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## PROJECT MANAGEMENT SYSTEM USING REACT JS WITH TYPE SCRIPT

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**Abstract-** Project Management System is a software or platform designed to help plan, organize, and track tasks and resources needed to complete a project from start to finish. It is done using ReactJS and TypeScript. It typically includes features for project listing, task management, resource allocation, communication tools for team collaboration. This system is used to streamline project workflows, improve team productivity, and ensure project goals are met within the specified time. It also provides reporting and analytics capabilities to enable project managers to monitor progress and make data-driven decisions.

**Keywords** - Organize tasks, productivity, task management, communication .

### I.INTRODUCTION

We will build some essential features of a project management system, like signing up as an organization, inviting other members to join, creating projects, listing open tasks for a project, assigning tasks to different members, managing the state of tasks, allow users to comment on tasks for better communication and collaboration, tracking all activities of different projects. It will be able to easily plan

projects while taking previous track record into account.

It improves productivity and overall quality of work. Teams can better navigate the project and perform the required tasks, ultimately improving the overall quality of work and producing a high-quality product.

In the world of academia and research, managing research papers, collaboration among researchers, and tracking the progress

of research projects is an essential and often complex task. To streamline and optimize these processes, the development of a Project Management System using React.js can prove to be a game-changer for research institutions, universities, and individual researchers alike.

React.js, a popular JavaScript library for building user interfaces, offers a robust and dynamic platform for creating web-based applications that can efficiently manage research papers and projects. By harnessing the power of React.js, researchers and institutions can create a user-friendly and responsive environment for handling research-related tasks.

## **II.LITERATURE REVIEW**

The Project Management System for Research Papers using React.js aims to address several critical aspects of research management:

1.Research Paper Repository: The system will serve as a central repository for storing and categorizing research papers. Researchers can easily upload, search, and access research papers, making it simpler to share knowledge and resources within the institution.

2. Collaboration Tools: Collaboration is key in research. This system will facilitate

collaboration among researchers by providing tools for discussion, annotation, and commenting on research papers. Real-time collaboration features can enhance the research process and promote knowledge exchange.

3.Project Tracking: Researchers can create and manage research projects within the system. They can set milestones, assign tasks, and track progress. This feature helps in efficiently managing multiple ongoing research endeavors.

4.Notifications and Reminders: The system will send notifications and reminders for deadlines, meetings, and updates related to research projects and papers, ensuring that everyone stays on the same page.

5.Analytics and Reporting: Research institutions can benefit from analytical tools that provide insights into research productivity, project timelines, and resource allocation. This data-driven approach can aid in decision-making and resource management.

6.Security and Access Control: Research papers often contain sensitive information. The system will implement robust security measures and access control to ensure that

only authorized individuals can access and modify research data.

7. User-Friendly Interface: React.js offers a responsive and intuitive user interface, making it easier for researchers and administrators to navigate and use the system effectively.

8. Integration with External Tools: The system can integrate with existing research tools and platforms, such as reference management software, to provide a seamless research experience.

By developing a Project Management System for Research Papers using React.js, researchers and institutions can foster a more collaborative, efficient, and organized research environment. This system has the potential to revolutionize how research projects are managed, ultimately leading to more productive and impactful research outcomes in the academic and scientific communities. Implementing such a system using React.js offers the advantage of building a modern and highly interactive web application. React's component-based architecture allows for easy scalability and maintenance, making it well-suited for complex projects like this. Furthermore, the

system can be designed to accommodate additional features based on the specific needs of research institutions, such as peer-review workflows, grant management, or patent tracking.

### III. METHODOLOGY

Developing a Project Management System using React.js involves a systematic methodology that encompasses planning, design, development, testing, and deployment stages. Here's a high-level methodology for building such a system:

#### 1. Project Initiation:

**Define Objectives:** Clearly outline the goals and objectives of the Project Management System. Identify the specific needs and requirements of the users, whether it's researchers, project managers, or administrators.

**Scope Definition:** Determine the scope of the project, including the key features, functionalities, and integrations required. Decide on the project's boundaries and limitations.

