makers can improve operational efficiency and strategic planning while making well-informed business decisions.

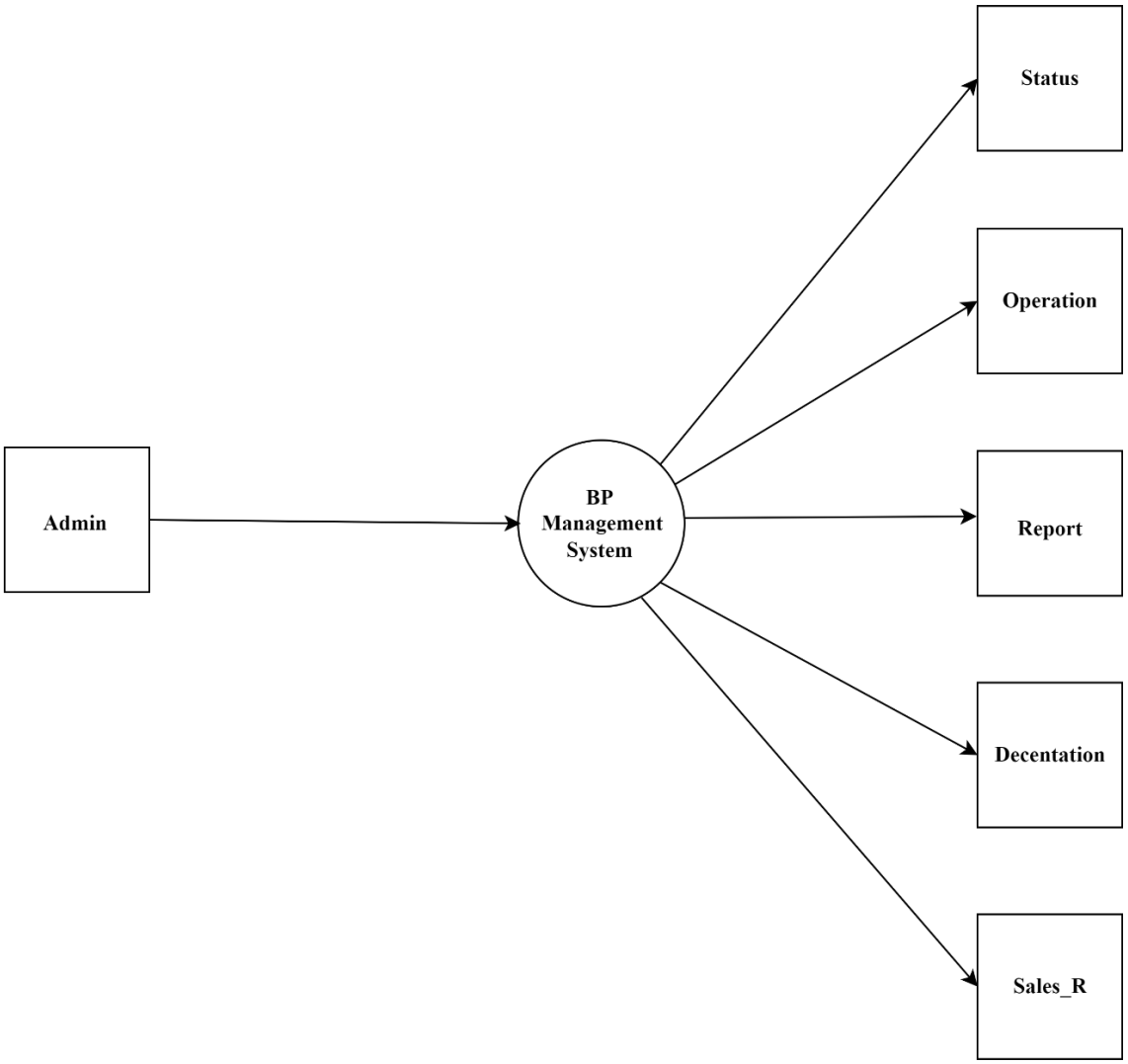
iv. **Scalability and Flexibility**: The PMS module's design enables it to adapt to the changing requirements and expansion of petroleum companies. The PMS gives you the flexibility to meet changing business needs with ease, whether it's scaling to accommodate higher transaction volumes or adjusting to new regulations.

The PMS guarantees easy implementation, seamless integration and efficient utilization within petroleum organizations by taking these operational factors into account. To get the most out of the PMS and promote operational excellence in the petroleum management procedures, operational viability is crucial.

