Tribhuvan University

Faculty of Humanities and Social Sciences

Project Management System

A PROJECT REPORT

Submitted to

Department of Computer Application

D.A.V. College

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted by

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Under the Supervision of

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Supervisor's Recommendation

I hereby recommend that this project prepared under my supervision by AMIT MAHATO entitled "**Project Management System"** in partial fulfillment of the requirements for the degree of Bachelor of Computer Application isrecommended for the final evaluation.

Mr. Sudip Adhikari

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LETTER OF APPROVAL

This is to certify that this project prepared by AMIT MAHATO entitled "**Project Management System"** in partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

Mr. Sudip Adhikari Faculty Member Bachelors in Computer Application Jawalakhel, Lalitpur	Mr. Shashi Bhushan Chaturvedi Coordinator Bachelors in Computer Application Jawalakhel, Lalitpur
Internal Examiner	**External Examiner**

Abstract

A Project Management System is like a smart hub that brings all your projects together, making it easy to organize and collaborate. It simplifies the complexity of managing projects, turning it into a smooth and successful process. The main aim of project management system is to work in team for doing their tasks and coordination between project foreman and their teams to manage projects and tasks towards the same goal. Task management focuses on individual tasks as Current tasks, task in-process, and completed work. Managers can easily create detailed descriptions of Main tasks as their topic name and Users start their work, in progress, completed tasks also send for review the projects task. Teams receive assurances of transparency and responsibility. A Project Manager can publish project details to their team. According to the project details, users can work on and update if necessary and they works. 'In progress' is available while the project starts, so all users and managers can by whom, Assigned in project can see what is in progress and what is being worked on. This project focuses on creating a system that can provide information about task, users, projects and managers also coordination between project managers and users to systematically manage projects and tasks. This project relies on a backend (database), at its core. PHP was used to make it work as desired and the technologies used to create this project are HTML, CSS, JavaScript, PHP, MySQL, XAMPP, and Visual Studio. The progress of the work carried out is described in this report.

Keywords: *Project Management System, Task Management, Manage Projects and Task, Progress Tracking, Subtasks, Project lifecycle.*

Acknowledgement

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With Regards,
Amit Mahato

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List of Abbreviation

DFD	Data Flow Diagram
ERD	Entity Relation Diagram
JS	JavaScript
PMS	Project Management System
PHP	Hypertext Pre-Processor
SDLC	Software Development Lifecycle
UI	User Interface

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CHAPTER 1: INTRODUCTION

1.1 Introduction

A project management system is a central control for all projects. It's like a true smart hub that helps you organize everything and collaborate within a team. Project management systems play a critical role in enabling absolute coordination between project foreman (manager, leader, Supervisor) and their teams (team members, Students) ensuring collective efforts are aligned toward a common goal. Task management, a central aspect of this system, focuses on individual tasks and includes sub tasks, work in progress, and successfully completed tasks after review. Users of this system can easily create comprehensive task descriptions and carefully document work in progress tasks and projects that have led to success. A hallmark of the team`s work is ensuring transparency and accountability throughout the entire project lifecycle.

A project foreman has the ability to disseminate intricate details about a team's projects and foster a collaborative environment where information flows seamlessly. Depending on the complexity of the project, users have the flexibility to create different tasks and customize their work to meet project specifications. The In-Progress feature is activated while a project is started and provides all users and foreman that have access to the project with a panoramic view of in-progress activities and tasks. A strategic focus on transparency and updates keeps all type users well-informed about project developments. The focus of this effort is to create a systematic system to efficiently manage projects and tasks, provide rich data and information, and facilitate co-ordination between project foreman and users. This strong system allows Administrators, Foreman and Users alike to easily access and understand work progress by simply entering project and task information, Workflow and ensuring overall project visibility.

1.2 Identification of Problem

The target users for a project management system are a group and educational institution. A Group or Educational institution for students that needs a solution to effectively manage projects, tasks, tracking and workflows with project information.

Users in which includes individuals, groups, educational institutions. Even individuals looking to improve their personal productivity. Understanding their prospects' needs, goals. The challenges are significant in tying up your task and manage to their specific requirements. A group, individuals, educational institution that find difficulty to keep track of project and their tasks. They need a project and task management system that can helps to organize their projects, assign tasks to members and monitor progress.

1.3 Problem Statement

In the real world, A Group, individuals, students or a small IT company that find difficulty to keep track of project and their tasks. They need a project and task management system that can helps to organize their projects, assign tasks to members and monitor progress. The target users for a project and task management system are a group. A Group or Educational institution for students that needs a solution to manage tasks, projects, and workflows with project information.

Users in which includes individuals, groups, educational institutions etc. even individuals looking to improve their productivity. Understanding their prospects' needs, goals. The challenges are significant in tying up your project and task which manages to their specific requirements.

1.4 Objectives

- To develop a project management system for managing projects and tasks.
- To provide clear responsibilities by assigning task to the members within the project.

1.5 Scope and Limitation

Scope:

i. **Project Management:**

Aiming to be a central hub for efficient project organization.

ii. **Task Management:**

Encompassing features such as task descriptions, sub-tasks, and progress tracking.

iii. **Accessibility and Understanding:**

Designed for easy access and comprehension by administrators, foremen, and users.

iv. **Flexibility and Customization:**

Allowing users to create and customize tasks based on project specifications.

Limitation

i. Resource Dependency:

Efficiency depends on reliable internet connectivity and server infrastructure.

ii. Scalability Challenges:

May be Potential issues with smooth performance as the user base grows.

iii. Compatibility Issues:

Integration challenges with existing tools and software used by target users.

1.6 Report Organization

i. **Chapter 1 :**

This Chapter 1 includes the brief introduction, problems and objectives of the project – Project Management System.

ii. **Chapter 2 :**

The Chapter 2 involves the background study of the current existing system and Research regarding it.

iii. **Chapter 3 :**

This includes system analysis and design of the Project management system which includes all the functional and non-functional requirements, feasibility analysis etc.

iv. **Chapter 4 :**

Implementation and Testing of the system as system testing and unit testing.

v. **Chapter 5 :**

Conclusion and Future Recommendations

CHAPTER 2: BACKGROUND STUDY AND LITERATURE REVIEW

2.1 Background Study

Project Management System is software that organizes the project and brings together the users and the members of teams of an organization together to work efficiently and effectively to enhance the organization and their own productivity. PMS is a platform that helps to interact users to work together for getting the same goal. The analysis of system, project management system is done by visiting the different websites as Trello [1] which is a popular project and task management having various features that helps to work smarter way and impact at scale by connecting works. Asana [2] which has similar features but has team functionality and many that handles the projects for team and organizations. ClickUp [3] it is also a project and task management system and collected the information and requirement that I need for my project. The requirements are gathered from different websites having the similar functions and enhanced the requirements. Also identified the common functionalities and features. I evaluated strengths and weaknesses of the existing system and understand user experiences and expectations. Examine new approaches and technology. [4]

2.2 Literature Review

According to the study of [5] the system PMS major purpose to improve project management by allowing direct upload of documents, improving work by monitoring, and providing automated work time tracking. A web-based information system to overcome problems associated with manual paper data record and lack of coordination in project management [5]. When working in the IT field, based on the results, we analyze the requirements of the project to achieve the results. We present the modeling phase of a project regarding the design and development of a learning project management system as far as analysis is concerned [4]. Researchers [5] have developed a system directed at improving the effectiveness of data processing and control, also simplify project work processes and projects with team coordination's. According to [4], the project has been

analyzed various research papers on e-learning and focused on designing an e-project management system. A development process methodology consisting of five phases: analysis, design, development, implementation, and testing. Project requirements were determined by defining phases, actions, and actor roles.