#### 2. Requirement Analysis:

**User Stories and Use Cases:** Create user stories and use cases to describe how different users will interact with the system. Define their workflows, needs, and pain points.

**Data Modeling:** Design the data schema for storing research papers, project details, user profiles, and other relevant data. Identify relationships between different data entities.

**Architecture Planning:** Choose the architecture for your React.js application, considering factors like scalability, maintainability, and performance. Define the front-end and back-end components.

**Database Design:** Create a database schema based on the data modeling phase. Select an appropriate database management system (e.g., MySQL, MongoDB) and design tables or collections accordingly.

**User Interface (UI) Design:** Create wireframes and prototypes for the user interface. Ensure that the UI is user-friendly, responsive, and aligned with best design practices.

**Technology Stack:** Choose the technology stack for both the front-end (React.js, Redux, etc.) and back-end (Node.js, Python, Ruby on Rails, etc.). Consider factors like compatibility and developer expertise.

#### **4. Development:**

**Front End Development:** Develop the user interface using React.js. Implement the components, views, and navigation based on the UI design.

**Back-End Development:** Create the back-end server and APIs for data storage, retrieval,

and processing. Implement user authentication, data validation, and security measures.

**Database Implementation:** Set up the chosen database system and integrate it with the back-end. Implement data CRUD (Create, Read, Update, Delete) operations and ensure data consistency.

#### **5. Testing:**

**Unit Testing:** Write and execute unit tests for individual components and functions to ensure they work as expected.

**Integration Testing:** Test the integration between different components and modules of the system. Verify that data flows correctly.

#### **6. Deployment:**

**Server Setup:** Deploy the back-end server on a production-ready environment, ensuring scalability and security measures are in place.

**Front-End Deployment:** Build and bundle the React.js front-end for production. Host it on a web server or use cloud-based hosting services.

#### **7. User Training and Documentation:**

**User Training:** Conduct training sessions for end-users and administrators to ensure they are proficient in using the system effectively.

**Documentation:** Create user manuals and system documentation that provide

guidelines, FAQs, and troubleshooting information.

**8. Maintenance and Support:**

**Ongoing Maintenance:** Implement a maintenance plan to address bug fixes, updates, and enhancements based on user feedback and changing requirements.

**User Support:** Provide ongoing user support to address inquiries, issues, and concerns.

**9. Monitoring and Optimization:**

**Monitoring:** Implement monitoring and analytics tools to track system performance,

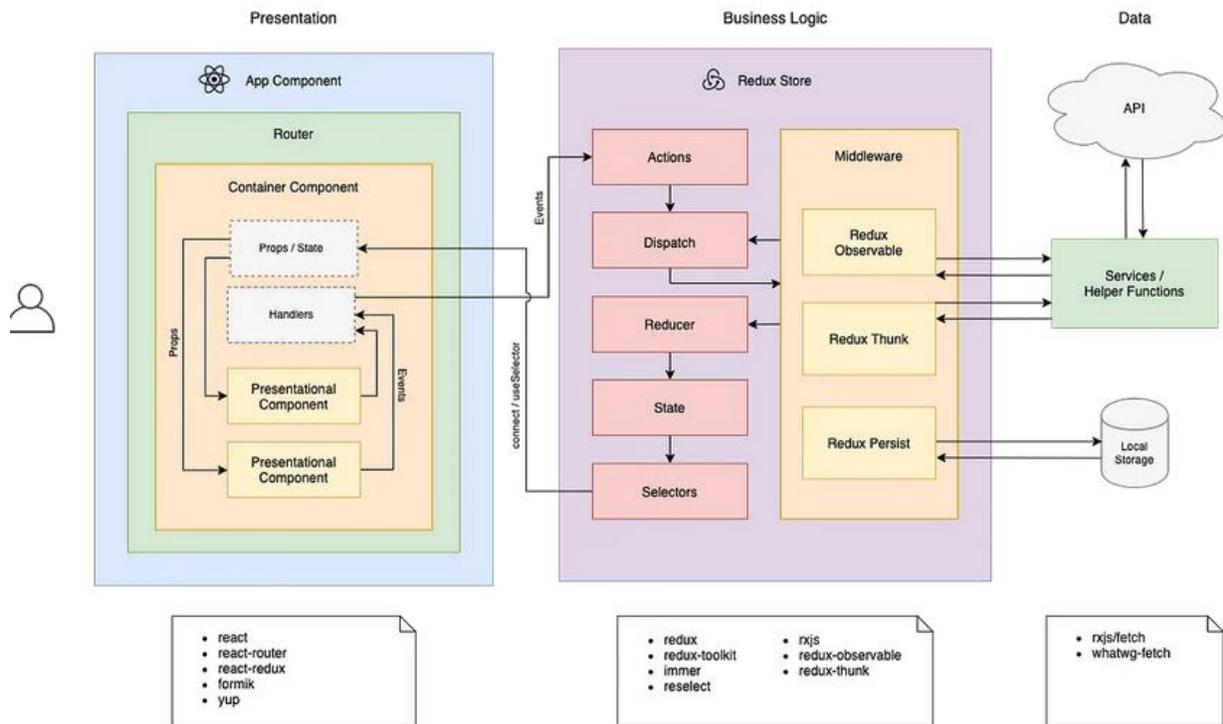
user behavior, and usage patterns. Use this data to make informed improvements.

