VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI.

DBMS Mini Project Report on

"TASK MANAGEMENT SYSTEM"

Submitted by

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Certificate

This is to certify that the DBMS Mini Project entitled **"TASK MANAGEMENT SYSTEM"** carried out by **Ms. KOYNA KAMANACHE** bearing **USN** 2KL20CS033 **and** **Mr. RAMACHANDRA NAIK** bearing **USN** 2KL20CS065 have satisfactorily completed the academic requirements for the partial fulfilment of ***DBMS Laboratory with Mini Project (18CSL58)*** of V Semester Bachelor of Engineering in Computer Science and Engineering of the Visvesvaraya Technological University, Belagavi for the Academic year 2022-2023.

Project Coordinator **HOD**

Internal Examiner

Name:

Signature:

Date:

External Examiner

Name:

Signature:

Date:

ACKNOWLEDGEMENT

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ABSTRACT

In a company where the hierarchy of employees spans over thousand managing the work with them is a difficult job. And in an environment where number of jobs is done simultaneously picking the right person for the job is also difficult task, as you are not aware of their availability. This online task management system application is designed for such an environment where the work is divided into group of employees and during the course of division the employees are selected to be part of the work in hand.

This online task management system software being a web based is easily accessible from any corner of the company as every machine is part of a LAN network.

The reason why it is made as a web application rather than a window based application if for the same reason. The complete task is divided into two types of users. Administrator (Highest authority), Manager (working group Community). The activities underlying these sections are as per the company policies.

This online task management system application provides most of the features required to manage the tasks developed in a firm.

This online task management system volume presents the manner in which the software was developed and how the various problems are tackled at the different levels to convince the user.

We hope that online task management system project report this online task management system package would prove to be an excellent environment to make Project Management simpler for end user

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

01. Manage project activities from a central place

Project tasks and task lists make it easy to keep your work items organized and manageable in one centralized, accessible location. You can monitor the status of tasks, assign them to members, set task dependencies, send email reminders, and track the progress of your project. You can even convert emails into tasks using our task tracking software.

02. Track milestones

Milestones can be used to group tasks together and quickly evaluate how close the project is to completion. Software Projects categorizes milestones as upcoming, overdue, archived, or completed.

03. Activate timer for tasks

Start the timer for a task to record your actual working hours. After completing the task, you can stop the timer and your entries are automatically logged in the timesheet.You can log time for tasks daily or weekly at your convenience and easily calculate the billable and non-billable hours for any project.

04. Update tasks in one go

You can update tasks selectively or in bulk. In Classic View, you can close tasks, set priority, change the task owner, and move a task from one task list to another. In Plain View, you can close tasks, set priority, and change the task owner

1.1.1 IMPORTANCE OF DBMS

What is a Database?

A **database** is an organized collection of data, so that it can be easily accessed and managed. Data is raw, unprocessed, unorganized facts that are seemingly random and do not yet carry any significance or meaning. A data can be in variety of forms like text, numbers, media, bytes ,etc. Many activities in our everyday life involve interactions with databases. For example, if we purchase something online or if we make airline reservations or if we do netbanking – we will come across databases.

A database stores and manages a large amount of data on a daily basis. Thus these data need to be stored and retrieved easily. Thus in order to manage such a large amount of data, software is created called as a Database Management System.

What is a Database Management System?

A Database Management System (DBMS) is software designed to store, retrieve, define, and manage data in a database. It consists of a group of programs which manipulate the database. The DBMS accepts the request for data from an application and instructs the operating system to provide the specific data.

A **relational database management system (RDBMS)** refers to a collection of programs and capabilities that is designed to enable the user to create, update, and administer a relational database, which is characterized by its structuring of data into logically independent tables. In this project we are using a relational database model to store data in the form of tables.

The Database management system plays an important role in processing and controlling information. The importance of database management system is given by

- **Data redundancy and inconsistency :**

Redundancy is the concept of repetition of data i.e. each data may have more than a single copy. The file system cannot control redundancy of data as each user defines and maintains the needed files for a specific application to run. There may be a possibility that two users are maintaining same files data for different applications. Hence changes made by one user does not reflect in files used by second users, which leads to inconsistency of data. Whereas DBMS

controls redundancy by maintaining a single repository of data that is defined once and is accessed by many users. As there is no or less redundancy, data remains consistent.

- **Data sharing:**

File system does not allow sharing of data or sharing is too complex. Whereas in DBMS, data can be shared easily due to centralized system.

- **Data concurrency:**

Concurrent access to data means more than one user is accessing the same data at the same time. Anomalies occur when changes made by one user gets lost because of changes made by other user. File system does not provide any procedure to stop anomalies. Whereas DBMS provides a locking system to stop anomalies to occur.

- **Data searching:**

For every search operation performed on file system, a different application program has to be written. While DBMS provides inbuilt searching operations. User only have to write a small query to retrieve data from database.

- **Data integrity :**

There may be cases when some constraints need to be applied on the data before inserting it in database. The file system does not provide any procedure to check these constraints automatically. Whereas DBMS maintains data integrity by enforcing user defined constraints on data by itself.
To ensure the integrity of a database, each change or transaction must conform to a set of rules known as ACID: Atomicity, Consistency, Isolation and Durability.

- **System crashing:**

In some cases, systems might have crashes due to various reasons. It is a bane in case of file systems because once the system crashes, there will be no recovery of the data that's been lost. A DBMS will have the recovery manager which retrieves the data making it another advantage over file systems.

- **Data security:**

DBMS has specialized features that help provide shielding to its data. Only authorized users are allowed to access the data in DBMS. Also, data can be encrypted by DBMS which makes it secure.

- **Multiple data views :**

Different views of same data can be created to cater the needs of different users.