The system supports the project management process in terms of managing project activities. You can see directly when a project starts and ends, as well as track the progress of any project you're working on [5]. This project provides users a clear idea of each stage of conception in terms of planning tasks, different needs for project realization, and models of different interfaces. The results obtained regarding the involvement of different actors involved in each action of an e-learning project [4]. The interface of a PMS that provides an information system is used for communication between users and the system. The interfaces are designed to give users an overview of how they will interact with the system [5].

CHAPTER 3: SYSTEM ANALYSIS AND DESIGN

3.1 System Analysis

To develop this website project management system, I am going to use the Waterfall Model. The Waterfall Model is a traditional project management approach that follows a linear and sequential progression through defined phases, such as requirements gathering, design, implementation, testing and deployment. In the context of my project, Project management system, my project is adopting the Waterfall Model means that each phase must be completed before moving on to the next.

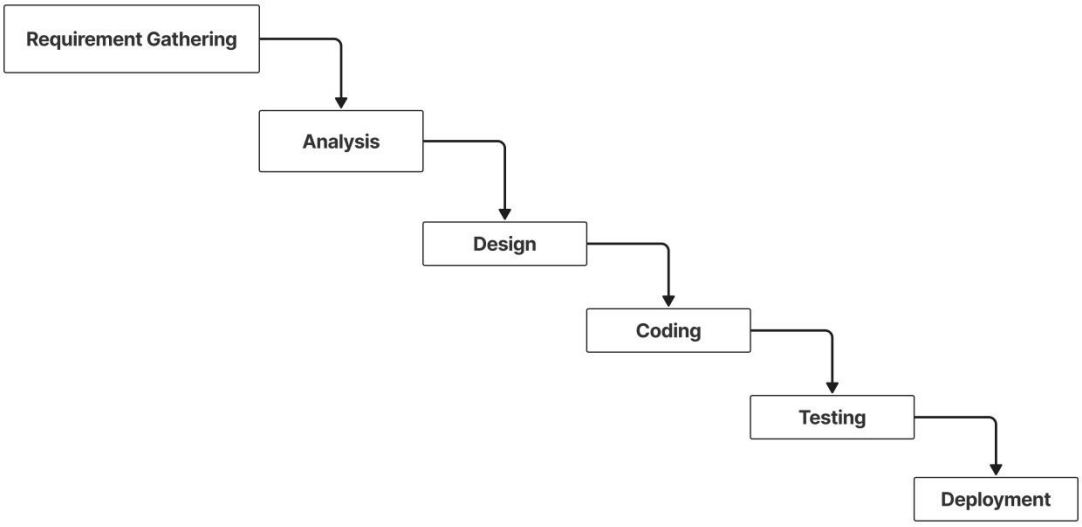


Figure 1: Waterfall Model

The decision to use the Waterfall Model involves an organized and well recorded process for developing projects. The report provides the work's progress at every stage. An understanding of the implementation of the project management system may be gained from this documentation. The report may include the difficulties encountered, choices taken at each stage. All things considered, using the Waterfall Model guarantees a methodical and disciplined approach to project management system development.

3.1.1 Requirement Analysis

1. **Functional Requirements**
    - Admin have to Register
    - Authentication and Authorization of Users
    - Create Department, Project, Task-Topic and Sub-Task
    - Users should be assigned in Project to access the project information.
    - Task should be reviewed by Admin after completed by the user for verification
    - Should be Time Scheduling for each task and project.

2. **Non Functional Requirements**
    - Secure users information by authentication and Password hashing.
    - Ability to manage multiple simultaneous operations.
    - The user interface should be natural and require negligible training for new users.
    - User friendly UI
    - Tracking of tasks by In-Progress, Suspended and Completed status.

3.1.2 Use case diagram

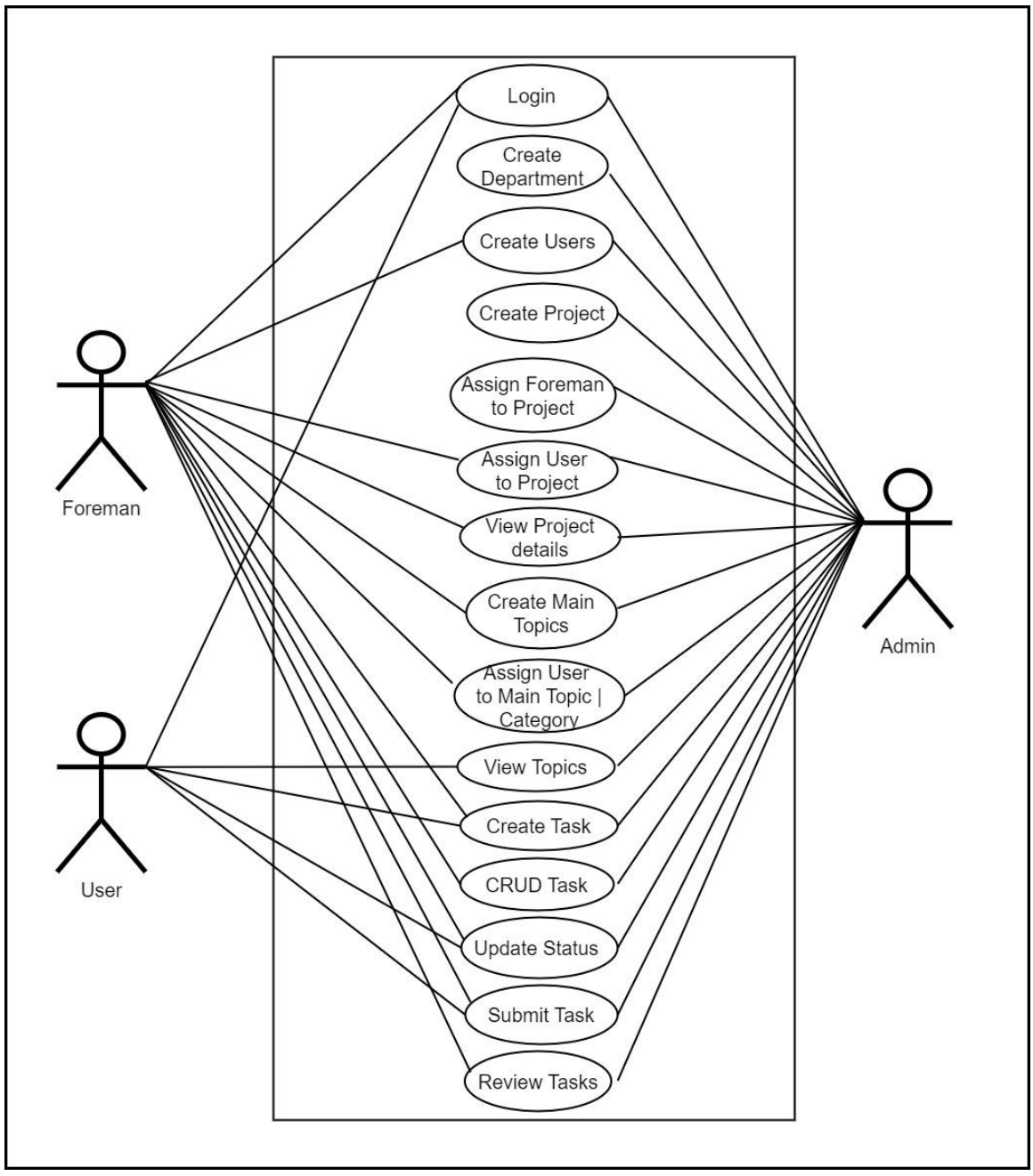


Figure 2: Use case Diagram

3.1.3 Feasibility Analysis

i. Technical Feasibility Study

The project is technically feasible. The techniques for developing web applications of project management system, PHP and AJAX is intended for server-side programming or Backend programming as MySQL should be used as the database. This project uses HTML, CSS, AJAX and JavaScript for the front end and this project can be accessible from the computers.

ii. Operational Feasibility

The Project management system has user-friendly interface in which end users can easily access and use this software. Phases and tasks are easy to manage and each module is simple, not complex which makes efficient, so we can say, it is feasible.

iii. Economic Feasibility

To make economic sense, Deciding the project management system (PMS) is compared how much it costs and what benefits it will bring to the business. Costs include creating the system, implementing it, and operating it. Benefits come from saving time, reducing costs and making better decisions. This project don't have any cost, running using the MySQL, Apache Server so we can say it is economically feasible.

iv. Legal Feasibility

It ensures that the software complies with the relevant laws, regulations and legal implications. This project is feasible legally due to the academic purpose project for the educational and learning purpose and it do not impact the government law.

v. Schedule Feasibility

The time schedule of the different Stages of the project that can be seen below in the following Gantt chart.

