### DESIGN AND DEVELOPMENT OF WEB APPLICATION ON PROJECT MANAGEMENT SYSTEM BY

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# This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering.

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# **DAFFODIL INTERNATIONAL**

# UNIVERSITY

DHAKA, BANGLADESH

January 2024

#### DECLARATION

I hereby declare that, this project has been done by me, under the supervision of Mohammad Monirul Islam, Assistant professor, Department of CSE, Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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#### APPROVAL

This Project titled "DESIGN AND DEVELOPMENT OF WEB APPLICATION ON PROJECT MANAGEMENT SYSTEM", submitted by Iftekhairul Islam, ID No: 151-15-307 Student ID to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 24<sup>th</sup> January 2024

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#### ABSTRACT

In this project report, we outline a distinctive approach that focuses on the creation of a centralized Project Management System tailored specifically for a designated organization. This innovative solution is introduced to address the needs of both employees and administrators, redefining their roles for optimal project collaboration. The Project Management Tool System functions as a dedicated platform where administrators, now referred to as admins, can efficiently manage the entire project system. Admins hold the ability to initiate projects, allocate specific tasks, and establish guidelines. On the other side, employees can easily register and undertake the assigned tasks following the provided instructions. Each project operates within a defined timeframe, and upon completion, both admins and employees are promptly notified. An additional feature involves a comment system within the project, fostering in-depth discussions between employees and admins regarding project intricacies. Notably, the sign-up process for employees offers flexibility, allowing registration through either their organization's email or personal email, thereby enhancing the overall versatility of the entire project system. This streamlined and adaptable approach significantly improves the overall user experience, contributing to the ease and efficiency of project management for both admins and their respective employees.

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# **Chapter 1:**

# Introduction

#### **1.1 Introduction**

In the current digital landscape, we find ourselves immersed in the era of technology, particularly with the pervasive influence of internet technologies that have significantly simplified various aspects of our lives. In this context, we are about to embark on a detailed exploration of the vast landscape that the internet offers, delving into the intricacies of systems that contribute to this digital transformation. It is evident that technological systems are rapidly undergoing the process of digitalization, and the implications of these changes are poised to shape our future. Notably, the challenges posed by the Covid-19 pandemic have added complexities to the daily routines of employees. In response to these challenges, we have undertaken the task of constructing a webbased environment. This environment is designed to assist employees in navigating and completing their tasks seamlessly, providing a platform for them to showcase their achievements in a digital format.

#### **1.2 Motivation**

The motivation behind the creation of this system lies in the desire to facilitate individuals in saving valuable time, with a specific focus on aiding Organization and employee'. Making a project management web app (like a website) can be driven by many reasons. It's all about helping people and groups handle their projects better. This could be for individuals, teams, or even big organizations. The goal is to make managing projects easier and more effective. The system further enhances work completion efficiency through re-assignment features, offering a mechanism for optimal task allocation. Admin benefit from an easy evaluation process for employee's' project

work, contributing to a more streamlined and effective educational environment. In essence, the Project Management System is envisioned as a catalyst for accelerating and optimizing organizational activities, abbreviated as PMS for convenience.

### **Objectives**

Our objectives for this project are as follows:

- 1. Ensure that Organizations encounter no difficulties when assigning specific tasks.
- 2. Facilitate the timely completion of critical project tasks with fixed durations, eliminating any unnecessary hassle.
- 3. Simplify collaboration between supervisors and employees by providing an easily 4. If tasks are reassigned, Organizations can better check employee project work, ensuring efficient and accurate completion.
- 5. The Project Management System (PMS) speeds up organizational work.

### **Expected Outcomes:**

**Enhanced Collaboration**: The centralized information hub fosters collaboration among team members, making it easier for them to work together on projects and share updates seamlessly.

**Efficient Task Tracking**: With all tasks stored in one place, it becomes simpler for employees and administrators to track the progress of various assignments, ensuring nothing is overlooked or forgotten.

Accessibility: The online system allows easy access to information from anywhere, promoting flexibility in work arrangements and enabling team members to stay connected even when not physically present.

**Streamlined Communication**: Besides sharing notices, the online portal facilitates quick and direct communication among employees and administrators, reducing the need for lengthy email exchanges or in-person meetings.

**Real-time Updates**: The system provides real-time updates on project activities, ensuring that everyone involved is well-informed about the latest developments, leading to better decisionmaking.