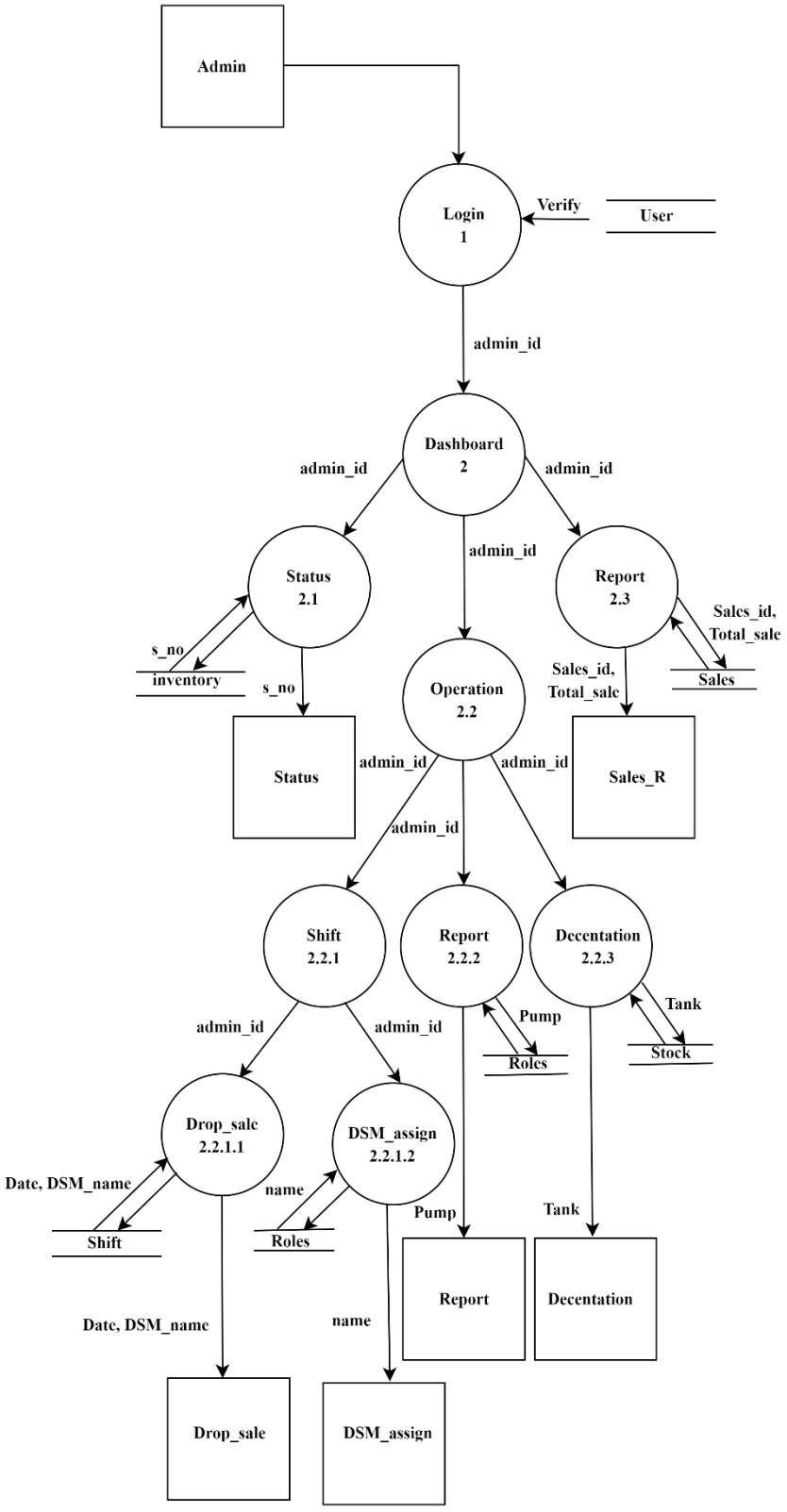
To sum up, the Petroleum Management System project's feasibility study has shed light on the project's operational, financial, and technical viability. The analysis has pointed out possible hazards and difficulties as well as areas in need of improvement and optimization. Going forward, overcoming possible obstacles and maximizing the project's chances of success will require cautious planning, wise resource allocation, and ongoing monitoring.

## 2.3 Data Flow Diagram

### a. Level – 0 DFD: -



**a. Level – 1 DFD for Admin: -**

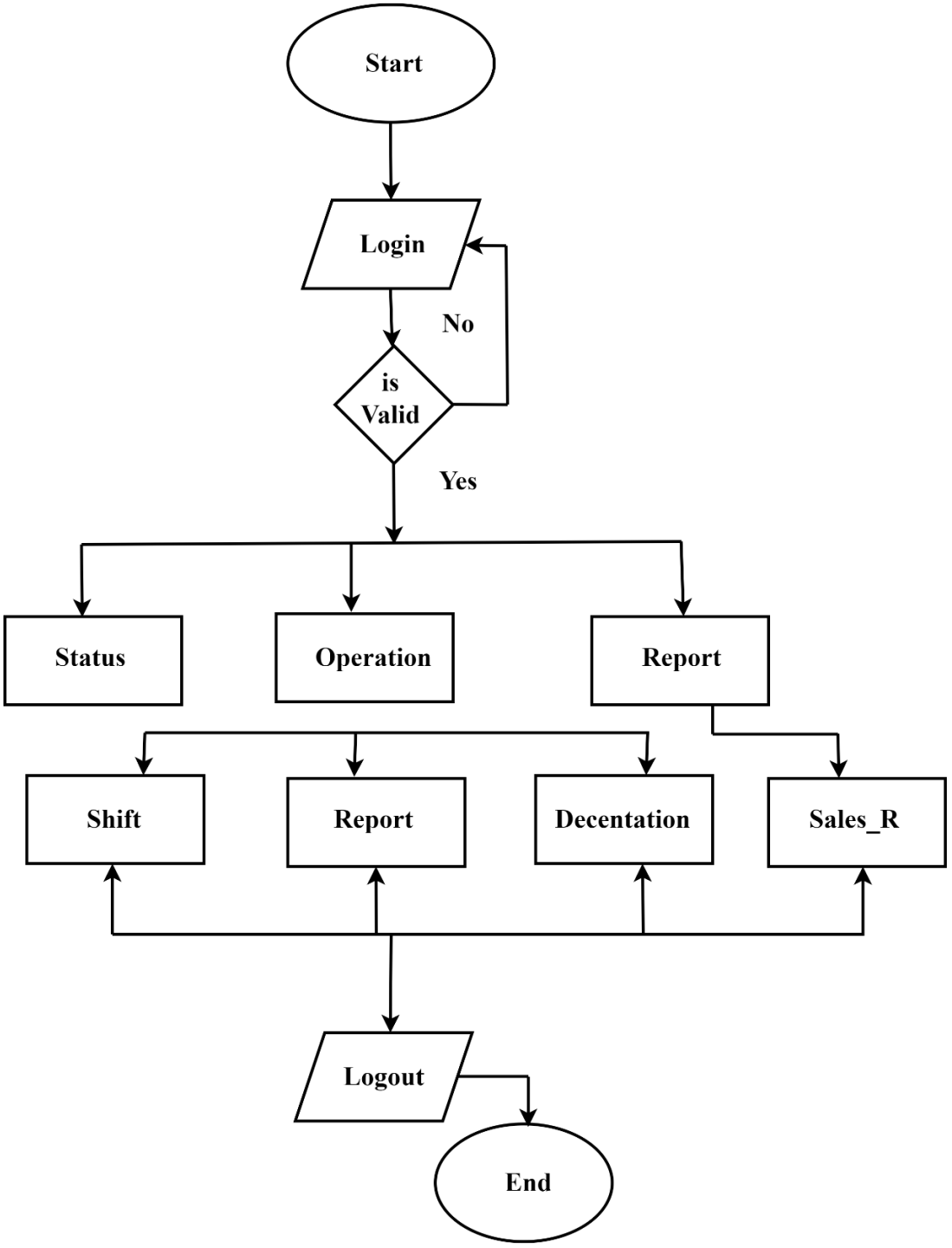


# CHAPTER 3

# SYSTEM DESIGN

# CHAPTER 3: SYSTEM DESIGN

## 3.1 System Flowchart



## 3.2 Database Table

**Role Table**

| Table 1: Role | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding Role** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | DSM_id | int (20) | PK | Hold unique id of DSM_id |
| 2 | DSM_name | Char (20) | Not null | Hold DSM_name |
| 3 | Position | Char (20) | Not null | Hold Position |
| 4 | Pump | Varchar (20) | Not null | Hold Pump |