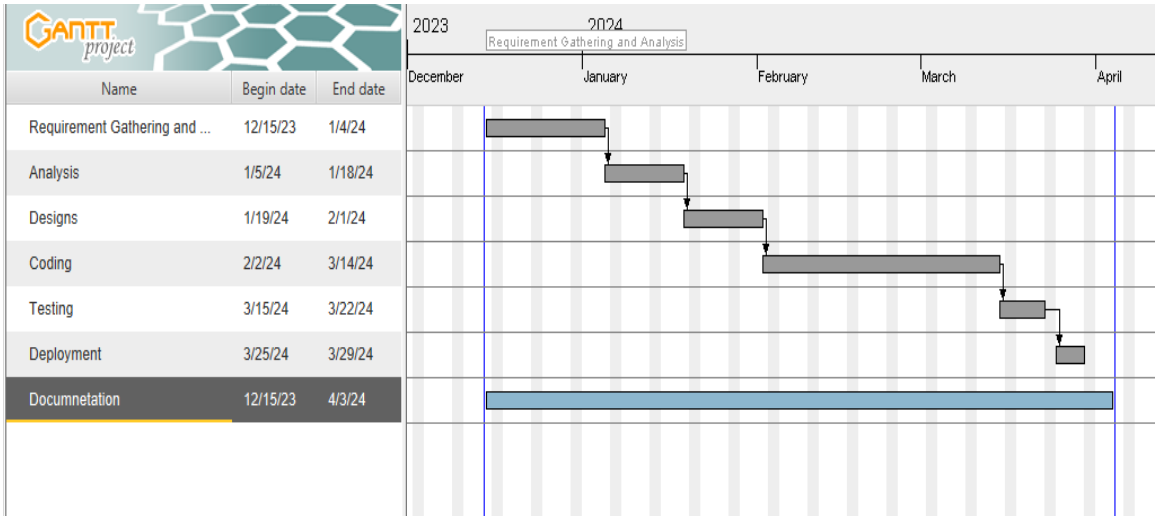


Figure 3: Gantt chart of Project Management System

The above Gantt chart has the project plan for nearly of 4 months. The Gantt chart of the project is shown in the above figure. This project is based on the waterfall model. So, the project follows the steps of the waterfall model. Project starts from the requirement gathering, the most of the time is separated for the coding part where the documentation goes from starting to the end of the project.

3.1.4 Data Modeling

ERD (Entity Relation Diagram)

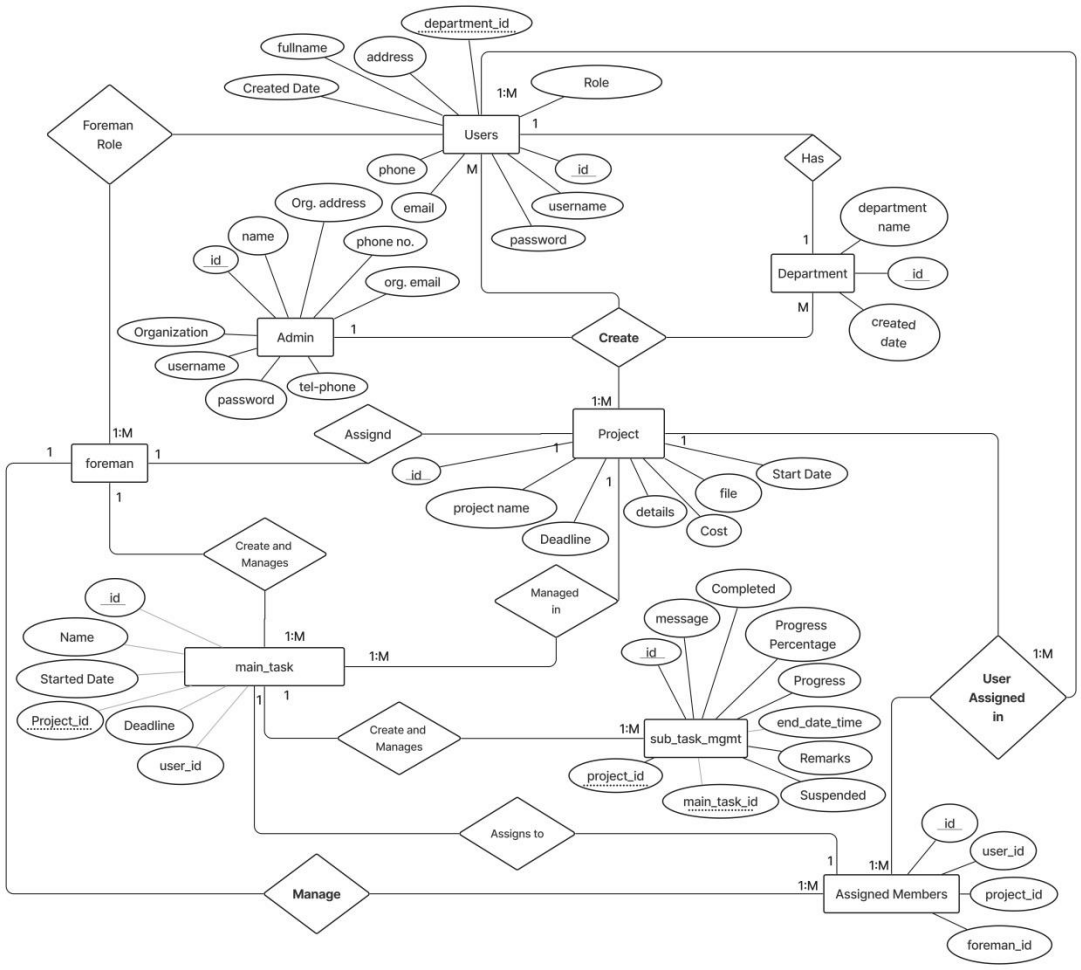


Figure 4: Entity Relation Diagram (ERD)

The ER diagram for the project, Project Management System is shown in figure above. In this project there are eight entities presents. i.e. Admin, Users as their roles(foreman and user), Department, Projects, main_task, Assigned_member and finally Sub_task_mgmt, where department_id is the foreign Key for users in users table and project_id is the foreign key for the main_task table and sub_task_mgmt table also the main_task is the foreign key of the sub_task_mgmt table.