### **Finance and Project Management:**

Project management plays a crucial role in any development project. The success or failure of a project depends on how well it is managed. Our Project Management System focuses on efficiently managing tasks assigned by supervisors to ensure project success.

Our system facilitates seamless communication between Employee and Admin, obviating the need for employees to physically approach the instructor's desk. This not only streamlines communication but also results in cost savings related to transportation. We take pride in asserting that the utilization of our system is designed to provide a comfortable and user-friendly experience for all stakeholders involved in the project.

# Chapter 2:

## **Background Study**

### **2.1 Introduction**

In Bangladesh, our web-based application, known as the Project Management Tool, is quite unique. It acts like a connector, allowing the distribution of projects or tasks among Employees and others. This type of system is not very common because people in this field usually stick to traditional ideas. Our goal is to create a system that makes distributing tasks hassle-free. We have plans for the future and hope to work hard on it. If we receive donations or investments, we can do even better and introduce new features. We are actively seeking opportunities to make our system more user-friendly and reliable.

#### **2.2 Relevant Activities**

A similar project, called Project Management Information System, stores and distributes project information. It breaks down projects into tasks chosen by a Super Advisor, calculates work lengths, and assigns them for completion. Resources, cost management, and project performance are crucial components of this system, aimed at capturing the successful completion of construction projects.

### 2.3 Scope of Problems

Designing our project to be effective for all users presents a challenge. Managing time and maintaining a specific routine will be tough, causing some problems.

# 2.4 Comparative Analysis

In the Project Management Information System sector, various tools assist with scheduling details such as task and critical path analysis. Our project introduces a unique feature: the supervisor assigning tasks and the employee working on the project can both add comments. Throughout the system, we've worked hard to ensure a proper output. Essentially, our system helps project managers or supervisors control and distribute project information, allowing them to plan and track progress easily.

### **2.4 Challenges**

- 1. Designing systems that are competitive and more efficient.
- 2. Understanding the system requirements of the global business environment.
- 3. Making the system adaptable to various types of users.

# **Chapter 3:**

# **Requirement Specification**

#### **3.1 Introduction**

In planning our project, we looked at what users really need and figured out the problems our system should solve. We collected information about what users want, making sure our project meets their expectations. We also sorted out technical stuff like what programming language to use, the hardware needed, and the database we'll use. This planning phase helps set up the project for success by addressing both user needs and technical details.

#### **3.2 Overall Depiction**

#### **3.2.1 Product Perspective**

Information systems, from a business standpoint, are part of a sequence of value-added operations for gathering, converting, and disseminating information. This helps managers make better decisions, improve organizational performance, and ultimately enhance company profitability.

#### **3.2.2 System Interfaces**

The system will be connected to a MySQL-based website server, accessible to all users via the internet.

#### **3.2.3 User Interfaces**

The system is a web based application with a simple design for easy use. All users share the same login shape and process.

#### **3.2.4 Communication Interface**

Data communication between the client and the server will use the Transmission Control Protocol (TCP) and the Internet Protocol (IP).

#### 3.2.5 Storage Limitation

There is no limit to storage space in our system. Quality planning, testing, and the writing process have been completed during the system's compilation.**3.2.6 Operations** Key operations include database functions like input, updating, editing, and deleting.

#### 3.3 Business Process Modeling

Our aim is efficient business management, and a well-planned arrangement is crucial for success. A well-programmed computer system must be in place to revamp the entire process.

#### 3.4 Requirement Analysis and Specification

Determining the requirements, cost, and specificity of the software is crucial. We gathered information from specific people, the program's website, and discussions with our supervisor.

#### 3.4.1 Requirement of Hardware

#### Table 3.1: Requirement of hardware

Processor	No limitations
RAM	Minimum 256 MB
Motherboard	No limitations
Internet Card	Any type
Graphics Card	Any type
Hard Disk	50 GB
Casing	ATX
Monitor, Keyboard, Mouse	Any type

#### 3.4.2 Requirement of Software

- VS Code
- XAMPP Control
- GitHub
- Composer

#### 3.5 Design

We detailed the software development approach, languages used, and the core architecture of the database. Visual aids like Use Case Diagram, Class Diagram, Flow Chart Drawing, and ER Diagram were employed.

