Timesheet Application

1. Introduction

Purpose

The purpose of this Timesheet Management Application is to help organizations and employees efficiently manage time logs, project assignments, and task tracking. It streamlines employee productivity, tracks project hours, and automates report generation.

Scope

This application enables:

- Employees to log time spent on specific tasks or projects.
- Administrators to manage users, projects, and reports.

2. Features

User Management

- User registration, login, and role-based access control.
- Roles: Admin, User

Project Management

- Add, edit, and manage projects.
- Assign projects to employees.

Time Log Management

- Employees can submit their daily or weekly time logs.
- Automatic validation of entries.

Timesheet Approval

- Managers can review, approve, or reject submitted timesheets.

Dashboard Management

Role-based dashboards displaying relevant information:

- **Employees**: View assigned projects and submitted timesheets.
- **Admins**: Overall summary and system reports.

Notifications

- Email alerts for timesheet submissions and approvals.

3. System Modules

3.1 User Management

Functionalities:

- User registration and login.
- **Role management:** admin, user.

Roles:

Admin: Can create and manage users.
Employee: Submit and manage time logs.

3.2 Project Management

Functionalities:
Create, edit, and delete projects.
Assign employees to projects.
Set project timelines and details.

Actors:
Admin: Full project control.
User: View the Projects.

3.3 Time Log Management

Functionalities:
Employees can log working hours for specific projects.
Validate daily working hours (e.g., 0–24 hours).

Actors:
Employee: Submits time logs.
Admin: approves or rejects time logs.

3.4 Dashboard Management

Functionalities:

- **Role-specific dashboards:**
- **Employee Dashboard:** View tasks, logs, and status.
- **Admin Dashboard:** System overview, reports, and user management.

4. Technical Stack

Frontend:
Framework: Angular
Styling: Bootstrap and Material UI

Backend:

- **Technology**: Node.js with Express.js
- **Database**: MongoDB

Security:

- **Password encryption:** bcrypt
- **Authentication**: JSON Web Tokens (JWT)
- HTTPS for secure communication.

Tools & Libraries:

- **Backend Testing**: Postman
- **Version Control:** Git / GitHub
- **API Documentation**: Postman

5. Workflow

Employee Workflow:

- Log in, → View assigned projects, → Add time logs, and submit for approval.

Admin Workflow:

- Log in → Manage users, projects → View system

6. Database Design

Tables:

Users:

- username (PK)
- Name, Email, Password, Phone, Department, Business Unit
- usertype(Admin, User)

Projects:

- Project ID (PK)
- Project Name, Client Name, Address, Department, Project Type
- Assigned Employees

TimeLogs:

- UserId(PK)
- User Name, Date, ProjectName, Task, Hours, TaskStatus

Timesheets:

- Timesheet ID (PK)
- User ID (FK)
- Project ID (FK)
- Date, Hours Worked
- Status (Completed, InProcess)

7. High-Level Design

1. System Architecture

- Frontend: Angular.
- Backend: Node.js with Express.js for APIs.
- Database: Relational database like MySQL/PostgreSQL.
- Authentication: JWT-based authentication for secure login.

2. Modules and Features

User Management

- Login, Add, Edit, Delete, Search, Filter Users.

Project Management

- Add, edit, delete, assign users, assign tasks, search, and filter projects.

Timelog Management

- Add and view timelog entries (User/Admin).

Dashboard Management

- View planned vs. actual hours, tasks, project status, and user performance.

3. System Flow

- User Login → Authenticate and Redirect to Role-Specific Dashboard.

Admin Panel

- Manage Users → CRUD, Search, Filter.
- Manage Projects → CRUD, Assign Users and Tasks.
- View Timelogs → All User Entries.
- Generate reports in Dashboard.

User Panel → Add/View Timelogs, View Assigned Projects.

8. Low-Level Design

8.1 Database Schema

User Table:

Column	Type
username	Varchar
email	Varchar
phone	Varchar
password	Varchar
department	Varchar
business_unit	Varchar

Projects Table:

Column	Type
project_name	Varchar
client_name	Varchar
address	Varchar
department	Varchar
business_unit	Varchar
project_type	Varchar

Tasks Table:

Column	Type
task_id	int
project_id	int
task_name	Varchar
planned_hours	int
status	Varchar

Tasks Table:

Column	Type
log_id	int
user_id	int
project_id	Varchar
task_name	int
date	Date
hours _spent	int
task_status	Varchar

8.2 API Endpoints

User Management

- **POST /api/users/login**: Login user.
- **GET /api/users**: List all users.
- **POST /api/users**: Add new user.
- **PUT /api/users/:id**: Edit user details.
- **DELETE /api/users/:id**: Delete user.
- **GET /api/users/search?query=xyz**: Search users.
- **GET /api/users/filter?department=IT&business_unit=HR**: Filter users.