**Sales Table**

| Table 2: Sales | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding Sales** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | Sales_id | int (20) | PK | Hold unique id of Sales_id |
| 2 | Product | Char (20) | FK | Hold Product |
| 3 | Unit | int (20) | Not null | Hold Unit |
| 4 | Total_sale | int (20) | Not null | Hold Total_sale |

**Inventory Table**

| Table 3: Inventory | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding Sales** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | S_no | int (20) | PK | Hold unique id of S_no |
| 2 | Tank | Varchar (20) | FK | Hold Tank |
| 3 | Accessory | Varchar (20) | Not null | Hold Accessory |

**Shift Table**

| Table 4: Shift | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding Shift** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | Date | Date | PK | Hold unique id of Date |
| 2 | DSM_name | Char (20) | Not null | Hold DSM_name |
| 3 | Cash | int (20) | Not null | Hold Cash |
| 4 | Fleet | Char (20) | Not null | Hold Fleet |
| 5 | Credit | int (20) | Not null | Hold Credit |
| 6 | Dealer | int (20) | Not null | Hold Dealer |
| 7 | Coupon | Varchar (20) | Not null | Hold Coupon |
| 8 | Total_sales | int (20) | Not null | Hold Total_sales |
| 9 | Cash_deposited | int (20) | Not null | Hold Cash_deposited |

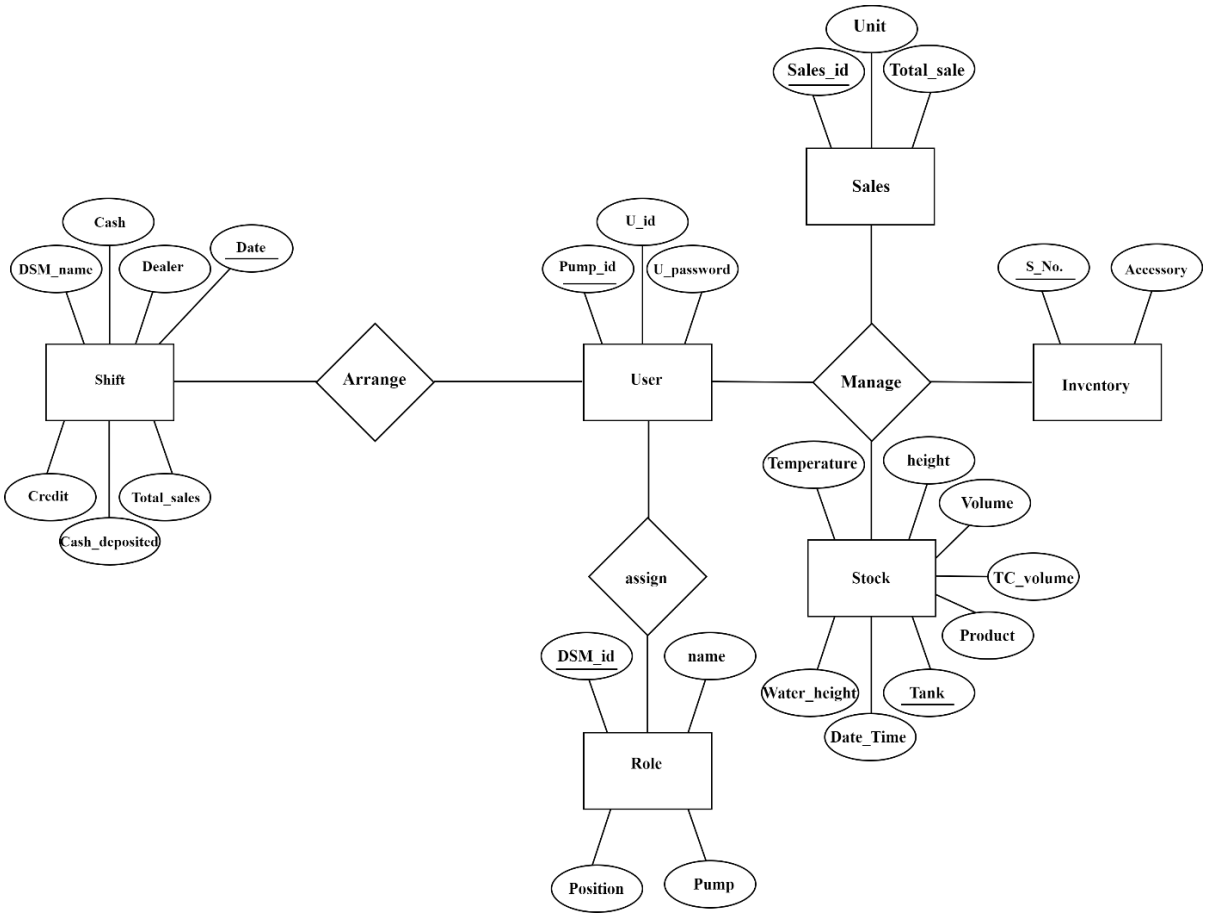
**Stock Table**

| Table 5: Stock | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding Stock** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | Date_Time | Date_Time | Not null | Hold unique id of Date_Time |
| 2 | Tank | Varchar (20) | PK | Hold Tank |
| 3 | Product | Char (20) | Not null | Hold Product |
| 4 | Volume | int (20) | Not null | Hold Volume |
| 5 | TC_volume | int (20) | Not null | Hold TC_volume |
| 6 | Height | int (20) | Not null | Hold Height |
| 7 | Temperature | int (20) | Not null | Hold Temperature |
| 8 | Water_height | int (20) | Not null | Hold Water_height |

**User Table**

| Table 6: User | | | | |
|---|---|---|---|---|
| **Description** | | **Record information regarding User** | | |
| **S.No.** | **Field Name** | **Field Type** | **Constraints** | **Description** |
| 1 | Pump_id | Varchar (20) | PK | Hold unique id of Pump_id |
| 2 | User_id | Varchar (20) | Not null | Hold User_id |
| 3 | User_password | Varchar (20) | Not null | Hold User_password |

## 3.3 Entity Relationship Diagram



# CHAPTER 4

# TESTING

# CHAPTER 4: TESTING

Testing is the process of evaluating an application or system to detect defects, bugs, errors and other issue that may affect its quality, reliability or functionality. It involves running the application in a controlled environment to verify that it behaves as expected, and comparing its actual results its intended results. The main objective of testing is to ensure that the application meets the requirements and specifications set forth by its users or customers, and that it performs the tasks it is designed to do in a consistent, reliable and efficient manner. So here we are using three testing approaches to check that the developed system met the specified requirements or not.