1.1.2 SQL

- **SQL** stands for **Structured Query Language.**
- Structured Query Language is the primary language used to communicate with Relational Databases like MySQL, Oracle, SQL Server, PostGres, etc.
- SQL is used to add, update or delete rows of data, retrieving subsets of data for transaction processing and analytics applications, and to manage all aspects of the database.
- SQL became a standard of the American National Standards Institute (ANSI) in 1986. The standard ANSI SQL is supported by all popular relational database engines, and some of these engines also have extension to ANSI SQL to support functionality which is specific to that engine.
- SQL allows users to understand and analyse the databases, which include the data fields in their tables.
- To control the rows of information stored in tables, SQL uses Queries. A Query is a special code written to retrieve the information from the database or perform any task.
- The crucial importance of SQL is that it provides lots of useful commands to interact with this data. When utilized effectively, these commands are very powerful in helping the clients to manage and modify vast volumes of data effortlessly.
- Some of the best-known and most essential commands are SELECT, DELETE, CREATE DATABASE, INSERT INTO, ALTER DATABASE, CREATE TABLE, and CREATE INDEX.

  SQL statements and are divided into different categories like : Data

  Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL).

1.1.3 IMPORTANCE OF NORMALIZATION

Normalization is a database design technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update and Deletion Anomalies. Normalization rules divide larger tables into smaller tables and links them using relationships. The purpose of Normalization in SQL is to eliminate redundant (repetitive) data and ensure data is stored logically.

Normalization is important because of the following reasons:

- Resolving the database anomalies :
  The forms of Normalization i.e. 1NF, 2NF, 3NF, BCF, 4NF and 5NF remove all the Insert, Update and Delete anomalies.
- Insertion Anomaly: occurs when you try to insert data in a record that does not exist.
- Deletion Anomaly: when a data is to be deleted and due to the poor deign of database, other record also deletes.
- Eliminate Redundancy of Data: Storing same data item multiple times is known as Data Redundancy. A normalized table do not have the issue of redundancy of data.
- Data Dependency: The data gets stored in the correct table and ensures normalization.
- Isolation of Data: A good designed database states that the changes in one table or field do not affect other. This is achieved through Normalization.
- Data Consistency: While updating if a record is left, it can lead to inconsistent data, Normalization resolves it and ensures Data Consistency.

1.1.4 STORED PROCEDURES

A SQL **Stored Procedure** (SP) is a collection SQL statements and SQL command logic, which is compiled and stored on the database. Stored procedures in SQL allow us to create SQL queries to be stored and executed on the server. Stored procedures can also be cached and reused. The main purpose of stored procedures is to hide direct SQL queries from the code and improve performance of database operations such as select, update, and delete data.

The stored procedure is created with the CREATE OR REPLACE PROCEDURE statement.

The syntax is given by:

CREATE or REPLACE PROCEDURE name (parameters)

IS

variables;

BEGIN

//statements;

END;

The most important part is parameters. Parameters are used to pass values to the Procedure.

There are 3 different types of parameters, they are as follows:

1. **IN:**

This is the Default Parameter for the procedure. It always receives the values from calling program.

2. **OUT:**

This parameter always sends the values to the calling program.

3. **IN OUT:**

This parameter performs both the operations. It receives value from as well as sends the values to the calling program.

The stored procedure is executed by:

EXECUTE [Procedure Name];

The benefits of using stored procedures:

- **It can be easily modified**: We can easily modify the code inside the stored procedure without the need to restart or deploying the application.
- **Reduced network traffic:** It reduces network traffic.
- **Reusable:** Stored procedures can be executed by multiple users or multiple client applications without the need of writing the code again.
- **Security:** Stored procedures reduce the threat by eliminating direct access to the tables. we can also encrypt the stored procedures while creating them so that source code inside the stored procedure is not visible.
- **Performance:** The SQL Server stored procedure when executed for the first time creates a plan and stores it in the buffer pool so that the plan can be reused when it executes next time.

1.1.5 TRIGGERS

Trigger is a special type of stored procedure that automatically runs when an event occurs in the database server. **Triggers** run when a user tries to modify data through a data manipulation language (DML) event. DML events are INSERT, UPDATE, or DELETE statements on a table or view.

Triggers can be written for the following purposes:

- Generating some derived column values automatically.
- Enforcing referential integrity
- Event logging and storing information on table access
- Auditing
- Synchronous replication of tables
- Imposing security authorizations
- Preventing invalid transactions

The syntax for creating a trigger is –

```
CREATE [OR REPLACE] TRIGGER trigger_name

{BEFORE | AFTER} triggering_event (INSERT/UPDATE/DELETE) ON table_name
[FOR EACH ROW]
[WHEN condition]
DECLARE declaration statements
BEGIN executable statements
EXCEPTION exception_handling statements (optional)

END;
```

Where,

- CREATE [OR REPLACE] TRIGGER trigger_name − Creates or replaces an existing trigger with the *trigger_name*.
- {BEFORE | AFTER} − This specifies when the trigger will be executed.
- {INSERT | UPDATE | DELETE} − This specifies the DML operation.
- [ON table_name] − This specifies the name of the table associated with the trigger.
- [REFERENCING OLD AS o NEW AS n] − This allows you to refer new and old values for various DML statements, such as INSERT, UPDATE, and DELETE.
- [FOR EACH ROW] − This specifies a row-level trigger, i.e., the trigger will be executed for each row being affected. Otherwise the trigger will execute just once when the SQL statement is executed, which is called a table level trigger.
- WHEN (condition) − This provides a condition for rows for which the trigger would fire. This clause is valid only for row-level triggers.

1.2 MOTIVATION & OBJECTIVE

MOTIVATION

I. Project justification: TMS provides a platform for research progression management to achieve a centralized progression tracking. The supervisor and the student could have an identical visual on research milestones and allowed to have the progress updated from time to time. Potential performance laid back or unprogressively working plan can be identified at an early stage and appropriate action can be discussed in order to meet the milestone as per planned. Apart from that, a centralized notification channel for research study can be achieved to avoid confusion or message missed. Lastly, TMS provides a dashboard which illustrates the overview of the research study distribution and progression trending, the report will be generated on the portal.

OBJECTIVES

The main objective of this project is to create a platform for Companies to Manage Employees tasks which are Observed by Managers(Admin)

Task Management System for managers is a project which conducts in order to provide a web-based application called Task Management System (TMS) for Employees and Managers of companies. It is an application which provides a platform for the research student to update their plan and milestone of their reports periodically. This project is to produce an application which would able to keep track records of each progress of Employee and able to provide a progress report of each employee to their supervisor.