### 3.6 Languages Used

- HTML (Hypertext Markup Language)
- CSS (Cascading Style Sheet)
- Bootstrap
- JavaScript

- Vue JS

- PHP (Laravel Framework)
- MySQL (Database management system)

These technologies were chosen for web development, ensuring a robust and effective system.

#### 3.7 Diagram of Use Case and Modeling

Imagine a use case chart as a visual way to understand how well a person (or a system) can handle different tasks within a plan or structure. It's like a map that shows various situations the plan is designed for and the different types of people who might be involved.

This chart helps us see the relationships between the plan and the people using it. It's not just about the plan itself; it also considers the different scenarios or situations where the plan can be useful. This visual representation can include other graphs or images to provide a more comprehensive understanding.

So, in simpler terms, a use case chart is like a detailed map that helps us see how a plan works, who benefits from it, and in what situations it can be most helpful.

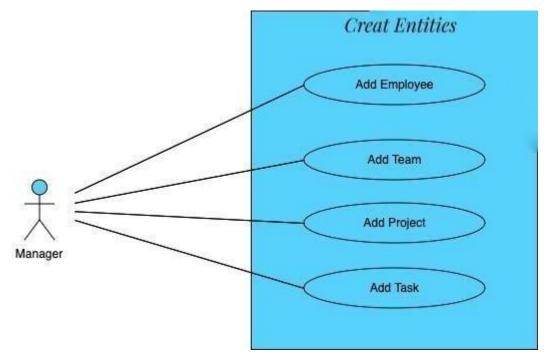


Figure 3.1 Manager role use case to create entity.

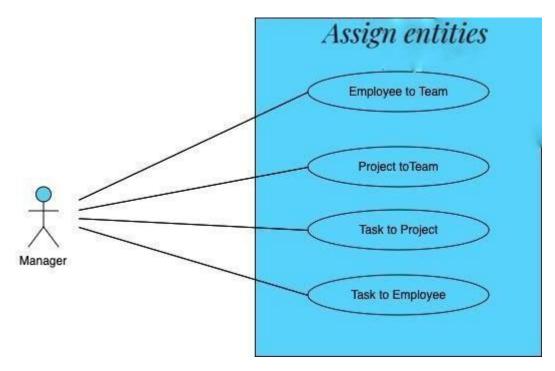


Figure 3.2 Manager role usecase to assign entities

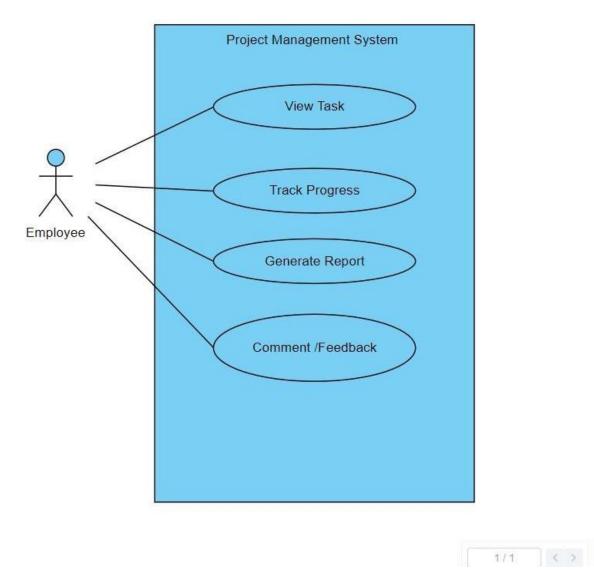
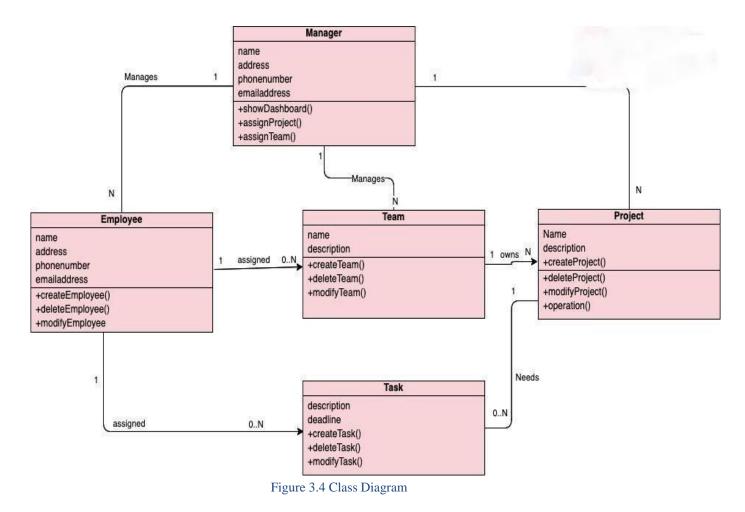