## 4.1 Unit Testing:

Unit testing is an essential part of the testing process. It involves testing individual code components or unit to verify that they perform as expected and meet their intended requirements. For BPMS project following units have been tested individually:

### 1.1.1 MODULE/SECTION: Login

**Section ID: L**

**Test Case: Mandatory test (Unit test)**

**Test Result**

| Test Case id | Section | Element name | Test data | Expected result | Actual Result |
|---|---|---|---|---|---|
| L1-1 | admin Login | email, password | No Data | Please fill out this field. | Test case passed. |
| | | email, password | Administrator/****** | Error Occurred. | Test case passed. |
| | | email, password | admin/***** | Successfully logged in. | Test case passed. |
| L1-2 | Drop safe | amount | No Data | Please fill out this field. | Test case passed. |
| | | amount | Filling | Successfully added | Test case passed. |

## 4.2 Integration Testing:

Integration testing is a type of software testing website that verifies the interaction and integration between different module or components. The main objective of integration testing is to ensure that individual modules work correctly when integrated and interact with each other as expected. Integration testing helps to identify defects, errors and other issues that may arise due to the interaction between modules. Integration testing can be done manually or using automated tools and frameworks. We have done integration testing manually. The following modules have tested using integration testing.

## 4.3 System Testing:

System Testing is a comprehensive software testing phase where the entire integrated system is tested as a whole to validate its behavior and functionality against specifies requirements.

**a. Functional Testing:** Functional Testing involves validating that each function of software application operates as expected, adhering to defined requirements and specification.

| Test Case ID | Test Case Scenario | Input / Test Data | Pass Condition | Fail Condition | Test Result |
|---|---|---|---|---|---|
| **ST-FT--01** | Search Functionality | Enter specific keyword related to audit plan. | Relevant audits are displayed. | Irrelevant record or error displayed | Pass |
| **ST-FT-02** | Filter Functionality | Select filter options such as audit plan status or date range. | Audit Plan are filtered. | Filter option doesn't work. | Pass |
| **ST-FT-03** | Pagination Functionality | Pagination control allow users to navigate through multiple pages of audit result. | Users can navigate through pagination control. | Pagination control doesn't allow users to navigate. | Pass |
| **ST-FT-04** | Reporting Functionality | Select Reporting Criteria. | Generated Report contains accurate and meaningful insights. | Inaccurate or false information present. | Pass |

**b. Non-Functional Testing:** Non-functional testing focusses on evaluating aspects such as performance, usability, security and error handling of software ensuring it meets quality attributes beyond functional requirements.

**i. Performance Testing:**

| Test Case ID | Test Case Scenario | Test Description | Pass Condition | Fail Condition | Test Result |
|---|---|---|---|---|---|
| **ST-NFT-01** | Response Time Testing | Measure System Response Time | Responses are generated within acceptable time frames. | Response time exceeds threshold. | Pass |
| **ST-NFT-02** | Load Testing | Evaluate system performance under load | System handles unexpected load. | System crashes. | Pass |

**ii. Usability Testing:**

| Test Case ID | Test Case Scenario | Test Description | Pass Condition | Fail Condition | Test Result |
|---|---|---|---|---|---|
| **ST-NFT-03** | User Interface Testing | Evaluate UI Design and Usability | User can easily navigate through system and perform task without confusion and frustration. | UI is cluttered and confusing, leading to errors and user dissatisfaction. | Pass |

**iii. Error Handling Testing:**

| Test Case ID | Test Case Scenario | Test Description | Pass Condition | Fail Condition | Test Result |
|---|---|---|---|---|---|
| **ST-NFT-04** | Exceptional Handling Testing | Evaluate system's response to exceptions. | System handles the exceptions gracefully and provide meaningful error messages. | System crashes or data loss occurs. | Pass |

**iv. Security Testing:**

| Test Case ID | Test Case Scenario | Test Description | Pass Condition | Fail Condition | Test Result |
|---|---|---|---|---|---|
| **ST-NFT-05** | Authentication Testing | Verify User Authentication | Users are granted access only with valid credentials. | Allowing unauthorized access. | Pass |
| **ST-NFT-06** | Authorization Testing | Test Access Controls | User can access only the resources authorized for their roles and permissions. | Users can access unauthorized resource and perform unauthorized actions, indicating a failure in access controls. | Pass |

# CHAPTER 5

# IMPLEMENTATION

# CHAPTER 5: IMPLEMENTATION

Firstly, we need to install some IDE software for implementing our project which are as follows: -

## 5.1 Visual Studio Code:

6.1.1 Go to the official Visual Studio Website:

https://visualstudio.microsoft.com/downloads/

6.1.2 Click on the "Download" button for the version of Visual Studio you want to install.

6.1.3 Choose the components you want to install, such as language, frameworks, and tools.

6.1.4 Click on the "Install" button to the start the installation process.

6.1.5 Follow the installation wizard and select the options that suit your needs.

## 5.2 PHP:

6.2.1 Setup the PHP development server like XAMPP. Choose the integrated development environment or code editor for writing PHP code, such as Visual Studio Code.

6.2.2 The project involves interacting with the database, design the database schema. Determine the tables, fields and relationship between them. Choose the database management system (DBMS) such as MYSQL.

6.2.3 Create the necessary PHP files to handle different parts of your project. Implement the core functionally using PHP, including handing forms, processing user inputs and interacting with database. Use the HTML and CSS create user interface.