3.1.5 Process Modeling

Level 0 DFD

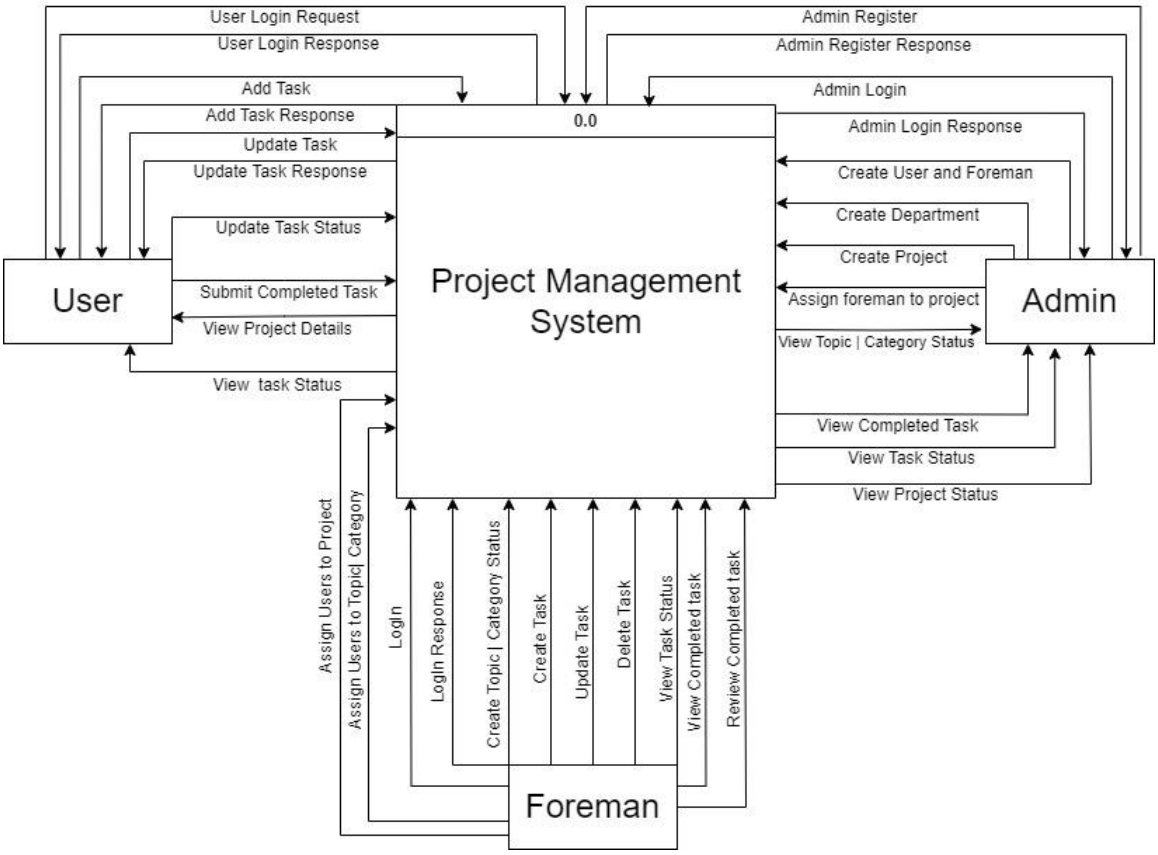


Figure 5: Level 0 Data Flow Diagram

Level 1 DFD

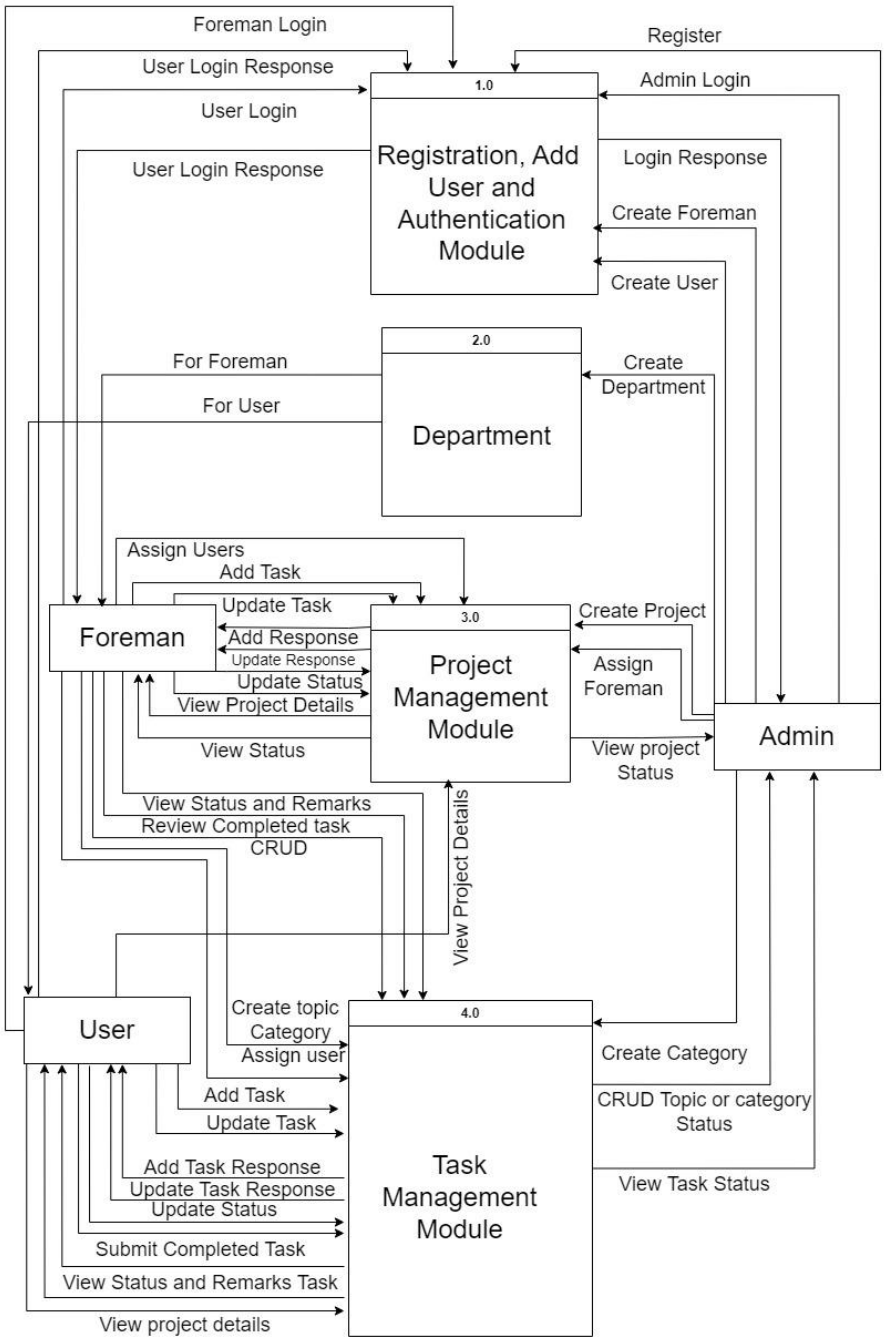


Figure 6: Level 1 DFD

3.2 System Design

3.2.1 Architectural Design