Figure 3.3 Employee roles

#### 3.8 Class Diagram and Modeling

A class diagram is a visual representation that shows the relationships and source code connections between classes in the Unified Modeling Language (UML). In this context, a class refers to the methods and attributes within an object. An object can be a specific element in a program or the unit of code

representing that element. Essentially, a class diagram helps illustrate how different components in a system are related and how they work together.



#### **3.9 Flow Chart Diagram**

A flowchart is a visual representation that shows the different steps of a process in a step-by-step order. It's a versatile tool that can be adapted for various purposes, like illustrating a production plan, a management or service procedure, or a complex sequence

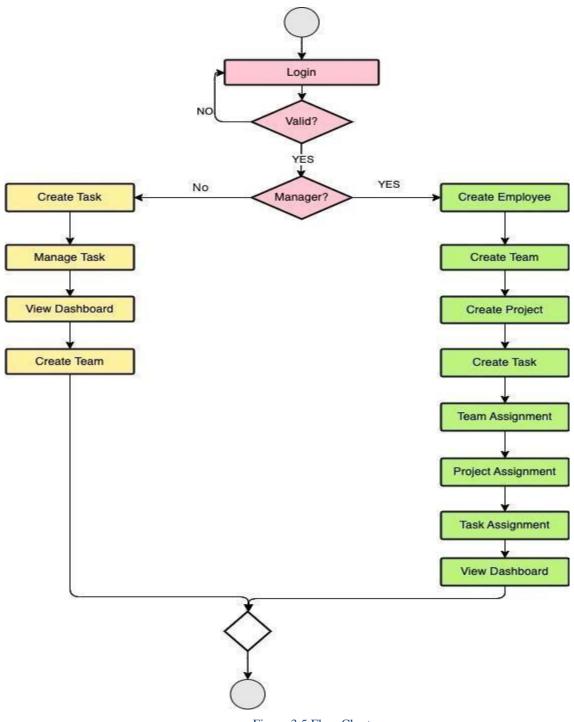


Figure 3.5 Flow Chart

# **CHAPTER 4:**

# **Design and Specification**

#### **4.1 Front-End Design**

This is usually the first page of our system, where people go when they visit our website. On this page, users can see the posts about different items. Here is what our user interface looks like.

#### 4.2 User Sign In

Here, users can sign up by providing the required information.

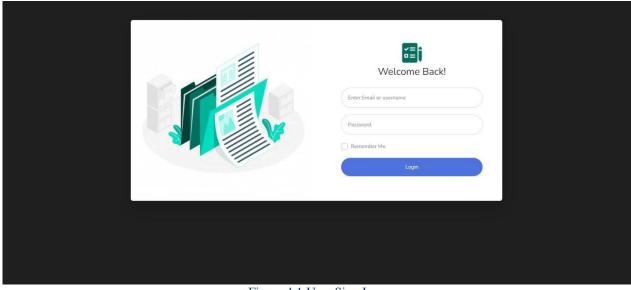


Figure 4.1 User Sign In

#### 4.3 User Sign Up

User signup process on the admin hand. Admin and create user to ensure proper security for the organization

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í≡ Tasks	Email					
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		h				

Figure 4.2 User sign up

### 4.4 Admin Dashboard

In this section, a Organization can easily view a employee's activities. Students can connect with the supervisor through the contact option, and the Organization can see this feature. Whenever the Organization reads a message, there is an option to mark it as unread.

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2	Mobile Team			2 Ecommerce	: Daraz BD	
3	Sales Team			3 Fund Rising	y: Sadaqah	
4	Marketting Team			4 Ecommerce	app: Flutter	
5	HR Team			5 Daily Accou	unts: FLutter	

Figure 4.3 Admin Dashboard

### **4.5 Team Creation**

This is our list of teams. In this section organization can create teams they have or they need

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	Save		5.	HR Team	٥
				Copyright © Task Management 2024	

Figure 4.4 Team

# 4.6 Assign Employee to Team

Organization can easily choose a project and select employees who have signed up by creating a project form. The admin can randomly assign employees to project tasks.

