**Project Title:** Task Management System

**1. Introduction**

The Task Management System (TMS) software solution focused at improving task organization, delegation, and tracking within teams or organizations. It provides a centralized platform for creating, assigning, prioritizing, and monitoring tasks, thereby enhancing productivity, collaboration, and transparency between the Project stakeholders

**2. Objectives**

* To streamline task management processes
* To improve team collaboration and communication
* To enhance task prioritization and allocation
* To Provide real-time task tracking and progress monitoring

**3. Features**

* **User Authentication and Authorization**: Secure login and role-based access control to ensure data confidentiality and integrity.
* **Create Components**: To create components Projects and Tasks for the Projects
  + **Project Creation :** Users can create new projects, duration and Company details
  + **Task Creation**: Users can create new tasks, specifying details such as title, description, priority, deadline, and assigned team members
  + **Task Assignment**: Assign tasks to individual team members or groups, with the ability to set deadlines and priorities.
  + **Task Prioritization**: Prioritize tasks based on urgency, importance, or other customizable criteria to ensure efficient resource allocation.
  + **Task Tracking**: Real-time tracking of task status, progress, and completion, allowing stakeholders to stay updated on project timelines.
* **Create Forms** 
  + Should have forms to Project Creation and Task Creations
* **Grids**
  + To perform Crud operations like read,update,delete for Projects and Tasks

**4. User Roles**

* **Admin**: Manages users, roles, and system settings. Has access to all features and functionalities.
* **Manager**: Creates, assigns, and monitors tasks within their team(s).
* **Team Member**: Receives assigned tasks, updates task status, and collaborates with team members.

**5. Technology Stack**

* **Frontend**: HTML, CSS, JavaScript (React.js)
* **Backend**: Node.js, Express.js
* **Database**: SQL Server

**6. User Interface Design**

* Clean and intuitive user interface (UI) design with easy navigation and accessibility.
* Responsive design to ensure compatibility across various devices and screen sizes.

**6.1. Use cases**

**Feature 1:**

**Actor:** Project Manager/Administrator

**Preconditions:**

* The user must be authenticated and have the necessary permissions (e.g., Project Manager or Administrator role).
* The user has access to the Task Management System interface and to access the Projects Component

**Main Scenario:**

1. **Actor Action:** The Project Manager/Administrator navigates to the project creation section of the system.
2. **System Response:** The system presents a form for creating a new project.
3. **Actor Action:** The Project Manager/Administrator fills in the required fields, including:
   * **Project Title**: A descriptive name for the project.
   * **Duration**: The planned duration or timeline for the project.
   * **Company Details**: Information about the company or organization associated with the project, such as name, address, and contact information.
4. **System Response:** The system validates the input and checks for any errors or missing information.
5. **System Action:** If the input is valid, the system creates a new project with the provided details.
6. **System Response:** The system confirms the successful creation of the project and provides a unique identifier or reference number for future reference.

**Post conditions:**

* A new project is created in the system with the specified duration and company details.
* The Project Manager/Administrator can now proceed with further project planning, task allocation, and management within the system.

**Alternative Flow: Invalid Input**

* **Step 1:** If the input is invalid or incomplete, the system displays error messages prompting the user to correct the issues.
* **Step 2:** The Project Manager/Administrator corrects the input errors and resubmits the form.
* **Step 3:** The system repeats the validation process until all input is valid.
* **Step 4:** Once the input is valid, the system proceeds with project creation as per the main success scenario.

**Exceptional Flow: Access Denied**

* **Step 1:** If the user is not authenticated or lacks the necessary permissions, the system denies access to the project creation section.
* **Step 2:** The system displays an error message informing the user of insufficient privileges.
* **Step 3:** The user is redirected to the login page or prompted to contact the system administrator for assistance.

**Feature 2:**

**Use Case: Task Creation with Task Name, Status, and Assigned To**

**Actor:** Team Member/Project Manager/Administrator

**Preconditions:**

* The user must be authenticated and have the necessary permissions (e.g., Team Member, Project Manager, or Administrator role).
* The user has access to the Task Management System interface.

**Main Success Scenario:**

1. **Actor Action:** The Team Member/Project Manager/Administrator navigates to the task creation section of the system.
2. **System Response:** The system presents a form for creating a new task.
3. **Actor Action:** The Team Member/Project Manager/Administrator fills in the required fields, including:
   * **Task Name**: A descriptive title for the task.
   * **Status**: The current status of the task (e.g., To Do, In Progress, Done).
   * **Assigned To**: The team member(s) responsible for completing the task.
4. **System Response:** The system validates the input and checks for any errors or missing information.
5. **System Action:** If the input is valid, the system creates a new task with the provided details.
6. **System Response:** The system confirms the successful creation of the task and provides a unique identifier or reference number for future reference.

**Post conditions:**

* A new task is created in the system with the specified name, status, and assigned team member(s).
* The Team Member/Project Manager/Administrator can now proceed with further task management, tracking, and collaboration within the system.

**Alternative Flow: Invalid Input:**

* **Step 1:** If the input is invalid or incomplete, the system displays error messages prompting the user to correct the issues.
* **Step 2:** The Team Member/Project Manager/Administrator corrects the input errors and resubmits the form.
* **Step 3:** The system repeats the validation process until all input is valid.
* **Step 4:** Once the input is valid, the system proceeds with task creation as per the main success scenario.

**Exceptional Flow: Access Denied:**

* **Step 1:** If the user is not authenticated or lacks the necessary permissions, the system denies access to the task creation section.
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* **Step 3:** The user is redirected to the login page or prompted to contact the system administrator for assistance.

**Exceptional Flow: System Error:**

* **Step 5b:** If an unexpected error occurs during task creation (e.g., database error, server downtime), the system displays a generic error message.
* **Step 5c:** The Team Member/Project Manager/Administrator is prompted to try again later or contact technical support for assistance.

**7. Security Considerations**

* Data encryption in transit and at rest to protect sensitive information.
* Regular security audits and updates to mitigate potential vulnerabilities.

**8. Deployment**

* Cloud deployment (e.g., AWS, Azure) for scalability, reliability, and accessibility.
* Continuous integration and deployment (CI/CD) pipeline for automated testing and deployment.

**9. Conclusion**

The Task Management System aims to revolutionize task management by providing a comprehensive solution for teams to efficiently create, assign, track, and analyze tasks. By enhancing collaboration, productivity, and transparency, TMS empowers organizations to achieve their goals effectively and adapt to dynamic business environments.