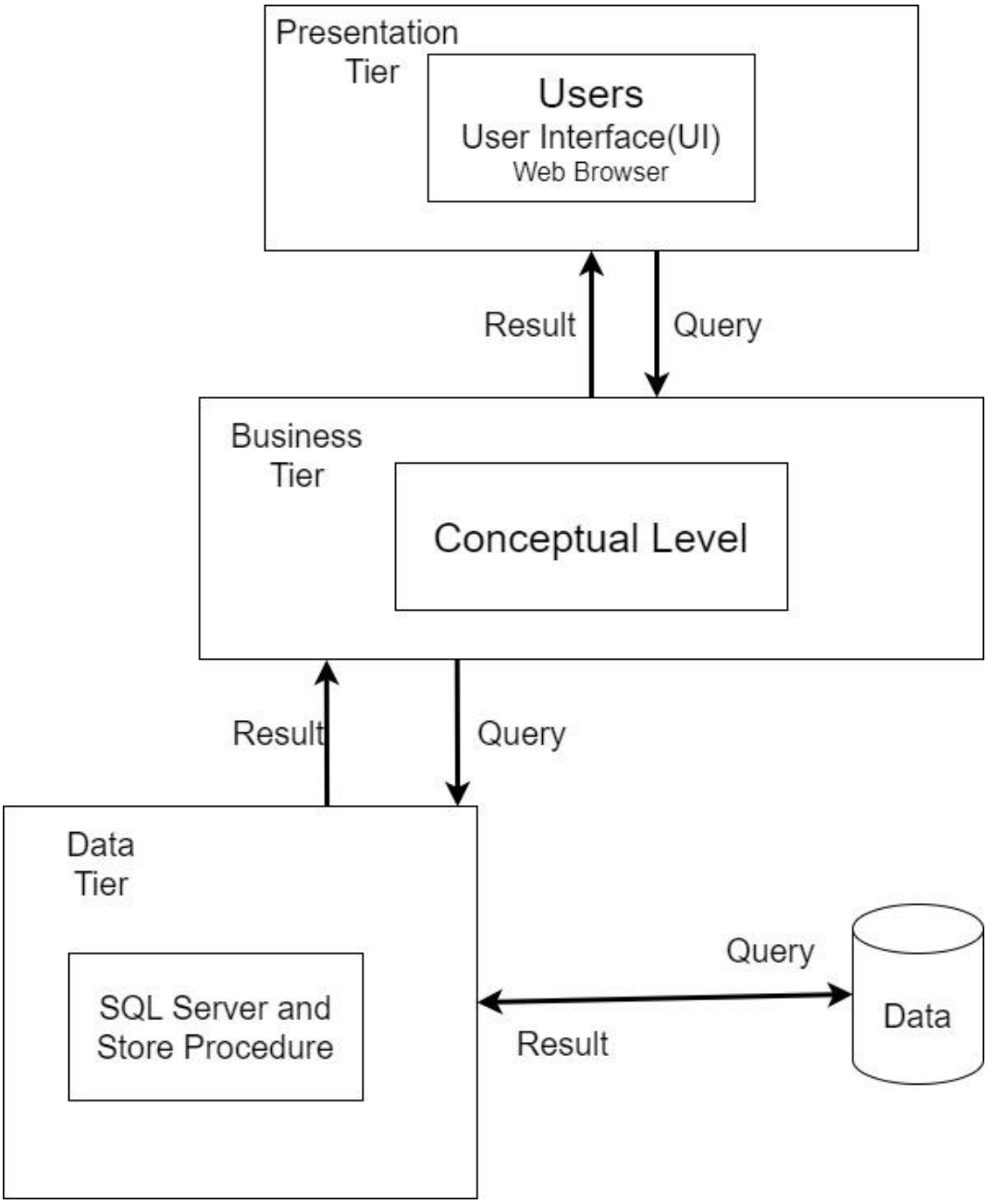


Figure 7: Architectural Diagram

3.2.2 Database Schema

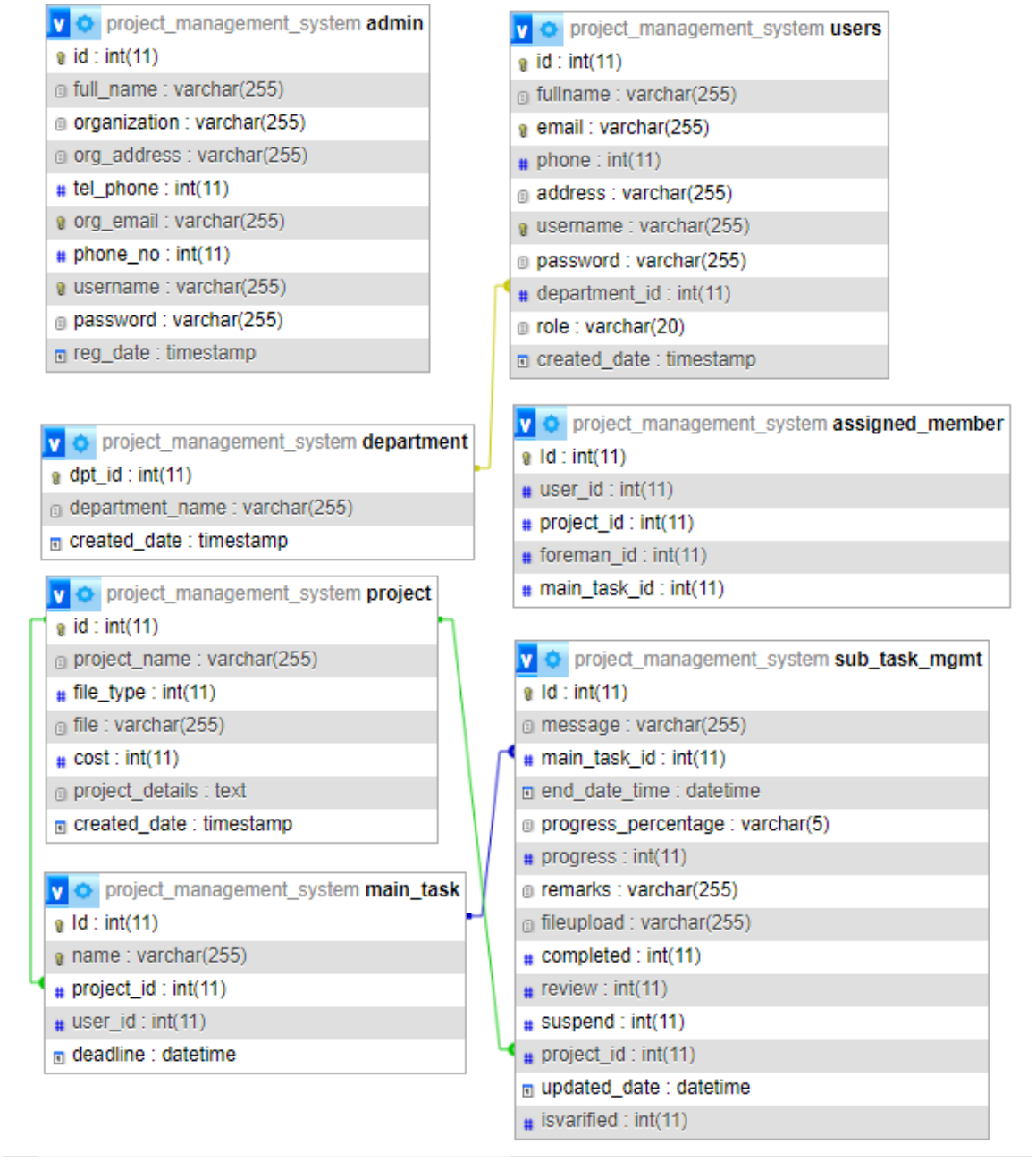
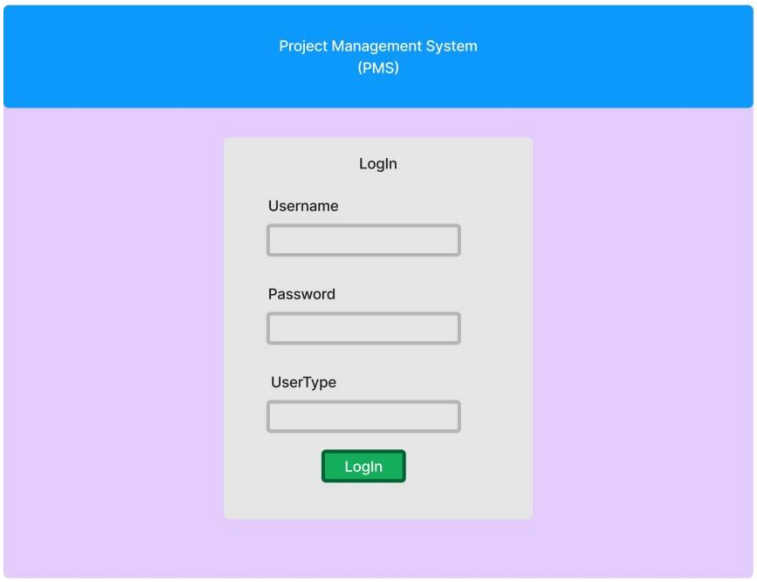
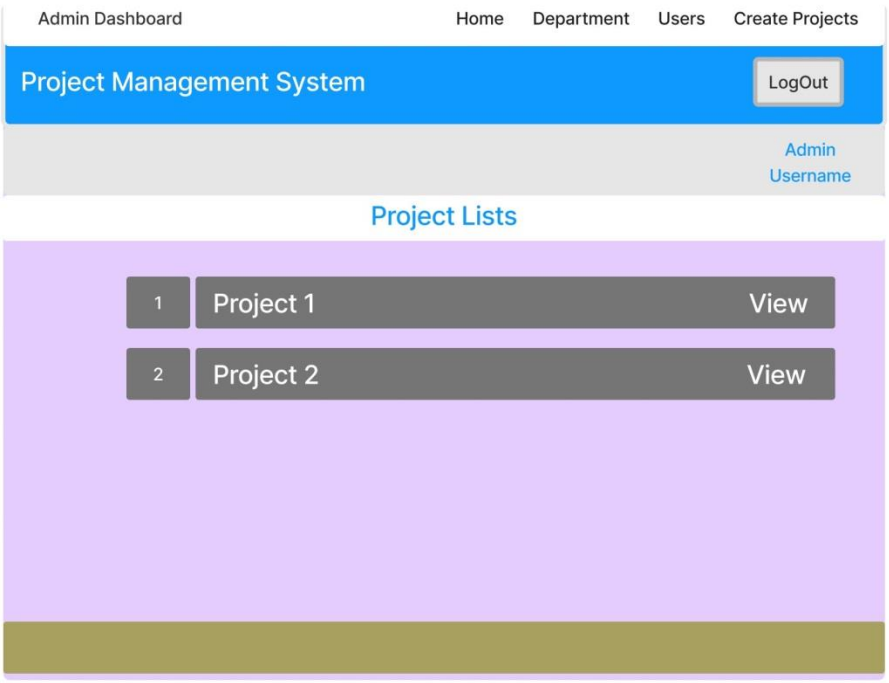


