

PROJECT TRACKING SYSTEM USING MERN STACK

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Abstract-- This paper represents the Project Tracking System is a web application that provides tracking and management of various projects of an organization or company. Easy management and monitoring of ongoing projects in a company or organization and the employees assigned to these projects.

The project tracking system can be used to identify all the tasks required to complete the project in a timely and successful manner. Therefore, it is recommended to implement a plan at the planning stage to control and manage the allocated resources. The project tracking system provides a fully automated monitoring and scrutiny system for financial applications, keeping track of planned, actual, and revised expenses from information system accounts. The project tracking system provides the most standardized automated technology for planning and budgeting in diverse group activities. The administrator has complete control over the system, allowing them to create and delete projects as needed. Assign start and end dates for these projects, assign people to work on those projects, and track project progress.

Instead of manually storing and remembering the documents and details of each project, the user can speed up the process using this software with just a few mouse clicks.

Keywords: Project Tracking System (PTS), MERN Stack, Progressive Web App, Web Application.

I. INTRODUCTION

The project tracking system is designed to help in the management of different projects for a company. It allows easy management and monitoring of the different projects that are executed in the company and the people assigned to these projects.

The project tracking system helps the organization to recognize all the tasks that are required to complete the organization's project successfully on time. That is why it is recommended to deploy it during the planning phase of a project to control and regulate the assigned resources. The Project Tracking System provides a fully automated monitoring and evaluation system for financial requests by simply tracking planned, actual, and changed expenses in the information system accounts. The project tracking system provides automated and highly standardized planning and budgeting techniques across a diverse group of activities. The administrator has overall control of this system allowing him to create and delete projects as per requirement. Assign start and finish dates for those

projects, assign people to work on those projects, and track project progress.

A. Overview

The Project Tracking System (PTS) is designed to help a company manage various projects. This allows for easy management and monitoring of the various projects running in the company and the people assigned to these projects. PTS assists the project team in recording important project information and monitoring project activities, delivery, documentation, and progress. The system provides reports to project managers and Business Development Manager that allow them to easily understand the status of key performance-based projects with the organization. With this capability, other systems such as easy information update and tracking make it easy for the project team to provide significant support for project success.

B. Problem Statement

In the current system, all project and employee information is stored manually, which takes up a lot of space or uses third-party tracking systems. These third-party softwares are legacy applications that are not easy to use and were developed using older technologies that are not fully supported by today's web browsers. So that only those specific platforms or devices can be supported that take longer and cause more inconvenience to the user. Therefore, it is very difficult to manage and locate project information accurately and in a timely manner. In this system, the project manager has to find out the deadline for a project and Business Development Manager is not able to check the correct progress of the project.

Disadvantages of the current system are that filing manual documents is time-consuming, lacks security, high cost, difficult to make changes, takes up a lot of space, there is a risk of loss, and has been replaced in the wrong places.

II. PROPOSED SYSTEM

The proposed system must have the ability to solve all existing system problems. The new system depends on the centralized database to store and retrieve projects and projects team-related information, all database access operations require authoritative users, the new system includes different users modules with different access level : (1) Business Development Manager with

administrator access level, (2) Human Resource Manager with edit/update access level, (3) Project Software Developer :

(i) Project Manager with edit/update access level, (ii) Team Leader with update access level, (iii) Software Developer with a view access level.

The proposed system contains a sheet of each project that includes the start date and end date, so the project team can review the progress of the projects at any time when it is an online system. Can access, also develops new system. Report any kind of information.

The Human Resource Manager has the power to create, update and remove employee details. He/She can view employee and project information.

The Business Development Manager is a system administrator and has complete control over the system, allowing it to create, edit and delete projects as needed. Set start and end dates for these projects, assign them to the project manager, track project progress as well as see team information, completion percentage, and reports on each project.

The Project Manager has the responsibility of the project manager to select the project team, to hire people to work on these projects. He can track projects and view progress reports.

The Team Leader assigns tasks to developers and edits or updates to project task lists. He can track projects and view progress reports, based on this information he will update the percentage of completed work.