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		Copyright © Task Management 2024	

Figure 4.5: Adding team

### 4.7 Assigned Project Under Team

This is the list of assigned projects. It includes details like project name, assigned employee, and actions. Admin can add, delete, copy, the project if needed."

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			4.	Ecommerce app: Flutter Mobile Team		×
	Save	6	5.	Daily Accounts: FLutter Mobile Team		8
				Copyright © Task Management 2024		
		F	Figure	4.6: Add Project		

### 4.8 Task creation under Project and assign to different employee

Employees assigned to a project can view, edit, and delete tasks. If the admin makes any mistakes, they can modify the tasks for their colleagues.

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				Copyright	© Task Management 2024		

#### Figure 4.7: Adding task

#### 4.9 Task Email

This is a preview of the assigned task information for employee sent to employee's email

M	Laravel <muntasir.yuma@gmail.com> to didereee ▼</muntasir.yuma@gmail.com>		4:11 PM (O minutes ago)	☆	٢	¢	:
		Dear <b>Dider</b> , A task has been assign to you by Admin Task: Create a list for all Funds comming for a specific Project					
		© 2024 Laravel. All rights reserved.					

Figure 4.8: task Email verify

#### 4.10 Task Details

In the initial planning of our project, we focused on understanding what users need and identified the specific challenges our system aims to tackle. This involved gathering information about user preferences to ensure our project aligns with their expectations. Simultaneously, we made key decisions on technical aspects such as the programming language, hardware requirements, and the chosen database. By considering both user needs and technical details during this planning phase, we established a solid groundwork for the subsequent development stages, aiming for a successful and user-friendly project outcome.

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fi Tasks	O Lorem (psum i	Lorem Ipsum industry: Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.			Comm	ent	01/05/2024	
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		Priority	Due date					
		Low ~	01/05/2024					
		Assignee						
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Figure 4.9: task details and progress bar

# 4.11 Employee Dashboard

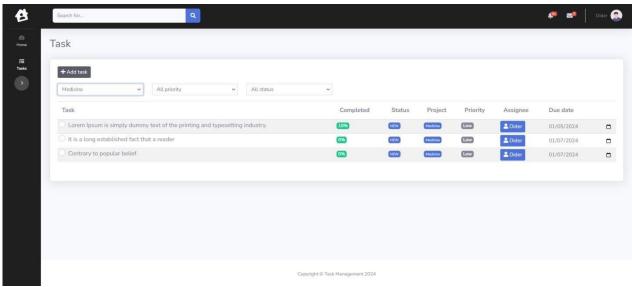
This is the complete preview of the employee dashboard after an admin assigns a project. Employees can also chat with the admin about tasks and smoothly complete their work without any hassle.

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Figure 4.10 Employee Dashboard

#### 4.12 Employee Task list

This is the complete preview of the employee dashboard after an admin assigns a project. Employees can also chat with the admin about tasks and smoothly complete their work without any hassle.





### 4.13 Back End Design:

Back-end Design refers to the internal structure of a website, also known as the server aspect design. It makes it easier to create dynamic websites. The back-end design defines how the website functions. Back-end designers, who are like computer programmers, handle things like the online form, security, and content of a website.

The most important part of web development is the back-end. It's like the foundation of the entire internet. Back-end developers deal with complex tasks like authentication, session management, database management, and security. Laravel, a popular back-end server, is used to build the backend of our project.

In our project, we worked together using Postman, an open-source platform, and a MySQL database to test our requests and responses. The pictures below show the back end of each section's API, which we designed.

#### **4.14 Implementation of Requirements**

Below, you'll find tables for collecting data. In this section, we've provided our data gathering table. The database is crucial for any project, and we aim to create a database model for each category in our project. We used a database called MySQL for this purpose.

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Figure 4.12 PHP Database

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Figure 4.13:Team members Database

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#### Figure 4.15: Projects List Database

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Figure 4.16: Task List Database

# **CHAPTER 5:**

# TESTING

#### 5.1 Utilization

The statement underscores the pivotal role of computer programs in application development, emphasizing their significance as essential components for technological progress. It highlights the structured process of form development, likely referring to the systematic creation of programs in code. The mention of an application development company suggests a business context, where programs are crafted and compiled, bringing together essential elements to form cohesive systems. Overall, the text emphasizes the crucial contribution of computer programs in advancing our technological landscape.