1.3 PROBLEM STATEMENT

An employee task management system is a software application that helps companies and organizations manage and track the tasks assigned to their employees. The problem statement for such a system might include the following:

- Difficulty in tracking the progress of tasks and ensuring they are completed on time
- Inefficient communication and coordination between employees and managers
- Lack of visibility into how much time is being spent on specific tasks or projects
- Difficulty in identifying bottlenecks or areas where additional resources are needed
- Inability to easily generate reports or analyze data on employee productivity and task completion

The goal of an employee task management system is to address these problems and help improve the efficiency, productivity, and accountability of the organization's workforce.

1.4 PROBLEM DISCUSSION

An employee task management system is a valuable tool for organizations of all sizes. It allows managers and employees to track, assign, and manage tasks more efficiently, which can help improve productivity, accountability, and communication within the organization.

One of the main benefits of an employee task management system is the ability to track task progress and ensure that tasks are completed on time. With the system, managers can assign tasks to specific employees and set deadlines, and employees can update their progress as they work on the tasks. This allows managers to have a clear understanding of what tasks are currently being worked on, and whether they are on track to be completed on time.

Another benefit is improved communication and coordination between employees and managers. With an employee task management system, employees can easily communicate with managers and other team members, providing updates on their progress or asking questions about specific tasks. This can help ensure that everyone is working towards the same goal and that there are no misunderstandings or delays caused by lack of communication.

An employee task management system also provides a level of visibility into how much time is being spent on specific tasks or projects. This can help managers identify bottlenecks or areas where additional resources are needed, allowing them to make better-informed decisions about how to allocate resources. Additionally, the system allows managers to generate reports or analyze data on employee productivity and task completion, giving them a better understanding of how their workforce is performing.

In conclusion, an employee task management system can be an effective tool for improving the efficiency, productivity, and accountability of the organization's workforce. It allows managers and employees to easily track, assign, and manage tasks, and provides the visibility and communication needed to ensure that tasks are completed on time and to the best of their ability.

CHAPTER 2: SOFTWARE REQUIREMENTS & SPECIFICATIONS

2.1 FUNCTIONAL REQUIREMENTS

The functional requirements for an employee task management system may include:

1. Task assignment and management: The system should allow managers to assign tasks to specific employees and set deadlines. It should also allow employees to view and update their assigned tasks.
2. Progress tracking: The system should allow managers and employees to track the progress of tasks and ensure they are completed on time.
3. Communication and collaboration: The system should include tools for employees and managers to communicate and collaborate on tasks, such as messaging, commenting, or file sharing.
4. Reporting and analytics: The system should allow managers to generate reports or analyze data on employee productivity and task completion.
5. User management: The system should allow managers to add, remove, or edit user accounts, and assign different levels of access or permissions to different users.
6. Notifications and reminders: The system should send notifications and reminders to employees and managers about upcoming deadlines or tasks that need attention.
7. Integration with other systems: The system should be able to integrate with other systems, such as calendars, email, or project management software.
8. Mobile accessibility: The system should be accessible via mobile device so that employees can update their task status or communicate with their manager on the go.
9. Security: The system should have a robust security system in place to protect sensitive information and user data.
10. Scalability: The system should be scalable, meaning it should be able to handle increasing numbers of users and tasks without performance issues.

These are some of the most common functional requirements for an employee task management system. Depending on the specific needs of the organization, additional requirements may also be necessary.

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2.2 NON- FUNCTIONAL REQUIREMENTS:

1. Performance: The system should be able to handle a large number of tasks and users with minimal lag or delays.
2. Reliability: The system should be reliable and available for use at all times, with minimal downtime or maintenance required.
3. Usability: The system should be easy to use and understand for both employees and managers, with a user-friendly interface.
4. Security: The system should have a robust security system in place to protect sensitive information and user data, such as role-based access controls and encryption.
5. Data management: The system should be able to store, retrieve and manage data effectively and in a timely manner.
6. Scalability: The system should be able to handle increasing numbers of users and tasks without performance issues.

2.3 SOFTWARE REQUIREMENTS

Software requirement involves defining prerequisites that need to be installed on a computer for the application to function optimally.

The software requirements for our project are:

- Operating System : Windows or Linux or MacOS
- Front End Scripting Language: HTML, CSS, JavaScript
- Back End : PHP
- Database Management System : MySQL
- Server Package : XAMPP

2.4 HARDWARE REQUIREMENTS

- Hardware requirements for this project are given by :
- Processor : Intel core i3 or above or equivalent
- RAM : 4GB

2.5 LANGUAGES USED FOR IMPLEMENTATION

- **HTML**

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser.

It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items.

Importance of HTML is given by A widely used language with a lot of resources and a huge community behind. Runs natively in every web browser. Open-source and completely free.Clean and consistent markup. The official web standards are maintained by the World Wide Web Consortium (W3C).Easily integrable with backend languages such as PHP and Node.js.

- **CSS**

Cascading Style Sheets (**CSS**) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of presentation and content, including layout, colours, and fonts. This separation can improve

content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

- **PHP**

PHP is a general-purpose scripting language especially suited to web development. It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1994. The PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page, but it now stands for the recursive initialism PHP: Hypertext Preprocessor.PHP code is usually processed on a web server by a PHP interpreter implemented as a module, a daemon or as a Common Gateway Interface (CGI) executable. On a web server, the result of the interpreted and executed PHP code – which may be any type of data, such as generated HTML or binary image data – would form the whole or part of an HTTP response. Various web template systems, web content management systems, and web frameworks exist which can be employed to orchestrate or facilitate the generation of that response. Additionally, PHP can be used for many programming tasks outside of the web context, such as standalone graphical applications and robotic drone control. Arbitrary PHP code can also be interpreted
and executed via command-line interface (CLI).The benefits of using PHP :PHP runs on platforms like Linux, Windows etc.