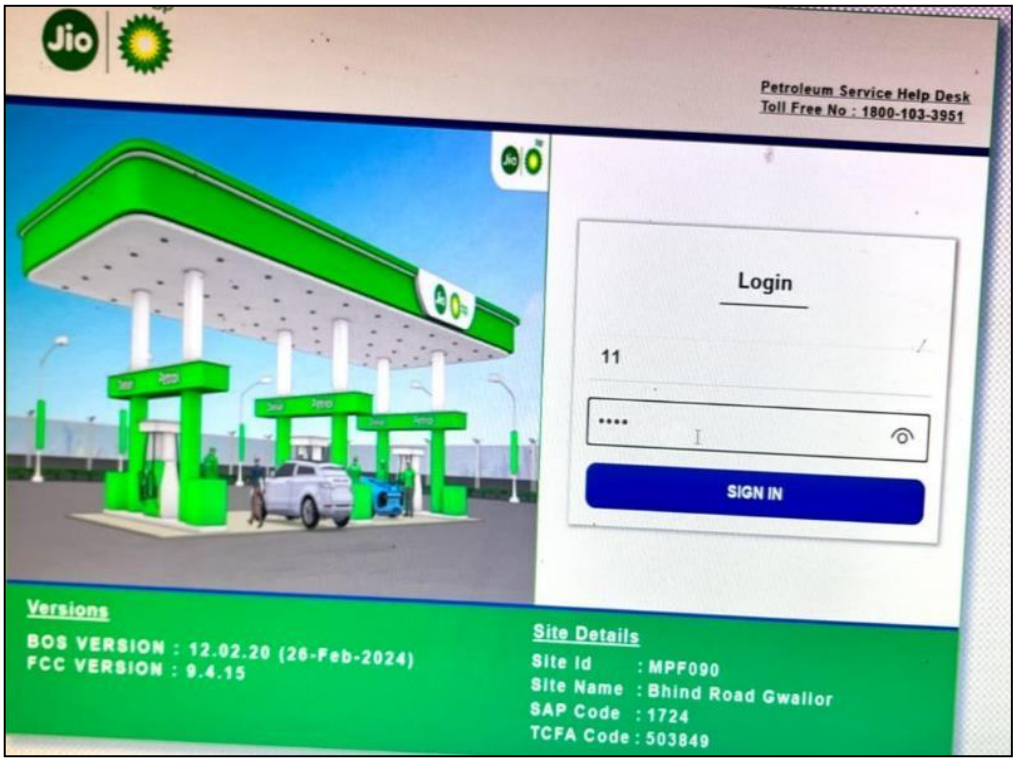
6.2.4 We used MYSQL in localhost through XAMPP or web browser.