Figure 8: Database Schema

3.2.3 Interface Design (UI Interface / Interface Structure Design)



Login Page



Dashboard

Figure 9: UI Design

CHAPTER 4: IMPLEMENTATION AND TESTING

4.1 Implementation

Implementation of the Project Management System (PMS) involves the development and integration of software designed to monitoring, and completion of projects within an organization. All the information that we gathered is studied, analyzed and implemented into a system in operation for users. It is one of the most important phases of any project consisting of coding, testing and documentation. This software includes features such as task scheduling, progress tracking and time scheduling. The system aims to provide a centralized platform for project foreman and Admin to oversee tasks, allocate resources and time Scheduling. Different tools and technologies have been used to develop the system which is already discussed in the previous chapter.

4.1.1 Tools and Technology

The various system tools and technologies that have been used in developing the project, Project Management System for both the front-end and backend of the project are:

Front-end:

- HTML5 (Hyper Text Markup Language): HTML is a syntax used to design and format a text document on the web.

- CSS3 (Cascading Style Sheets): Cascading Style Sheets (CSS) is a style sheet language used to describe the presentation. CSS is among the core languages of the open web and is standardized across Web browsers.

- JavaScript: It is most commonly used as part of web browsers. It is a dynamic programming language. Implementations are done to interact with the user, control the browser and communicate asynchronously, and alter the document content that is displayed.

Back-end:

- PHP: It is a server-side scripting language designed for web development. PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data.

- AJAX: It is used, in this system to communicate between frontend and backend sending XHR requests.

- MySQL: It is the used for open-source relational database management system and many high-profile, large-scale websites. The SQL phrase stands for Structured Query Language.

- Figma: This site has used for designing the system Entity Relation Diagram (ERD).

- Draw.io: This site is used to design the system Use Case Diagram, flowchart and Data Flow diagram for the system.

- Visual Studio Code: It is the code editor used in this project.

4.1.2 Implementation of Modules

- **User Management:**

Users consist of two types, Admin and Users. Users as foreman and Common user which interact to the system for project management and progress. Admin Create Users as Foreman and User also the Department which is used for the users. Foreman can be the Supervisor, Project manager, group leader. User can be the students, team member or a common user who do their task in the project.

- **Department Management:**

Admin create the department as their necessity and referenced to the users as foreman and user to know in which department the users from.

- **Project Management:**

This includes the information of project that a project needed to execute and data's of detailed information. Project has the project details attached with file which helps to understand the project easy and do their task accordingly. Project can update, delete by admin and view by user and foreman. Admin will assign foreman in the project to manage under the supervision of assigned foreman.

- **Assign Users to Project:**

This includes assigning the users in the project according to their skills and department. User as foreman is assigned to the project to manage users and divide the major tasks to their topics and assign to the users that are assigned in the project. User is assigned to the project to access the project information with the foreman in which under the supervision they are assigned and the they will assigned to the topic of divided tasks or major topics of individuals to access and do their task.

- **Task | Sub-Task Management**

This includes the tasks of the topics | sub-tasks of the main-task. Only assigned user can access the sub-task which consists of status control, controlled by the assigned user. Status control includes the in-progress, suspended and completed, while starting the task in-progress status will be activated, due to some reason if task will be suspended the suspend the project and submit also if the task completed the submit with the file attaching to the task and submit for review. User can update the status according to their progress of task which shows the user activity. After completing the tasks, user can submit the task to verify from the Admin or foreman.

4.2 Testing

The primary goal of software testing is to identify defects, errors, or bugs in the software and ensure that it behaves as intended. Testing is an integral part of the software development life cycle, helping to deliver quality and reliable product to end-users.

4.2.1 Test Case for Unit Testing

A test case for unit testing includes input data, expected output, and a set of conditions or actions to be tested. Individual components or functions of a program in a software are tested in isolation to ensure that they work as expected.

The testing is done on stage by stage of each module and tested as it is working as expected or not and analyzed data's had recorded.

Table 1: Admin, Users Login Testing

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin enter valid username and password	Username: Admin Password: Admin123	Redirects to Admin Dashboard	Pass
2.	Foreman enter valid username and password	Username: Foremanone Password: 123	Redirects to Foreman Dashboard	Pass
3.	User enter valid username and password	Username: Userone Password: 123	Redirects to User Dashboard	Pass
4.	Admin, Foreman and User enter Invalid username and password	Username: ram Password: ram567	Redirects to login page by showing incorrect username and password	Pass

Table 2: Create Department

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin Create Department	Department Name: BCA Department	Creation of New Department	Pass

Table 3: Add Users

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin Create User as foreman	Foreman Username: Foremanone Password: 123	Creation of New User as foreman	Pass
2.	Admin Create User as users	User Username: Userone Password: 123	Creation of New User as user	Pass

Table 4: Add Project

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin Create Project	Project Name: Project I	Creation of New Project	Pass
2.	Admin Delete Project	Open a Project	Deletion of opened Project	Pass

Table 4: Assign and Unassigned Foreman to Project

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin assign Foreman to Project	Open the targeted project Project I	Assign foremanone to targeted Project I	Fail
2.	Admin assign Foreman to Project	Open the targeted project Project I	Assign foremanone to targeted Project I	Pass
3.	Admin Unassigned Foreman from Project	Open the targeted project Project I	Unassigned from the project	Pass

Table 5: Assign and Unassigned User to Project

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin or Foreman assign Users to Project	Open the targeted project Project I	Assign user to targeted Project	Fail
2.	Admin or Foreman assign Users to Project	Open the targeted project Project I	Assign user to targeted Project	Pass
4.	Admin or Foreman Unassign Users to Project	Open the targeted project Project I	Unassign user from targeted Project	Pass

Table 6: Create Topics | Main Task

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin or Foreman Create Topic | Main Task to Project	Open the targeted project.	Creation of New Topic | Main Task	Pass
2.	Admin or Foreman Delete Topic | Main Task to Project	Open the targeted project.	Deletion of New Topic | Main Task	Pass
3.	Admin | Foreman Update Topic | Main Task to Project	Open the targeted project.	Update of Topic | Main Task to Project	Pass