- Easy function methods and syntax of this language.
- Supports DBMS and other open source databases.
- Supports Oracle, MySQL etc.
- Compatible with the servers like IIS, Apache etc.
- Offers comparable efficiency and usability when used for website development.
- Websites developed with PHP include faster processing features and they function easily which makes the data processing easy.
- It is compatible on all Operating Systems such as UNIX, Windows etc.
- Compatibility to upload into HTML
- Affordable to customize, design, develop and modify PHP based websites.

- PHP is easier when compared to other scripting languages and it is easy to comprehend with its simple features and techniques.

- **JavaScript**

JavaScript, an object scripting language which is used in web pages along with markup language HTML. JavaScript is very popular and adopted universally by every web browser for its support which allows dynamic content to get execute in a webpage. JavaScript does not incorporate or abide by any HTML tags or rules. It is similar to stand-alone programming language developed by Sun Microsystems. As JavaScript got its success worldwide with its integration into the web browsers, the Microsoft has added the JavaScript technology to its own Browser Internet Explorer. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behaviour, and all major web browser have a dedicated JavaScript engine to execute it.

JavaScript benefits:

- Faster user experiences.
- JavaScript helps in user interface interactivity.
- Good and responsive web design.
- Easy to learn.

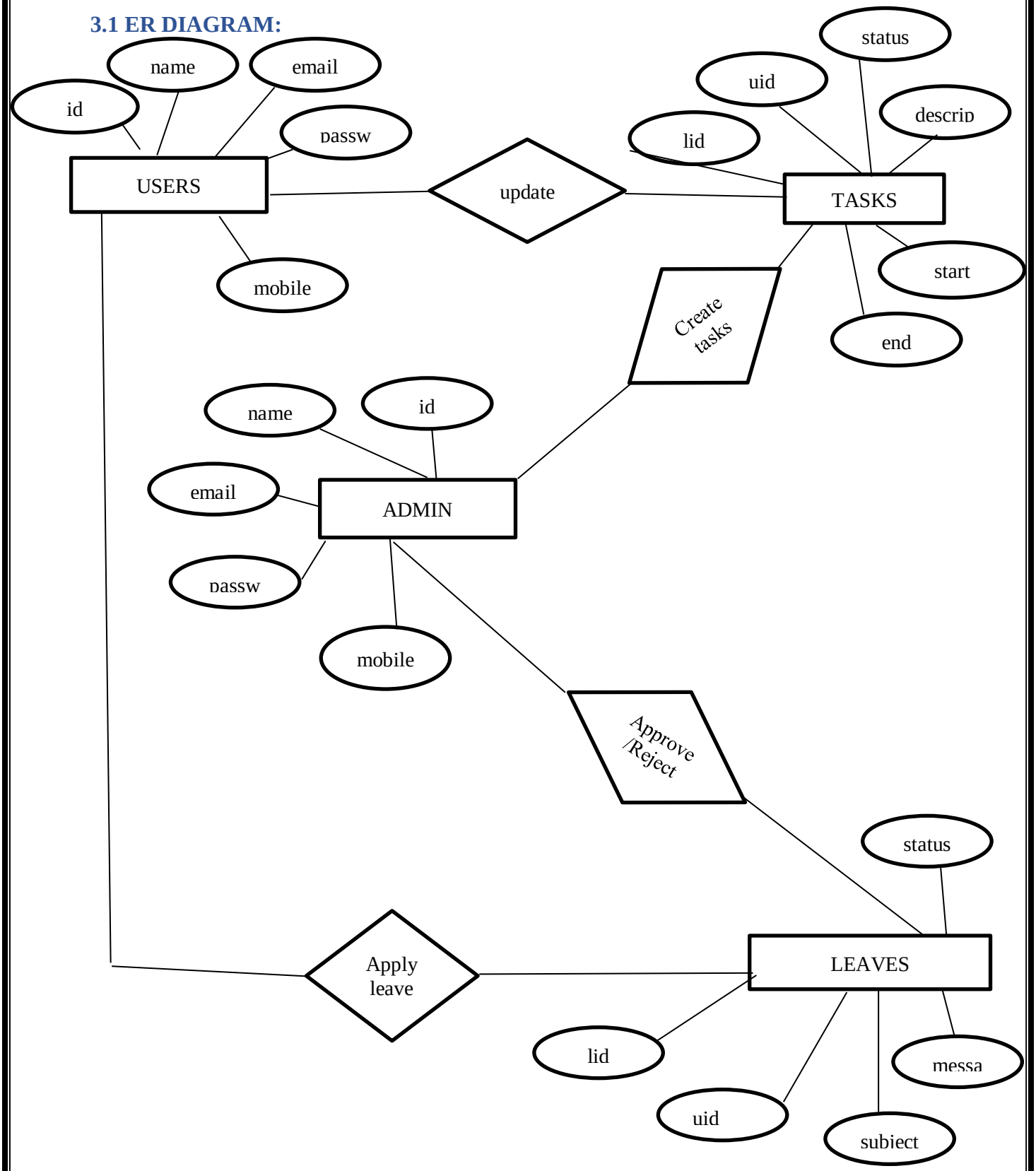
- **MySQL**

MySQL is a widely-used, open-source relational database management system (RDBMS). It is based on the Structured Query Language (SQL), which is used for managing and manipulating relational databases. MySQL is known for its reliability, ease of use, and performance, making it a popular choice for web-based applications and other systems that require a database..

MySQL stores data in tables, which are similar to spreadsheets, with rows and columns. Each table has a set of columns (also known as fields) that define the type of data that can be stored in each row. MySQL allows users to create, read, update, and delete data in the database using SQL commands.

