**Project Documentation: TaskEase**

**1. Project Overview**

**1.1 Project Title:**

TaskEase – A Task Management System

**1.2 Description:**

TaskEase is a web-based task management system that enables users to create, assign, track, and manage tasks efficiently. It helps individuals and teams improve productivity by organizing their workflow and ensuring task completion within deadlines.

**1.3 Objectives:**

* Provide an intuitive interface for task management.
* Enable users to assign and monitor task progress.
* Implement role-based access for different user types.
* Integrate notifications and reports for better task tracking.

**1.4 Scope:**

* **Users:** Individuals, Teams, Organizations
* **Platforms:** Web-based Application
* **Features:** Task creation, assignment, tracking, status updates, notifications, and reports

**2. System Architecture**

**2.1 High-Level Architecture:**

The system follows a **three-tier architecture**:

1. **Frontend:** React.js (or Vue.js/Angular)
2. **Backend:** Node.js with Express (or Django/Flask)
3. **Database:** PostgreSQL/MySQL (or Firebase for NoSQL)

**2.2 Technology Stack:**

* **Frontend:** React.js, Bootstrap/Tailwind CSS
* **Backend:** Node.js with Express.js
* **Database:** PostgreSQL/MySQL
* **Authentication:** JWT-based authentication
* **Hosting:** Firebase, AWS, or Heroku

**3. Features and Functional Requirements**

**3.1 User Roles:**

1. **Admin:** Manages users, tasks, and system settings.
2. **Manager:** Assigns and tracks tasks.
3. **User:** Creates and updates personal tasks.

**3.2 Functional Features:**

| **Feature** | **Description** |
| --- | --- |
| User Authentication | Secure login/signup using JWT |
| Dashboard | Overview of assigned and created tasks |
| Task Management | Create, edit, assign, and delete tasks |
| Task Status Updates | Change status (To Do, In Progress, Completed) |
| Notifications | Email or in-app alerts for task updates |
| Role-Based Access | Different permissions for Admin, Manager, and User |
| Reports & Analytics | Generate reports on task progress |
| Collaboration | Add comments and attachments to tasks |

**4. System Workflow**

1. **User Registration/Login** – Users sign up or log in using email/password.
2. **Task Creation & Assignment** – Users create tasks and assign them to others.
3. **Task Tracking & Updates** – Users update task status, and notifications are sent.
4. **Reporting & Analytics** – Managers generate reports on team productivity.

**5. Database Schema**

**Tables:**

1. **Users:** (UserID, Name, Email, Role, PasswordHash)
2. **Tasks:** (TaskID, Title, Description, Status, AssignedTo, CreatedBy, DueDate)
3. **Comments:** (CommentID, TaskID, UserID, Content, Timestamp)
4. **Notifications:** (NotificationID, UserID, Message, Status)

**6. Security Considerations**

* **Data Encryption:** Encrypt sensitive data at rest and in transit.
* **Authentication & Authorization:** JWT-based authentication and role-based access control.
* **Input Validation:** Prevent SQL injection and XSS attacks.
* **Backup & Recovery:** Implement daily database backups.

**7. Testing Plan**

**7.1 Testing Types:**

* **Unit Testing:** Test individual functions and API endpoints.
* **Integration Testing:** Ensure different modules work together.
* **User Acceptance Testing (UAT):** Gather user feedback before deployment.
* **Performance Testing:** Ensure the system handles workload efficiently.

**8. Deployment Plan**

**8.1 Deployment Stages:**

1. **Development Environment:** Local setup for coding and testing.
2. **Staging Environment:** Pre-production testing server.
3. **Production Deployment:** Live deployment on a cloud server.

**8.2 CI/CD Pipeline:**

* Use GitHub Actions or Jenkins for automated deployment.

**9. Maintenance & Future Enhancements**

**9.1 Maintenance Plan:**

* Regular security updates.
* Performance optimizations.
* User support and bug fixes.

**9.2 Future Enhancements:**

* Mobile app integration.
* AI-based task recommendations.
* Advanced analytics and reporting dashboards.

**10. Conclusion**

TaskEase provides a simple yet powerful task management solution for individuals and teams. By streamlining task assignments, progress tracking, and collaboration, the system improves productivity and efficiency.