Table 7: Create Topics | Main Task

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin or Foreman Create Topic | Main Task to Project	Open the targeted project.	Creation of New Topic | Main Task	Pass
2.	Admin or Foreman Delete Topic | Main Task to Project	Open the targeted project.	Deletion of New Topic | Main Task	Pass

Table 8: Create Task

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin, Foreman, User can Create Tasks	Task inside the Assigned Topic	Creation of New Task	Pass
2.	Admin or Foreman Delete Task to Topic	Task inside the Assigned Topic	Deletion of Task	Pass
3.	Submit task	Submit Topic Tasks	Submission of task	Fail
4.	Submit task	Submit Topic Tasks	Submission of task	Pass

4.	Status Tracking	In-Progress, Suspended, Completed	Update Status	Fail
5.	Status Tracking	In-Progress, Suspended, Completed	Update Status	Pass
6.	Remarks for suspended and completed	Remarks content upload	Update Remarks	Fail
7.	Remarks for suspended and completed	Remarks content upload	Update Remarks	Pass

Table 9: Review the task.

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin or Foreman Review the task.	Open the targeted project and go to targeted topic to review.	Redirects to review page to review the task of Topic | Main Task	Pass

Table 10: Verify and Redo.

S.N.	Test Case	Test Data	Expected Result	Result
1.	Admin or Foreman Review the task as varify	Open the targeted project and go to targeted topic to review.	Verify the task of Topic | Main Task	Pass
2.	Admin or Foreman Review the task as Redo	Open the targeted project and go to targeted topic to Redo.	Redo the task of Topic | Main Task	Pass

CHAPTER 5: CONCLUSION AND FUTURE RECOMMENDATIONS

5.1 Lesson Learnt/Outcomes

After the accomplishment of this Project Management System project, I have learned many things while making this project as listed below.

- Learned about HTML, CSS, PHP, JavaScript and MySQL Server
- Learned about how to manage a project during working on a project.
- Learned about researching the current market and system available in market.
- Learned to implement a CRUD Operation in a system.

5.2 Conclusion

The project "Project Management System" is a web based application that is built based on the HTML, CSS and JavaScript for the Front end and PHP, JavaScript has been used for the backend to make this website more flexible and user-friendly to connect, learn and use this website easily. This project management system serves as the cornerstone of effective project coordination and collaboration. It empowers project foremen and teams to align their efforts towards common objectives while ensuring transparency and accountability throughout the project lifecycle. Task management within this system enables detailed tracking of individual tasks and productivity.

5.3 Future Recommendations

There are a lot of more features that can be added and recommended to enhance this system for a advanced project management system that handles a project and provides more flexibility and productivity.

- Implementation of multi-user in one Topics | Main Task
- Implementation of Record system that generates report of the tasks within the project.
- Implementation of User-Control System that user handles the work themselves.

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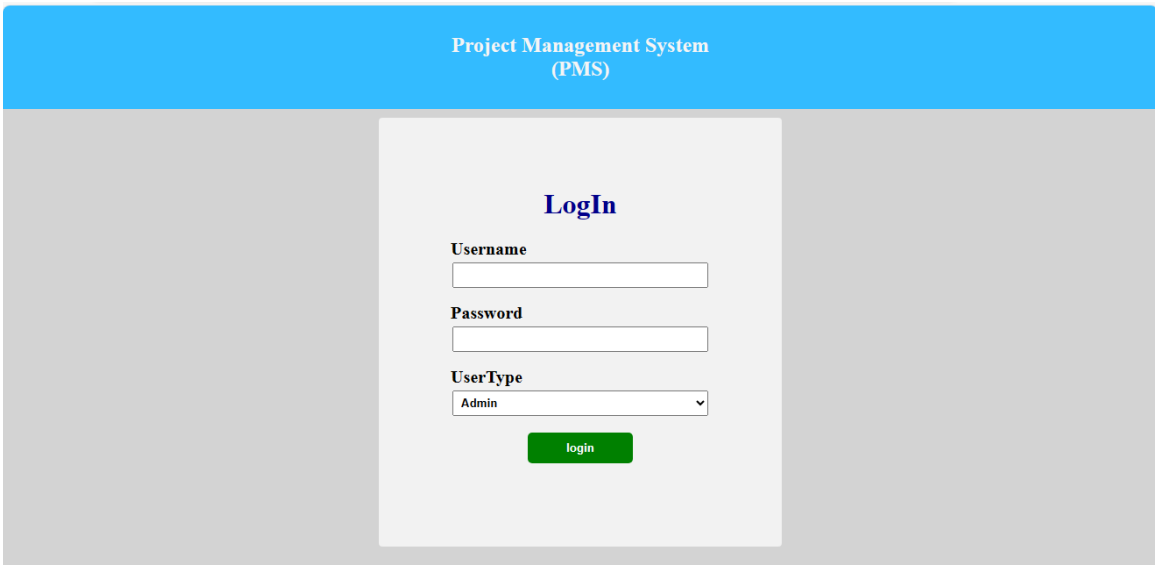
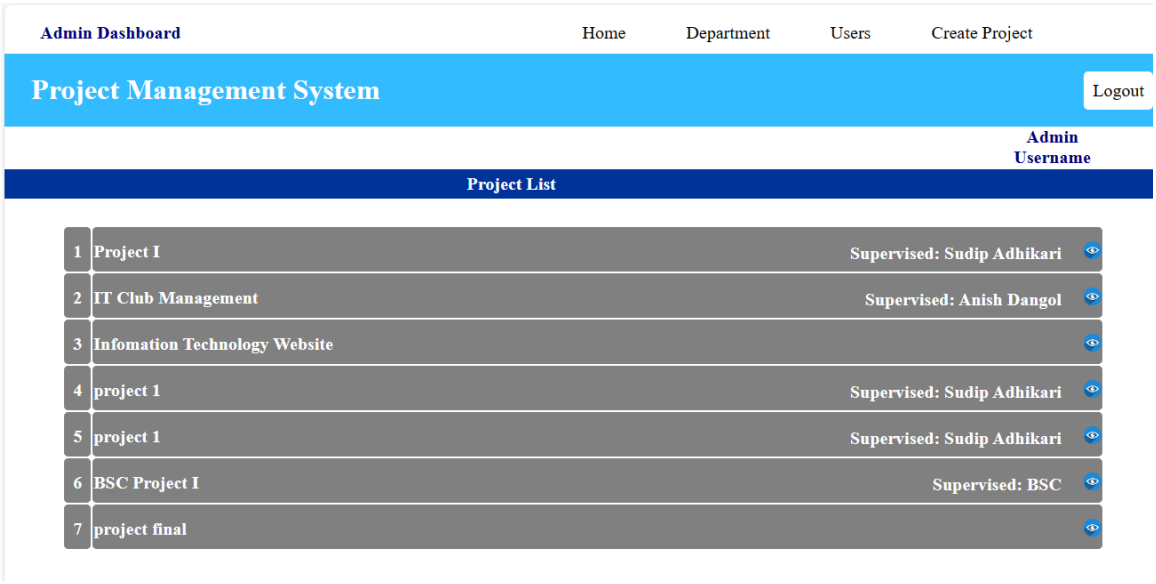
APPENDICES