CHAPTER 3: SYSTEM DESIGN

3.1 ER DIAGRAM:



3.2 SCHEMA DIAGRAM

ADMINS

id	name	email	password	mobile

USERS

uid	name	email	password	mobile

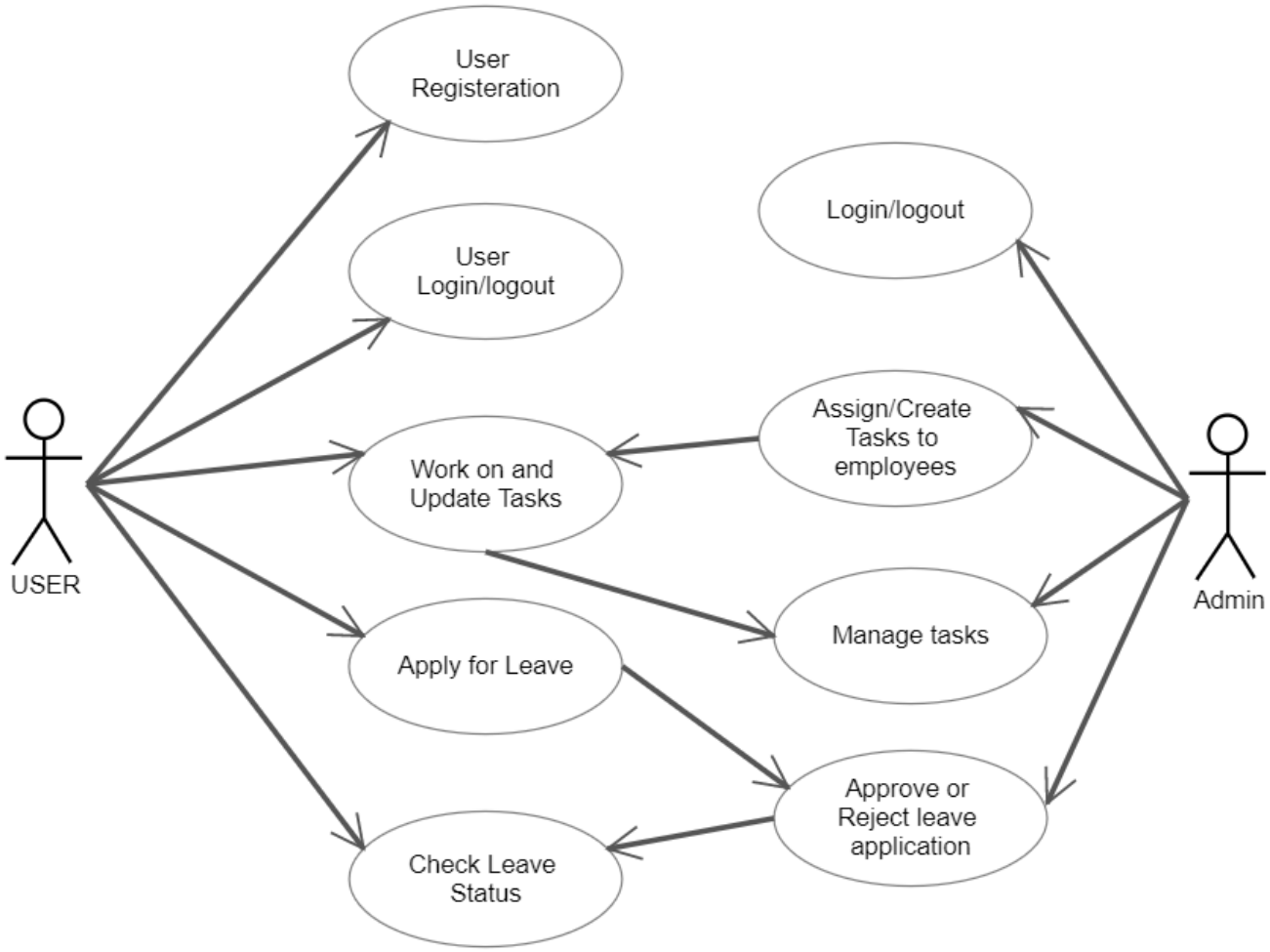
LEAVES

lid	uid	subject	message	status

TASKS

tid	uid	description	start_date	end_date	status

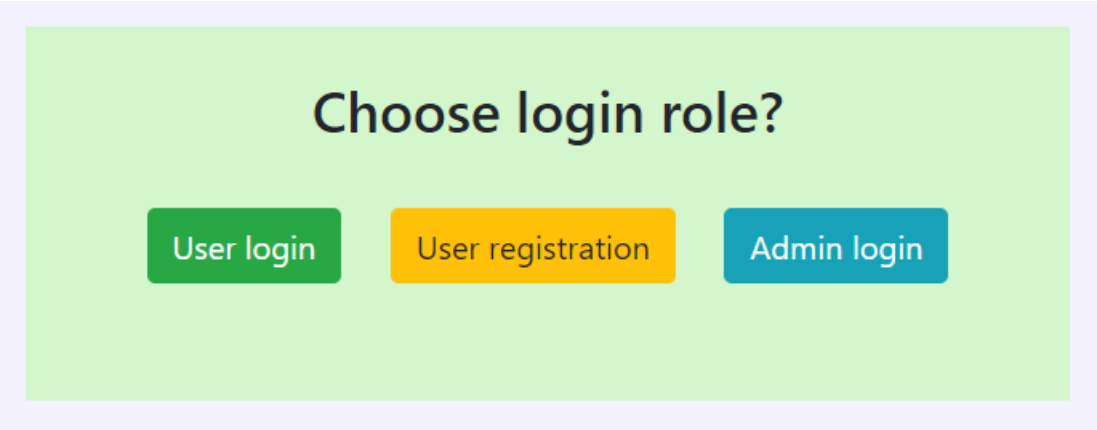
3.3 USE CASE DIAGRAM



CHAPTER 4: IMPLEMENTATION AND SCREENSHOTS

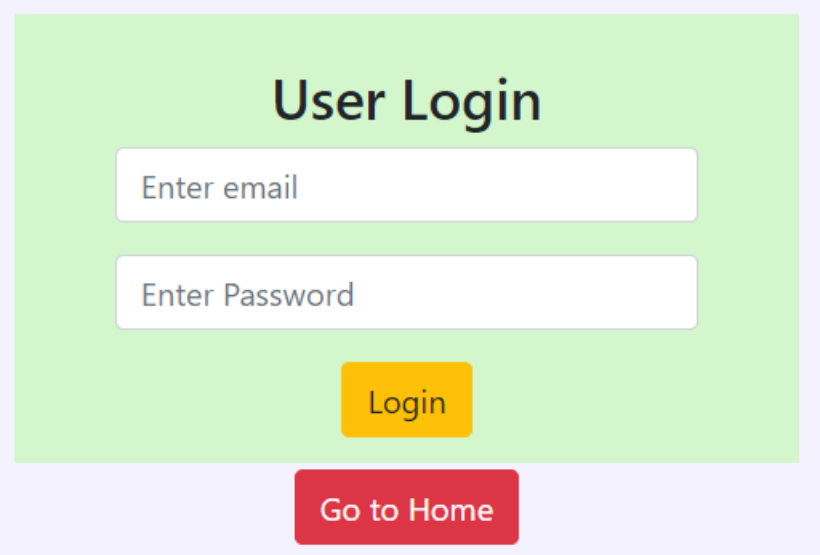
Landing Page:

This page facilitates the users to register , login themselves with their mobile number as user-id.

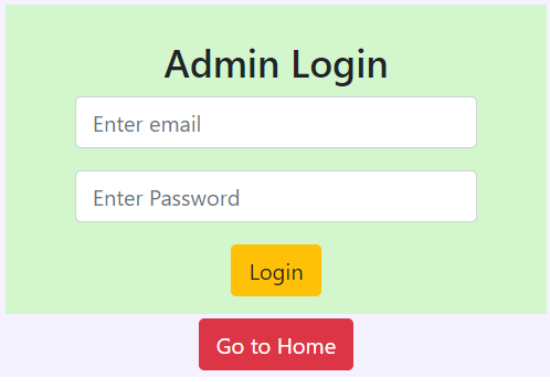


USER LOGIN:

This facilitates user to login with his already existing account details.

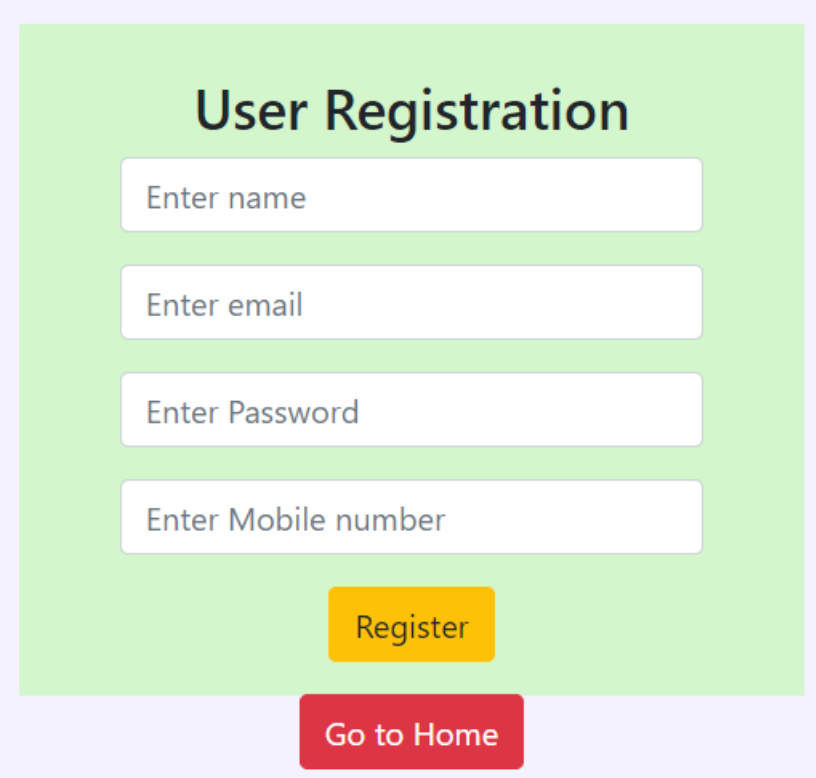


ADMIN LOGIN: This is for managers/supervisors to login



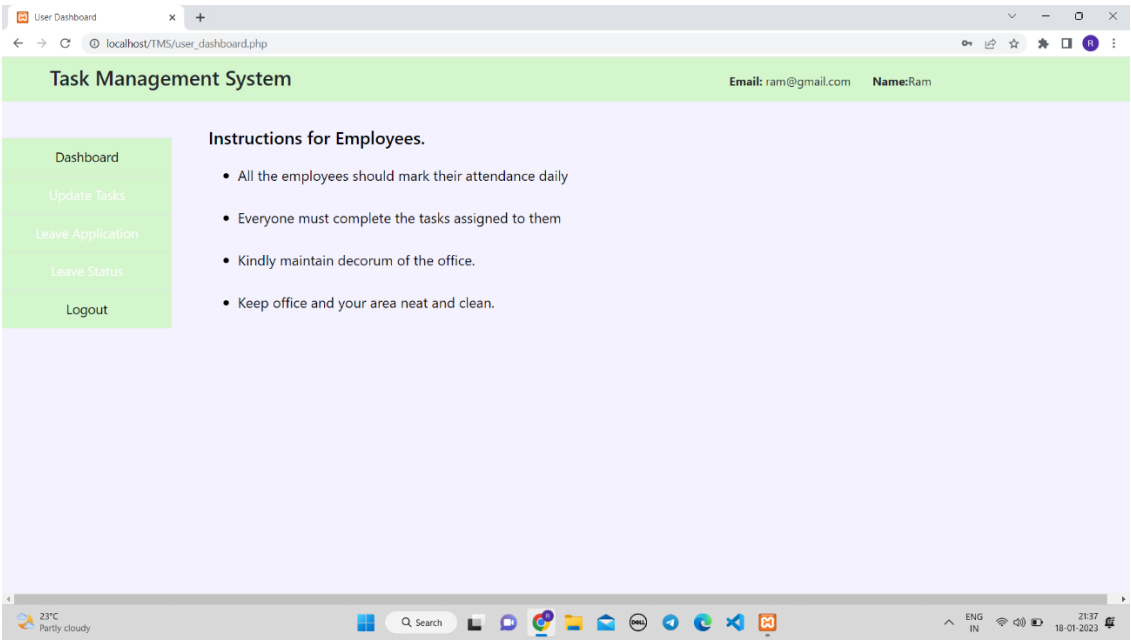
USER REGISTER:

This page contains a form to collect data and create a new user / insert a new user in users table



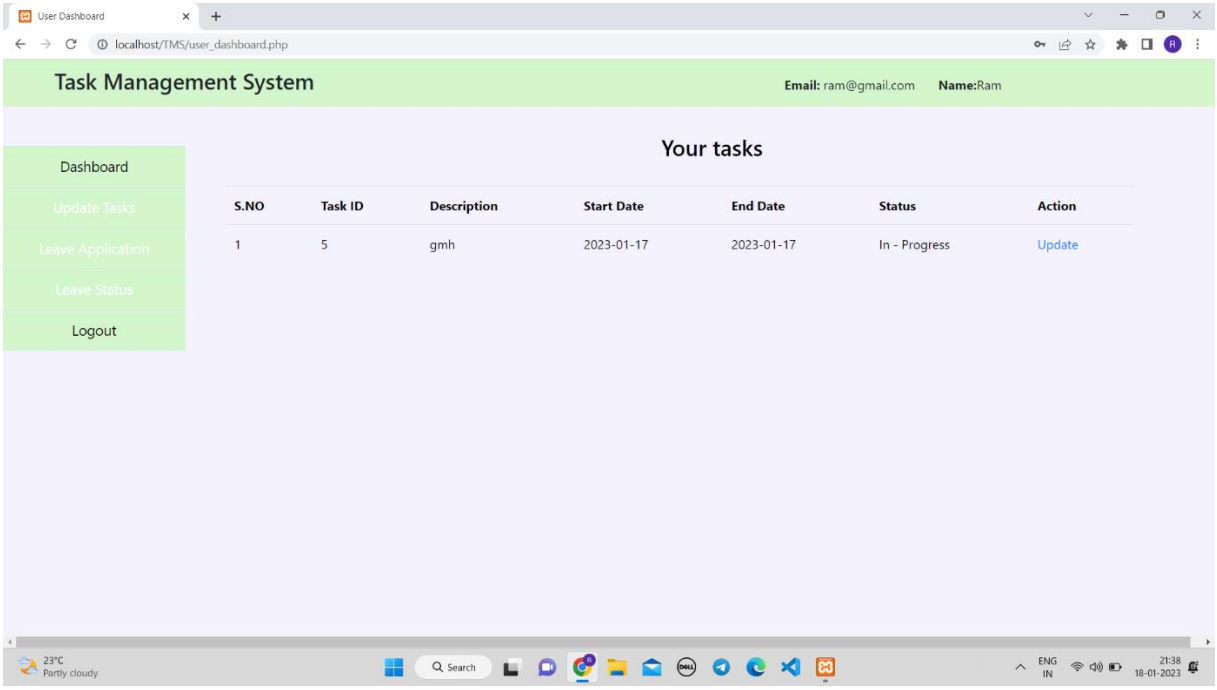
USER DASHBOARD:

This page is opened when a user is logged in



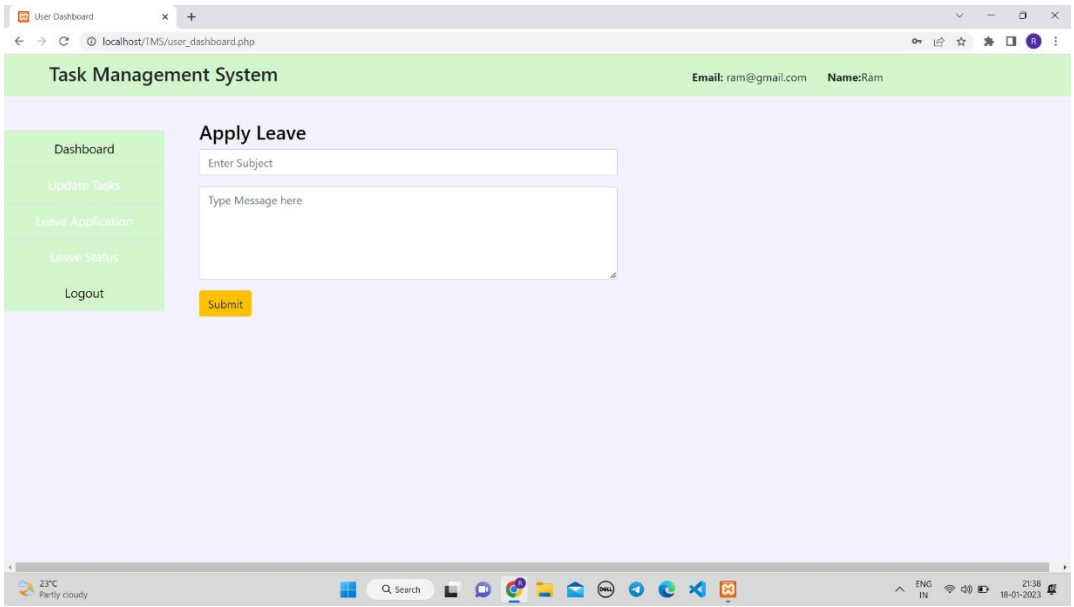
UPDATE TASKS:

This page contains all the tasks assigned to the user and he/she can update the status of tasks assigned to him/her.