Project Management

- **GET /api/projects**: List all projects.
- **POST /api/projects**: Add new project.
- **PUT /api/projects/:id**: Edit project.
- **POST /api/projects/:id/assign**: Assign users/tasks.
- **GET /api/projects/search?query=abc**: Search projects.
- **GET /api/projects/filter?department=IT**: Filter projects.

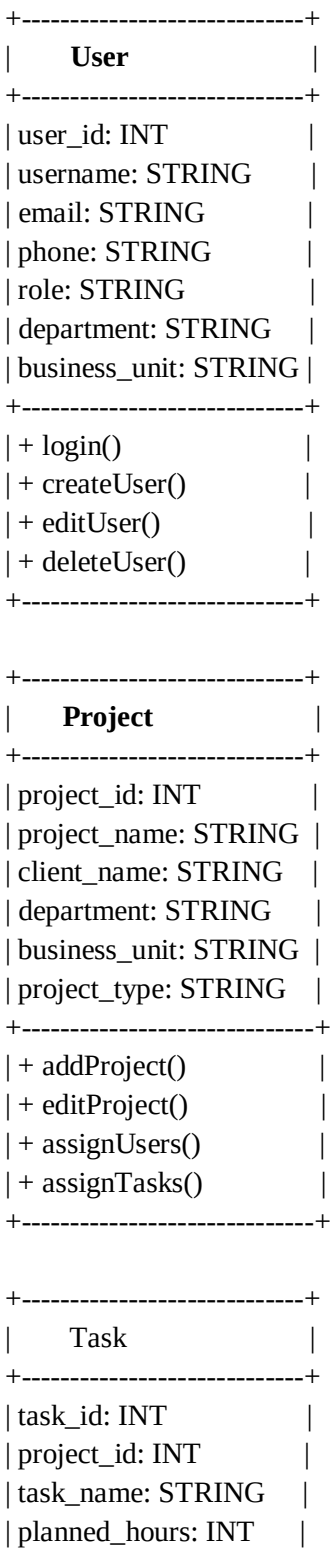
Timelog Management

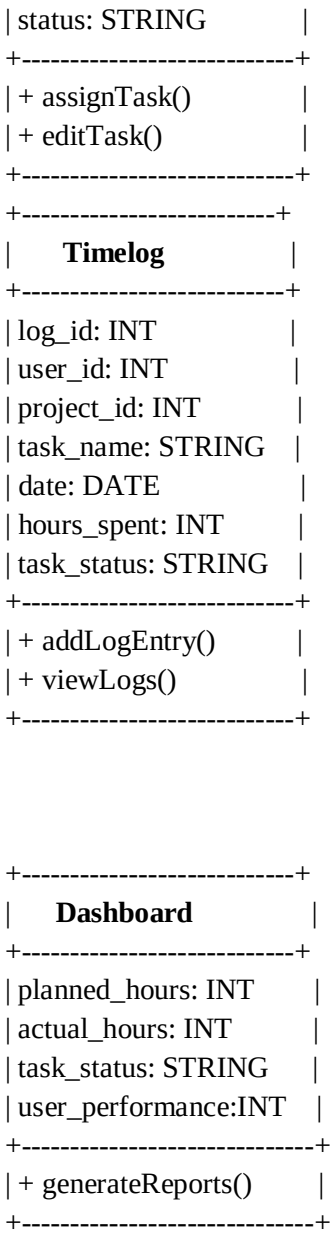
- **POST /api/timelogs**: Add new log entry.
- **GET /api/timelogs/user/:id**: View user's logs.
- **GET /api/timelogs/admin**: View all logs (admin).

Dashboard Management

- **GET /api/dashboard/planned-vs-actual**: Planned vs Actual Hours.
- **GET /api/dashboard/task-status**: Task status by project.
- **GET /api/dashboard

9. Class Diagram





Relationships:

- User 1..* → 1 Project
- Project 1..* → 1 Task
- User 1 → * Timelog
- Timelog * → 1 Project

10. Conclusion

The Timesheet Management Application is an efficient solution for organizations to streamline employee time tracking, project monitoring, and reporting. Its user-friendly design and robust backend architecture ensure scalability, reliability, and security.