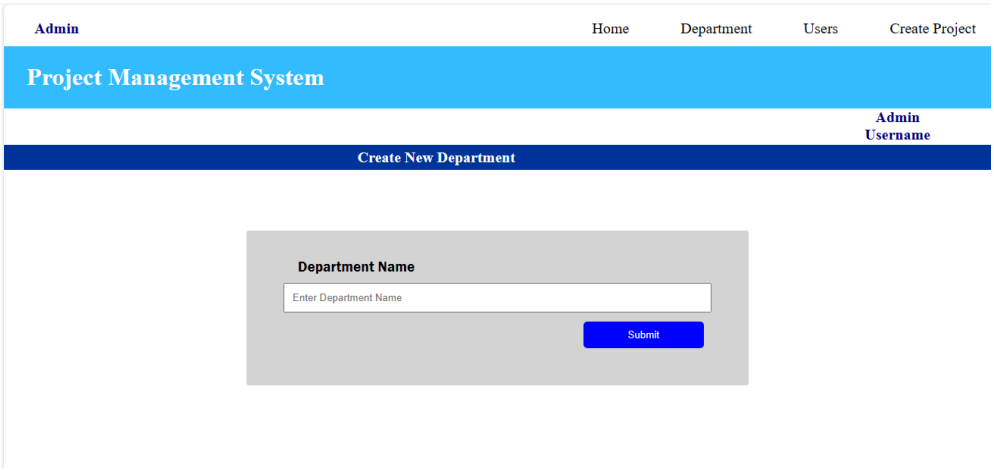
Login



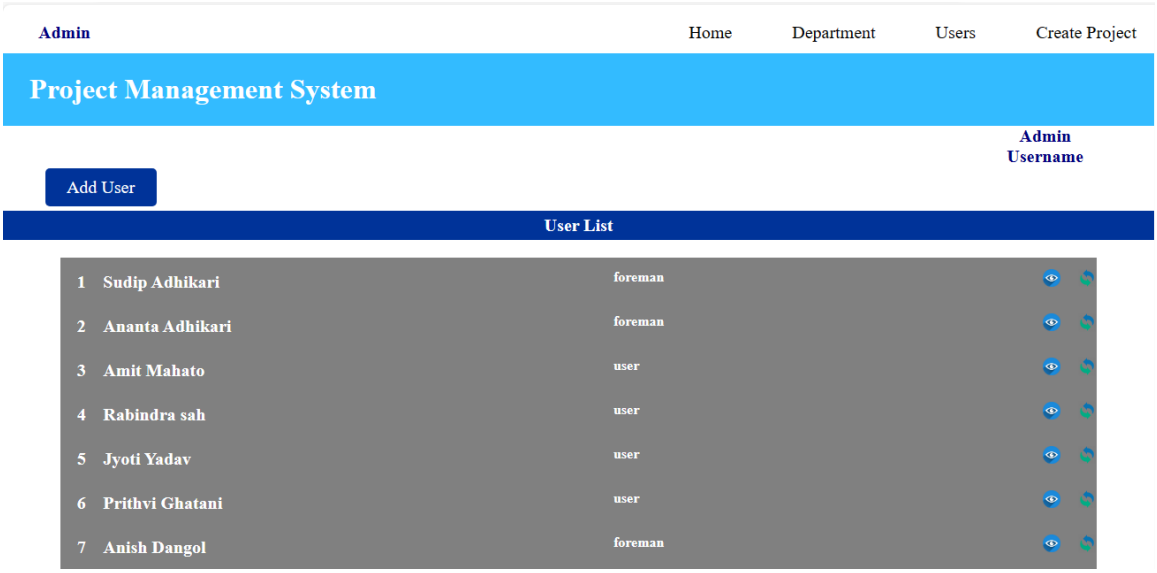
Dashboard



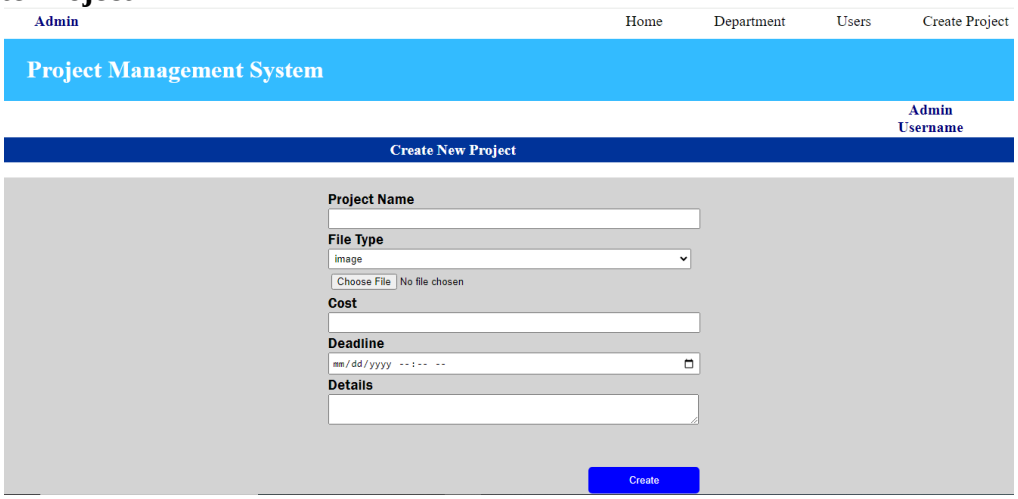
Create Department



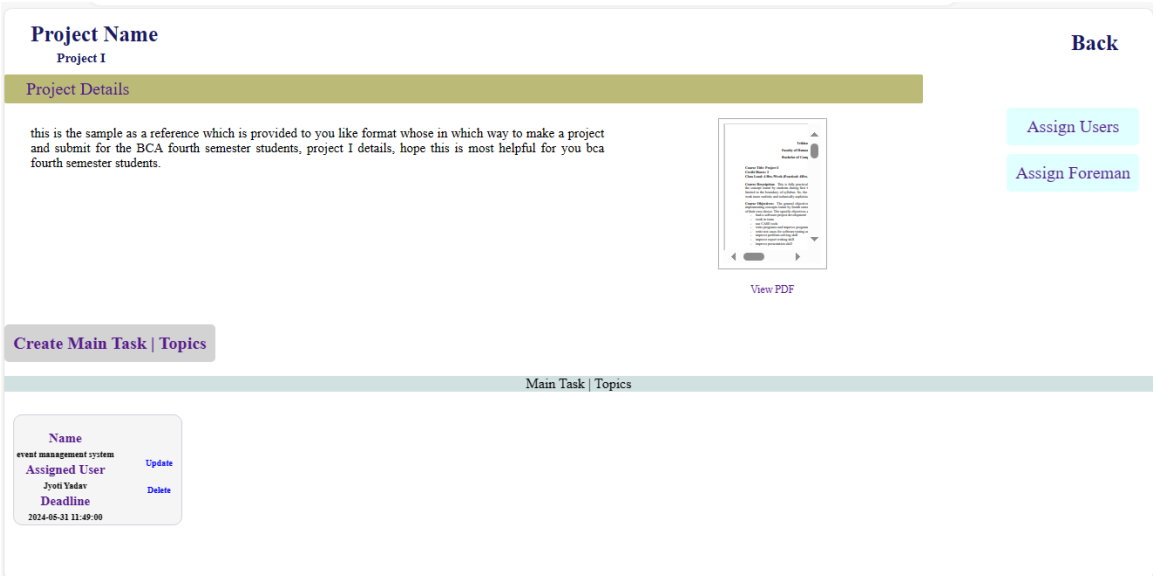
User List



Create Project



Project Details and Project Main Tasks of Topics



Subtask


Task Management
Home
Back
event management system
List the Tasks
Deadline mm/dd/yyyy --:-- --
Add
Current Date: 3/21/2024
Current Time: 3:19:36 PM
Tasks
Sn.
Tasks
Deadline
Expiry
Progress Percentage
Progress
Progress Report
Remarks
Action
Controls
1
login page
2024-03-23 11:51:00
2 days left
50
Completed
Choose File
No file chosen
OIP.jpg
Select
Progress
Suspend
Completed
Remarks
Submit Task
2
app
2024-03-18 11:55:00
expired
Choose File
No file chosen
None