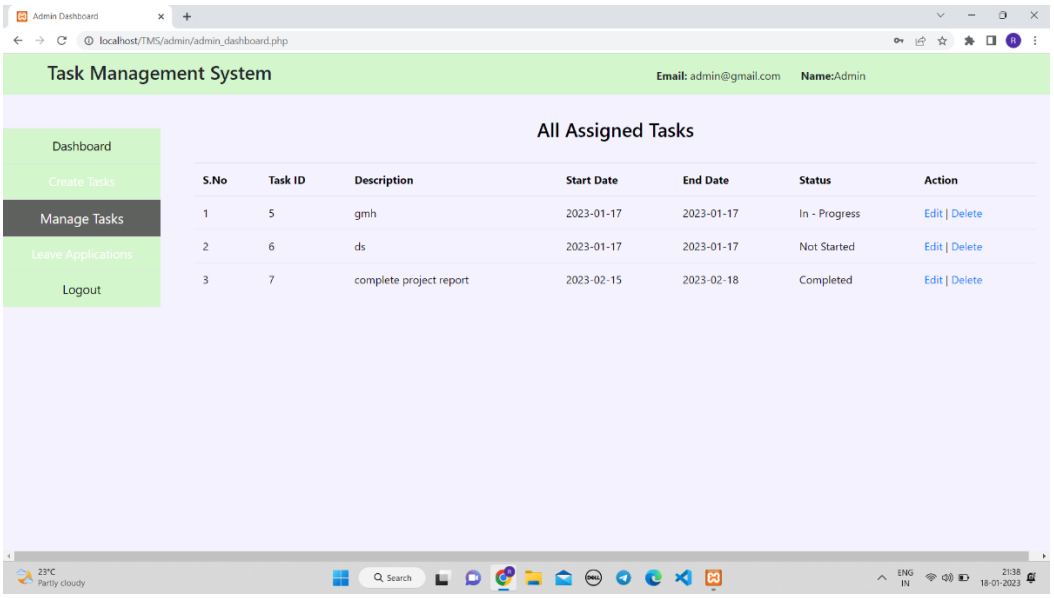
LEAVE
APPLICATION :

This page contains a form for employee for applying leave



MANAGE TASKS:

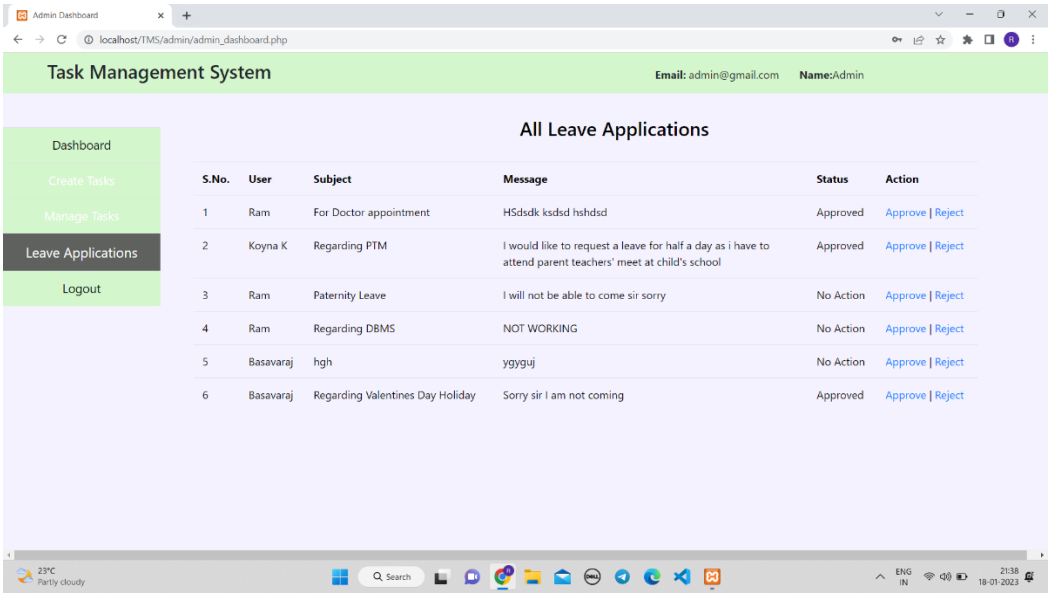
This page contains all the tasks assigned to all the users, it's in admin dashboard



Admin can also edit or delete the tasks

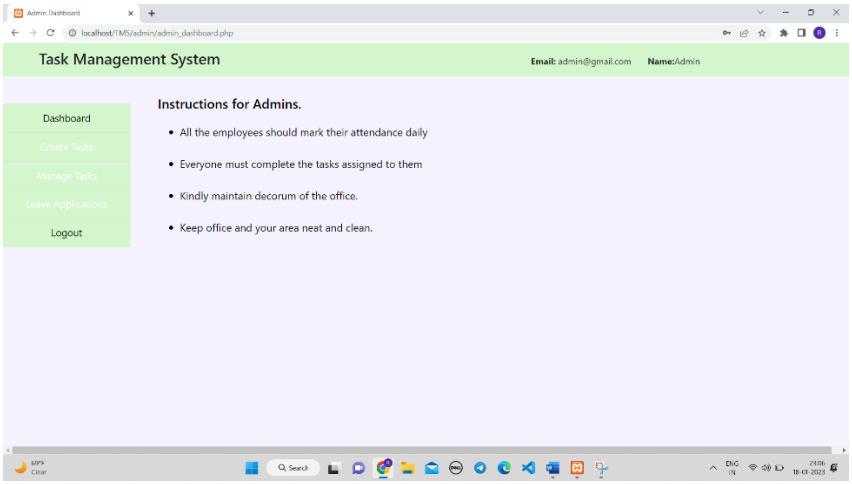
LEAVE APPLICATIONS:

This page contains all the leave applications of all the users , which admin can approve or reject



ADMIN DASHBOARD:

This page has all the links to other admins functionalities.



4.1 MODULES

The system after careful analysis has been identified to be consisting of the following modules and roles. The modules involved are:

- Administrator
- Users/Employees

Admin:

The administrator is the super user of this application. Only admin have access into this admin page. The administrator has all the information about all the users and about all tasks

- Admin can view and remove tasks.
- Admin can view and remove Leave applications.
- Admin can reject and accept applications.

Users:

- Users must login with their password and user ID
- They can view tasks assigned to them .
- They can update tasks
- They can apply for leave.
- They can check leave status

CHAPTER 5: CONCLUSION

Without software, collaboration can be quite tricky. especially in a remote work environment.
Your team members cannot rely on spreadsheets for complex tasks and completing them prior to their deadlines.

When you manage complex tasks manually, it can be a strenuous job. For this reason, task management systems Offer automated solutions. Automation can help to free up a big part of your time that would be otherwise spent Thesetasks.

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