# CHAPTER 6

# SAMPLE FORMS AND REPORTS

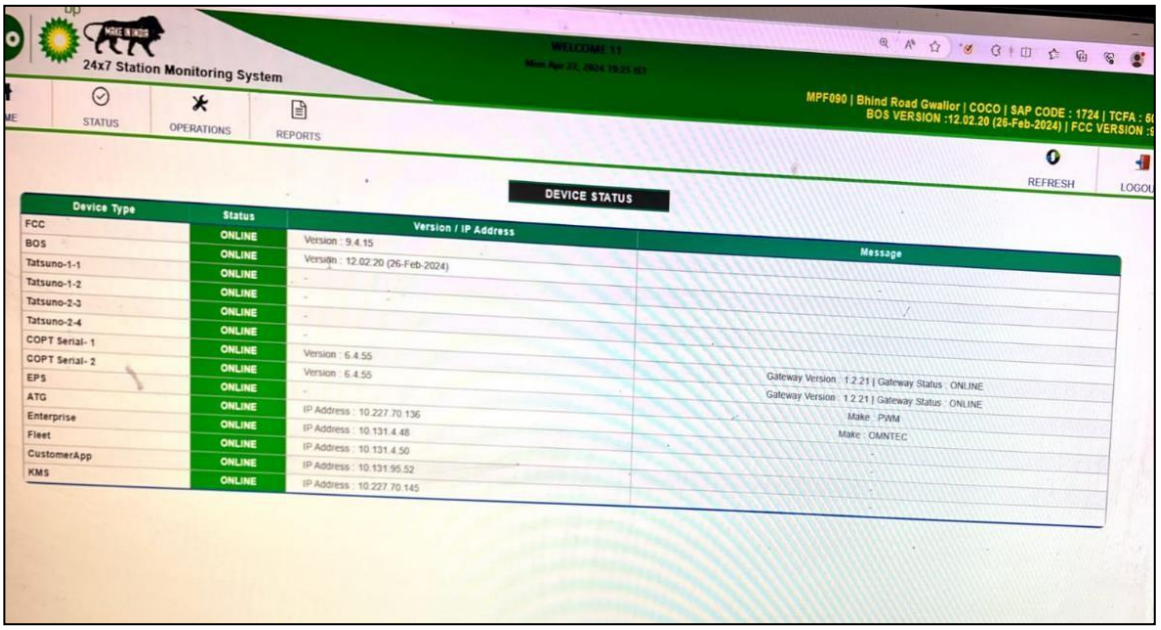
# CHAPTER 6: SAMPLE FORMS AND REPORTS

## 6.1 Login Page

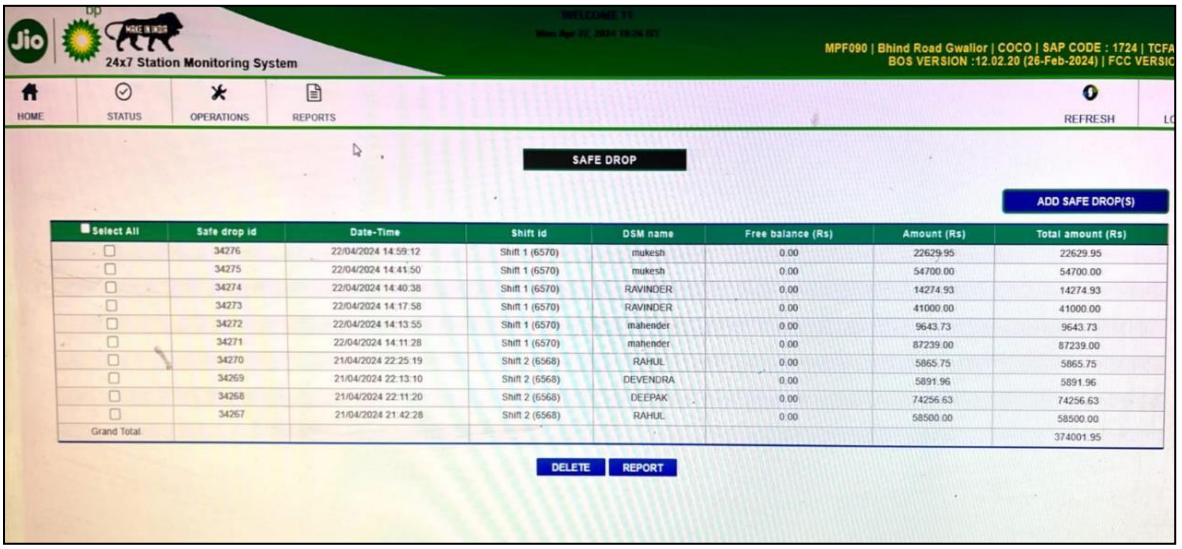



## 6.2 Home Page

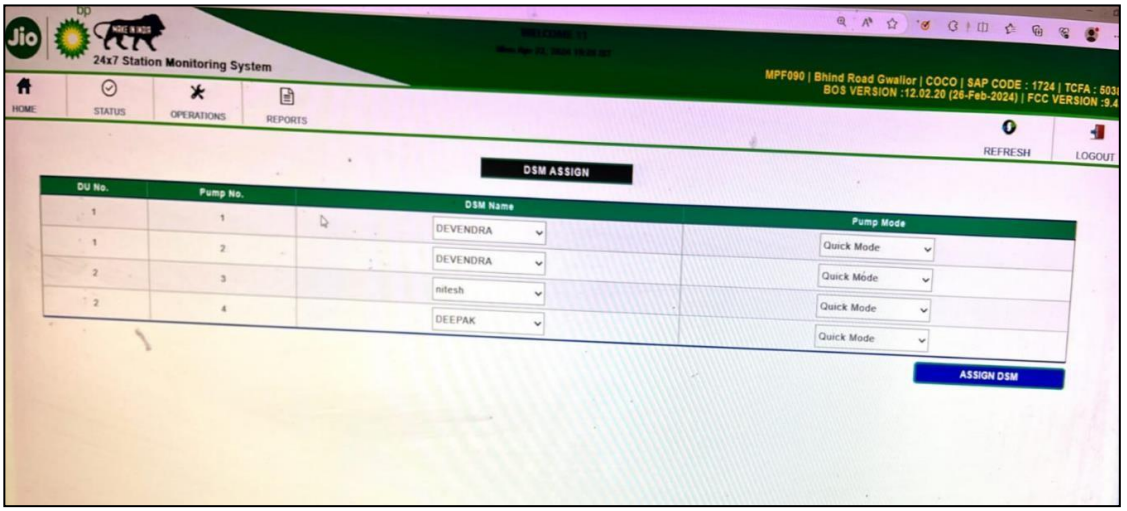
## 6.3 Device Status



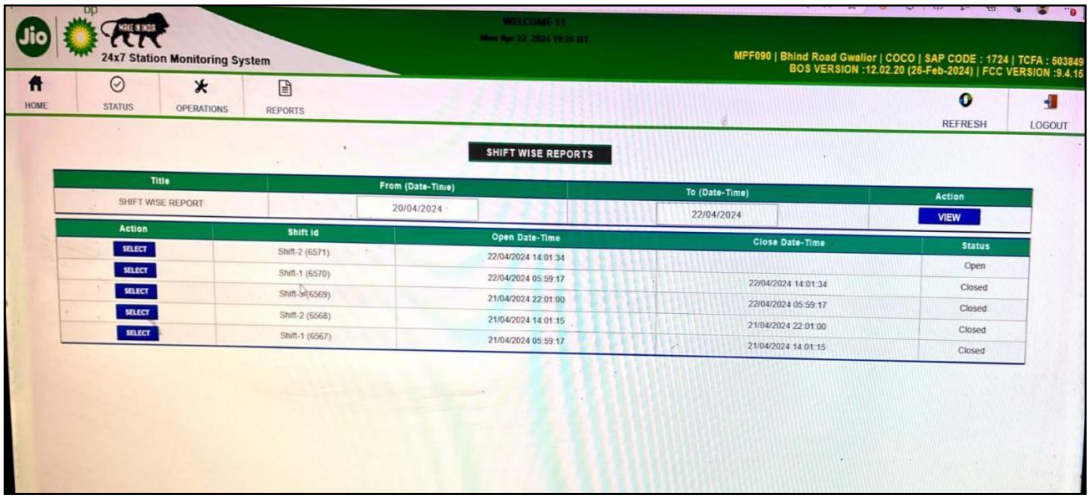

## 6.4 Safe Drop



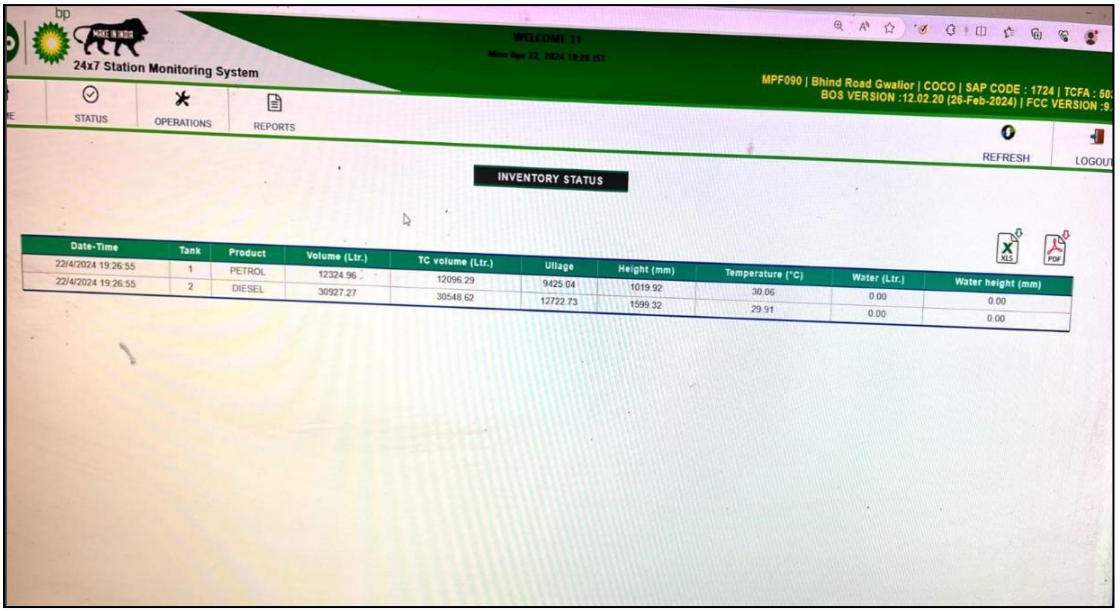
## 6.5 DSM Assign



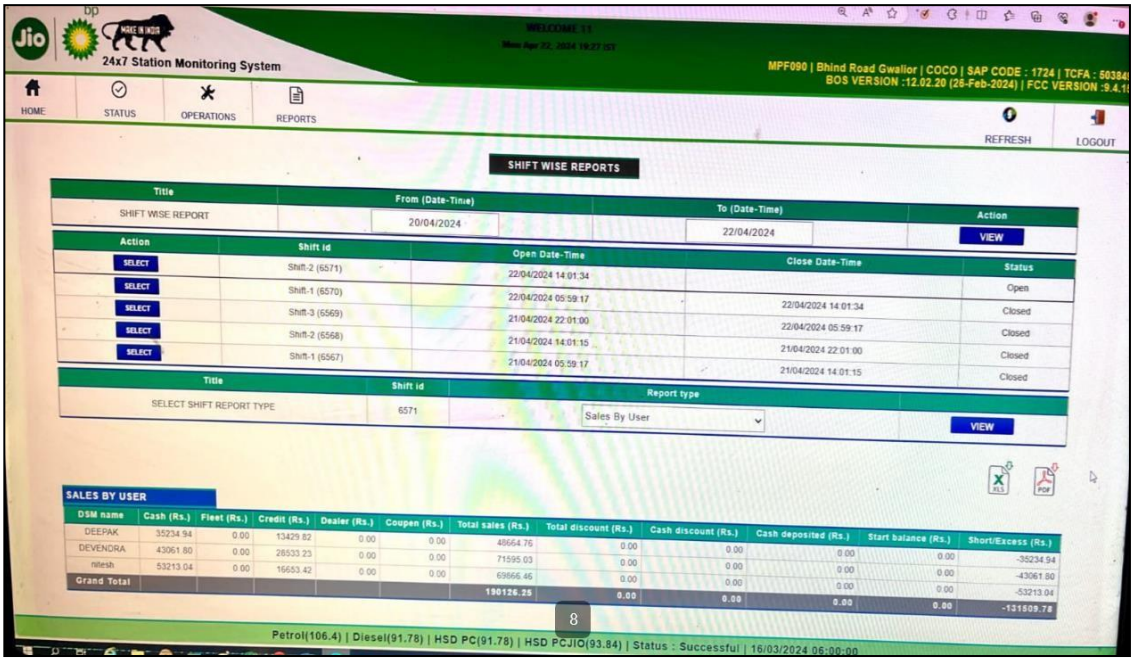

## 6.6 Shift Wise Reports



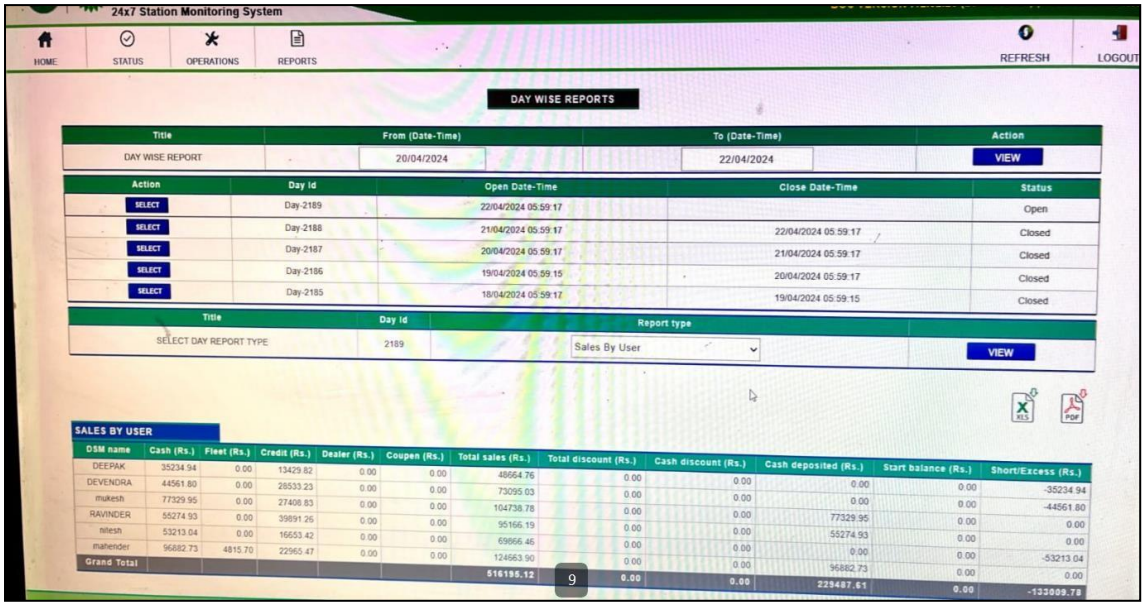
## 6.7 Inventory Status




## 6.8 Shift Wise Report



## 6.9 Day Wise Reports



# CHAPTER 7

# CONCLUSION

# CHAPTER 7: CONCLUSION

To sum up, the process of creating the Petroleum Management System (PMS) has involved a great deal of commitment, creativity, and persistence. Our team has successfully navigated various obstacles and intricacies during the process to produce a solid and effective petroleum management solution.

The petroleum industry faces several critical issues that are addressed by the PMS, such as ineffective resource management, difficulties with compliance, and restricted visibility into operational data. The PMS enables enterprises to improve decision-making, expedite operations, and maintain regulatory compliance by supplying role-based access control, seamless integration with current systems, and extensive reporting and analytics features.

All things considered, the Petroleum Management System is a big step toward modernizing petroleum management procedures, promoting operational excellence, and helping businesses prosper in a sector that is changing quickly. We are dedicated to providing creative solutions that address the changing demands of the petroleum industry and support its long-term prosperity as we work to improve and refine the system.