**Optimization:** Continuously optimize the system for better performance, security, and user experience.

**10. Evaluation and Feedback:**

**User Feedback:** Gather feedback from end-users and stakeholders to assess the system's effectiveness and identify areas for improvement.

**IV.SYSTEM DESIGN**



Anatomy of a React Application

## V.IMPLEMENTATION

This Application is implemented through React JS with Typescript. The below steps has to be followed :

1. Install Node JS on Windows. Check whether Node JS is properly installed.
2. To generate a new React app using Vite, we have to install a tool called create-vite. This tool helps us to start a project from a basic template for popular frameworks. This tool can be installed by using the below command.

**npm install -g create-vite**

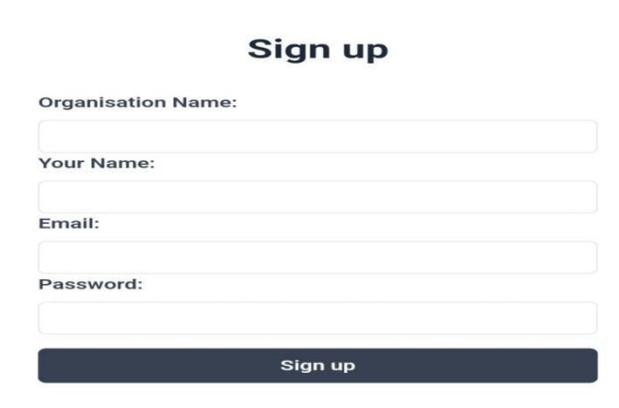
3. After the installation, we can create our new React app using the following command:

**npx create-vite project-management-system --template**

4. Once our new React app is created we can now setup local storage to store the data.
5. Define the component templates for every individual feature.
6. We need to group the components in the related structured format.
7. Test the application to ensure that it doesn't raise any errors.

8. After testing the application successfully without any errors, now we can deploy the application.

## VI.RESULTS



**Sign up**

Organisation Name:

Your Name:

Email:

Password:

**Sign up**

*Figure 1. Signup Screen*

Signup here'." data-bbox="512 508 890 730"/>

**Sign in**

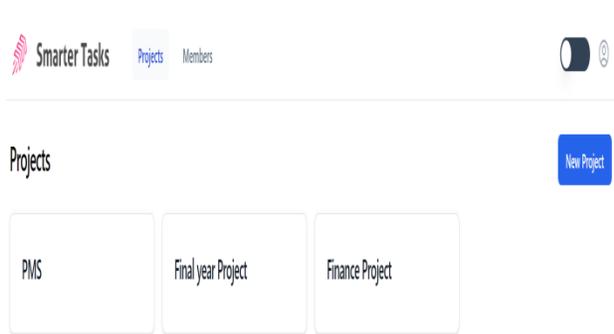
Email:

Password:

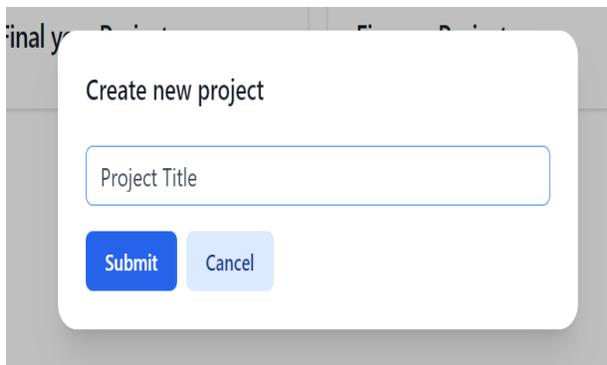
**Sign In**

Don't have account? [Signup here](#)

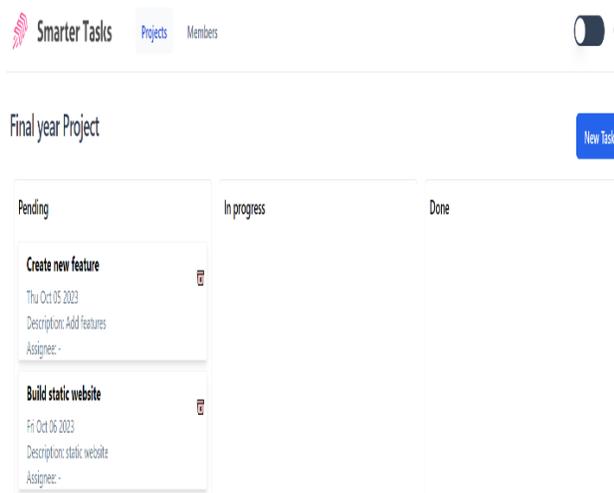
*Figure 2. Sign in Screen*



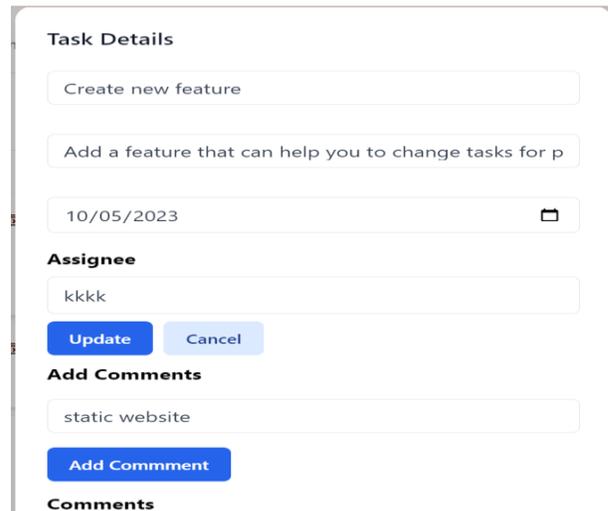
**Figure 3. Projects**



**Figure 4. Create a new project**



**Figure 5. Inside a project**



**Figure 6. Task card inside the project**

## VII.CONCLUSION

Project Management system provides multiple benefits over the conventional method. Some of these benefits are centralized information, up-to-date status monitoring, e-mail notification, convenience of use, backups etc. We can build few essential features such as Signing up as an organization , inviting other members to join , creating projects , listing open tasks for a project , assigning tasks to different members, managing the state of tasks , tracking all activities of different projects and allow users to comment on tasks for better communication and collaboration.

## VIII.FUTURE ENHANCEMENTS

Enhancements in project management systems can greatly improve efficiency, collaboration, and overall project success. Enhanced data analytics can provide real-time insights into project progress, helping project managers make data-driven decisions. Predictive analytics can also help in identifying potential issues before they become critical. Allow users to create custom dashboards with widgets that display project metrics, task lists, and progress charts according to their preferences. Utilize TypeScript to build resource allocation models that optimize the allocation of team members based on their skills, availability, and project needs. Strengthen user authentication with multi-factor authentication (MFA) and enhance security measures to protect sensitive project data.

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