The Software Developer can view his/her task and other information related to the project.

III. LITERATURE REVIEW

Celoxis is a project management & collaboration solution to manage projects, tasks, resources, timesheets, expenses, and more from one place.

Drawbacks: (1) Celoxis software is very expensive and not cheap for small organizations. (2) Setting up an alert takes more time than a task. (3) Sometimes it can complicate simple projects.

IV. SYSTEM REQUIREMENTS

The *Software Requirements* for Project Tracking System are (1) Operating System: Windows 7 or above, macOS 10 or later, (2) Web Browser: Google Chrome or Microsoft Edge, (3) Text Editor: Visual Studio Code, (4) Languages: HTML, CSS, JavaScript, TypeScript, (5) Front-end: React js, Material UI, (6) Back-end: Node js, Express js, (7) Database: MongoDB (mongoose).

The *Hardware Requirements* for this system are (1) CPU: 64 bit, (2) Processor: Intel i5 or above, (3) RAM: 4GB, (4) Storage: 50GB or above

A. MERN Stack

The **MERN** stack is a JavaScript stack used for easy and fast deployment of full-stack web applications. The MERN stack consists of 4 technologies: (1) MongoDB,

(2) Express, (3) React, and (4) Node.js. It is designed to make the development process smooth and easy.

Each of these 4 powerful technologies provides developers with an end-to-end framework to work with and each of these technologies plays a big role in the development of web applications.

Cross-platform document-oriented database. **MongoDB** is a NoSQL database where each record is a document consisting of key-value pairs that are similar to JSON (JavaScript Object Notation) objects. MongoDB is flexible and allows its users to create schemas, databases, tables, etc. Documents identifiable by the primary key form the parent unit of MongoDB.

Back-end Framework:

Express is a Node.js framework. Instead of writing code using Node.js and creating loads of node modules, Express makes it easier and easier to write back-end code. Express helps design great web applications and APIs. Express supports many middlewares that make the code short and easy to write.

React: Front-end library

React is a JavaScript library used to create a user interface. React is used for the development of single-page applications and mobile applications because of its ability to handle rapidly changing data. React allows users to code in JavaScript and create UI components.

Node.js: JS Runtime Environment

Node.js provides a JavaScript environment that allows the user to run their own code on the server (outside the browser). Node Pack Manager ie npm allows the user to choose from thousands of free packages (node modules) to download.

B. PWA

Progressive Web Apps are web apps that use emerging web browser APIs and features as well as traditional progressive enhancement strategies to bring a native app-like user experience to cross-platform web applications. Progressive web apps are a useful design pattern, although they are not a formal standard. PWA can be considered similar to AJAX or other similar patterns that include a set of application attributes, including the use of specific web technologies and techniques.

V. RESULTS & DISCUSSIONS



Fig. 1 Screenshot of the BDM Dashboard

The above figure 1 shows the visualization and reports of the projects and their tasks so that it is easy to track the progress of project data.



Fig. 2 Screenshot of the HR Dashboard

The above figure 2 shows the visualization of the employee's status and their work so that it makes managing employees easier.



Fig. 3 Screenshot of the developer dashboard

The above screenshot shows assigned tasks of the developer to work on them which helps him to do priority tasks first and what to be done first for the project.



Fig. 4 shows the system working on Mobile as Web App

The above screenshot shows the working of the project tracking system on a mobile device as a web app, this is made by the PWA Technology.

VI. CONCLUSION

In this paper Project Tracking System was built using MERN Stack, the main objective of the project tracking system is to monitor the progress of the project by HR and BDM anywhere anytime. The PM monitors

and manages the team and tasks of the project entrusted to him.

The team leader assigns the task to the respective project and updates the status and progress of the task. Web App will not only help the administrator to get notifications from users, but it will also help the administrator by providing a convenient system to track the progress of the report while sitting in one place as it has the support of PWA which establishes the website to install as an application on the cross-platform. It also provides a view of the project report and the current status.

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