In summary, the message underscores the significance of computer programs in a structured development process within a business context. These programs are seen as essential components driving technological progress by forming cohesive systems, contributing to the advancement of our overall technological landscape.

#### **5.2 Integration and Verification**

During this phase, our primary goal is to integrate all the components within each test project, ensuring they work seamlessly together. We then thoroughly examine the project, actively seeking and resolving any issues that may arise, particularly focusing on identifying and fixing bugs. This stage is crucial as it allows us to refine the project's functionality, enhance its overall performance, and deliver a more polished and reliable end product. By systematically addressing and resolving issues, we aim to optimize the project's effectiveness and ensure a smooth user experience.

In summary, this phase is a critical step in the development process where integration, meticulous examination, and issue resolution play key roles. The ultimate goal is to refine the project's functionality, enhance its performance, and deliver a final product that is not only polished but also reliable and capable of providing users with a positive experience.

#### **5.3 Testing Results**

In this passage, the emphasis is on examining the effectiveness of a plan through the evaluation of the results obtained from coordinated efforts. Specifically, the statement asserts that, during the phase of testing the application, no technical errors have been detected. This absence of identified technical errors suggests that the development process has been successful and executed smoothly. Furthermore, the affirmation that the system operates seamlessly and is free from glitches is indicative of a high level of reliability and stability in the implemented plan. Reliability implies that the system can consistently perform its intended functions without unexpected failures, while stability suggests that the system is resistant to disruptions or crashes.

In summary, the text communicates a positive evaluation of the plan's implementation. It underscores the lack of technical issues and the successful performance of the tested system, reinforcing the notion that the plan has been executed effectively and the desired outcomes have been achieved.

Table 5.1: Log in	test	case	
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Conditions	Email	F	F	F	Т
	Password	F	Т	F	Т
Actions	Result	Error Please Enter a valid email and password	Error Please Enter a valid email and password	Error Please Enter a valid email and password	Successfully Logged in.
	Expected Result	Error Please Enter a valid email and password	Error Please Enter a valid email and password	Error Please Enter a valid email and password	Successfully Logged in.

Conditions	Old Password	F	F	F	Т
	New Password	F	Т	F	Т
Actions	Result	Error Please Enter a valid password	Error Please Enter a valid password	Error Please Enter a valid password	Password Changed.
	Expected Result	Error Please Enter a valid password	Error Please Enter a valid password	Error Please Enter a valid password	Password Changed.

 Table 5.2: Change Password Test Case

Table 5.3: Test case evaluation

S.L No	Test	Expected Result	Result
1	Sign Up	When unregistered users sign up, their information is saved in the MySQL database.	Successfu 1
2	Log In	When clients log in to lease items, they can view their account information.	Successfu 1
3	Forgot- Password	A mail should be sent to the registered email for verification.	Successfu 1
4	Upload Products/Items	Admin can upload new information and images for specific services.	Successfu 1
5	Log Out	Exit from the application.	Successfu 1

# **CHAPTER 6:**

# Impact on Society, Environment, and Sustainability

#### 6.1 Impact on Society

This system, unlike manual project management information systems, offers various advantages by being online or cloud-based. Speed, capacity, efficiency, cost-effectiveness, accuracy, and the ability to handle complex tasks are all benefits of an online information system. The most significant practical advantage is speed, which is crucial for efficiently distributing responsibilities across various fields. It aids in creating and maintaining organized plans, improving team collaboration, and preventing misunderstandings by outlining everyone's role.

#### **6.2 Impact on Environment**

#### 1. No Negative Environmental Impact:

□ This means that the system, whatever it may be, does not harm or damage the environment in any way. It is designed and implemented in a manner that minimizes its ecological footprint. This is a positive aspect, suggesting environmental consciousness and responsibility.

#### 2. Benefiting a Wide Range of Users:

- The system is designed to be helpful and advantageous to a diverse group of people or users. It implies that the system's features or outputs are valuable and can be utilized by many different individuals or entities.
- 3. Useful Outputs for Efficient Task Distribution:

 The system produces valuable results that are beneficial for effectively assigning and managing tasks. It suggests that the system aids in optimizing workflow or processes by distributing tasks efficiently. This could be particularly useful in organizational or work-related contexts.