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- https://www.w3school.com/

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Summary

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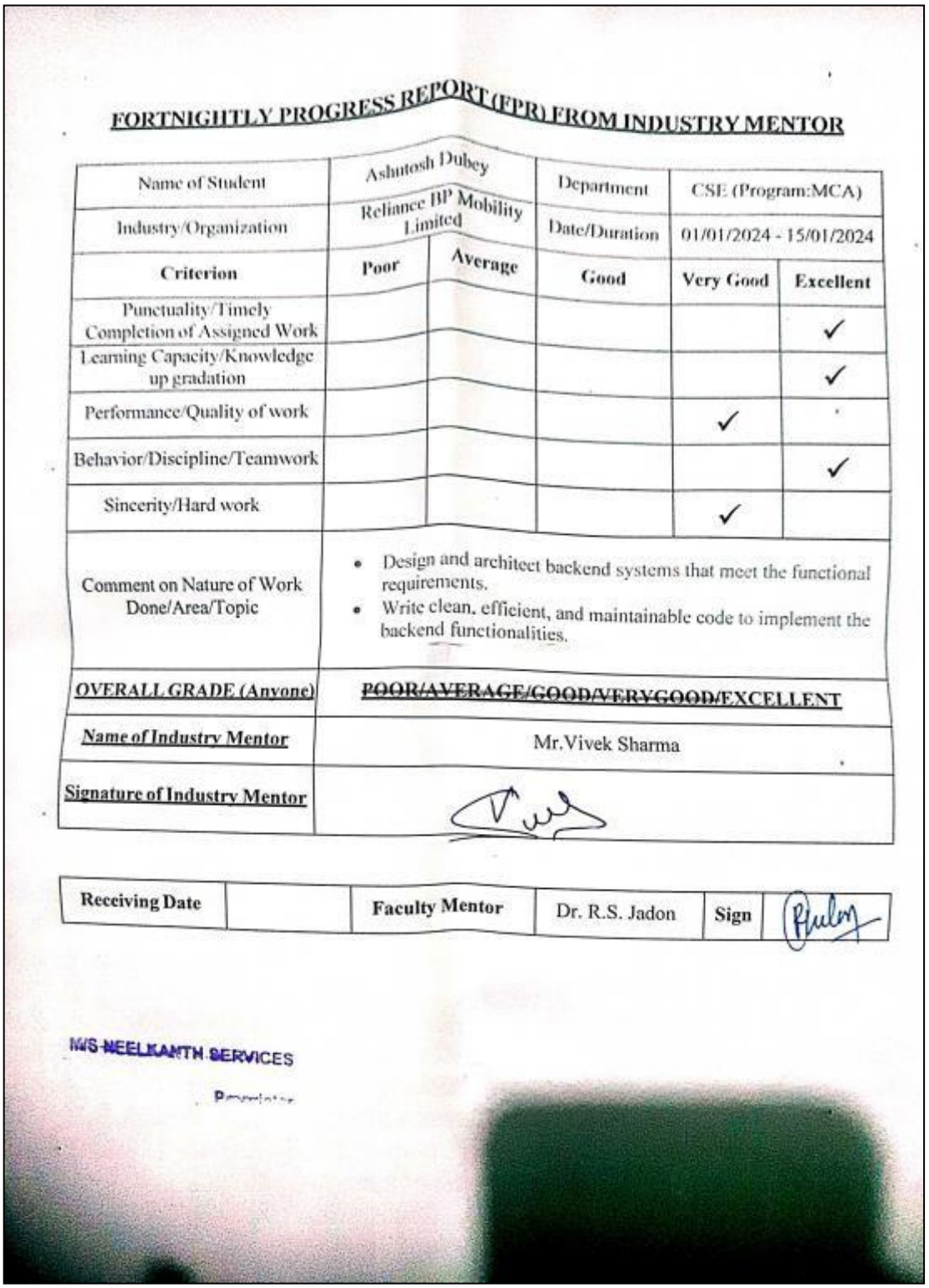

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| **Criterion** | **Poor** | **Average** | **Good** | **Very Good** | **Excellent** |
| Punctuality/Timely Completion of Assigned Work | | | | | ✓ |
| Learning Capacity/Knowledge up gradation | | | | | ✓ |
| Performance/Quality of work | | | | ✓ | |
| Behavior/Discipline/Teamwork | | | | | ✓ |
| Sincerity/Hard work | | | | ✓ | |
| Comment on Nature of Work Done/Area/Topic | • Design and architect backend systems that meet the functional requirements.<br>• Write clean, efficient, and maintainable code to implement the backend functionalities. | | | | |
| ***OVERALL GRADE (Anyone)*** | ~~POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT~~ | | | | |
| ***Name of Industry Mentor*** | Mr.Vivek Sharma | | | | |
| ***Signature of Industry Mentor*** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Receiving Date** | | **Faculty Mentor** | Dr. R.S. Jadon | **Sign** | |

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| Industry/Organization | Reliance BP Mobility Limited | | Date/Duration | 16/01/2024 - 31/01/2024 | |
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| Punctuality/Timely Completion of Assigned Work | | | | ✓ | |
| Learning Capacity/Knowledge up gradation | | | | | ✓ |
| Performance/Quality of work | | | | ✓ | |
| Behavior/Discipline/Teamwork | | | | | ✓ |
| Sincerity/Hard work | | | | | ✓ |
| Comment on Nature of Work Done/Area/Topic | • Design and architect backend systems that meet the functional requirements.<br>• Write clean, efficient, and maintainable code to implement the backend functionalities. | | | | |
| **OVERALL GRADE (Anyone)** | ~~POOR/AVERAGE/GOOD/VERYGOOD/EXCELLENT~~ | | | | |
| **Name of Industry Mentor** | Mr.Vivek Sharma | | | | |
| **Signature of Industry Mentor** | | | | | |

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| Performance/Qualityofwork | | | | ✓ | |
| Behavior/Discipline/Teamwork | | | | ✓ | |
| Sincerity/Hardwork | | | | ✓ | |
| CommentonNatureofWorkDone/Area/Topic | • Designandarchitectbackendsystemsthatmeetthefunctionalrequirements.<br>• Writeclean,efficient,andmaintainablecodetoimplementthebackendfunctionalities. | | | | |
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