#### 4. Reliable Internet Connection:

• The efficiency of the system relies on a stable and dependable internet connection. This highlights the importance of having a consistent and strong network for the proper functioning of the system.

#### 5. Computer-Driven with No Additional Environmental Risks:

• The system is powered by computers, indicating that it likely involves technology and software. Despite being computer-driven, it is emphasized that there are no extra risks to the environment. This might mean that the design or operation of the system is environmentally friendly or that it has measures in place to avoid negative impacts.

In summary, the statement suggests that the described system is environmentally conscious, beneficial to a diverse user base, efficient in task distribution with a reliable internet connection, and, despite being computer-driven, it does not introduce any additional environmental risks. It underscores a positive impact and responsible use of technology.

#### **6.3 Ethical Aspects**

The system lets managers or users assign jobs to their employees or professionals. But, it's really important to make sure things are done ethically. This means keeping a close eye on tasks, checking in regularly, and evaluating how well they're being handled. It's a bit like making sure everyone is playing by the rules.

A key part of this is finding the right balance between letting individuals grow and making sure everything is done in an ethical way. Teamwork is important, and the system helps by allowing tasks to be shared, but it's crucial to do this in a way that's fair and follows ethical standards. So, in simpler terms, the system helps bosses share tasks, but they have to make sure everyone is doing things the right way and growing as a team.

### 6.4 Sustainability Plan

Sustainability is about making sure we can keep going strong in the long run. To make a good plan for this, we first look at big challenges, figure out how to solve them, and consider everything that affects our plan, both from inside and outside. It's like making sure our plan can handle all kinds of situations over time.

For example, if we're talking about software (like computer programs), we pay attention to the important parts of it. We also try to make it better all the time by adding improvements. This way, our plan not only works well now but stays strong and effective as time goes on. It's like building a foundation for the future, making sure we're ready for whatever comes our way.

# **CHAPTER 7:**

# **Completion and Future Scope**

#### 7.1 Conclusion

It's recommended for businesses to utilize this technology for project execution, as it enhances project management by providing quality information. The system's scope, design, and features vary based on operational requirements, helping project managers handle large volumes of information for effective time management.

In summary, it's a smart move for businesses to use this technology when working on projects. It makes managing projects better by giving us good information. The way the system is set up and what it can do depends on what the business needs, which helps project managers deal with a lot of information. This is really helpful for making sure time is used well and projects are done right.

#### 7.2 Future Scope

#### 1. Web-Based Application for Project Management:

• The development team has successfully created a web-based application. This type of application is accessed through a web browser, offering flexibility and accessibility to users from different devices and locations. It provides a centralized platform for managing project data and handling the flow of information related to various tasks within a project.

#### 2. Facilitating Easy Task Sharing:

• One of the primary functionalities of the application is to make task sharing among team members more straightforward. This could involve features like assigning tasks, updating task status, and facilitating collaboration among project

participants. The goal is to streamline communication and coordination within the project team.

#### **3.** Future Plans for Feature Enhancement:

• The development team has ambitious plans for the future evolution of the application. This includes the addition of new features intended to improve the overall efficiency of the system. These features could encompass a range of tools or capabilities that enhance project management processes.

#### 4. Making Each Project Component Fully Dynamic:

• The term "fully dynamic" suggests a commitment to creating a system where every component of a project can be adjusted or modified easily. This flexibility can be crucial for adapting to changing project requirements, ensuring that the application remains responsive to the evolving needs of different projects.

#### 5. Conversion into Android and iOS Application:

• As part of the future roadmap, there is consideration for converting the entire system into a mobile application compatible with Android and iOS platforms. This signifies a recognition of the increasing prevalence of mobile devices in business operations and a desire to provide users with the flexibility to manage projects on the go.

In summary, the development team has successfully created a web-based project management application with a focus on easy task sharing. The future plans include adding features to enhance efficiency, ensuring that each project component is fully dynamic, and exploring the possibility of adapting the system into a mobile application for both Android and iOS platforms. These initiatives aim to create a robust and adaptable tool for effective project management.

We developed a web-based application for managing project data and information flow, allowing easy task sharing. Future plans include adding new features to enhance system efficiency, making each project component fully dynamic, and potentially converting the entire system into an Android and iOS application.

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# DESIGN AND DEVELOPMENT OF WEB APPLICATION ON PROJECT MANAGEMENT SYSTEM

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