

# A Project Report on

## TaskNest

By:

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### 1. Problem Statement

TaskNest is a personal productivity application designed for individuals who need a structured yet lightweight way to manage tasks, projects, and overall workflow. Existing tools are either too heavy or too simplistic.

TaskNest aims to offer a balanced Kanban-style task organizer with proper engineering practices: requirements analysis, architecture, testing, CI/CD, and deployment.

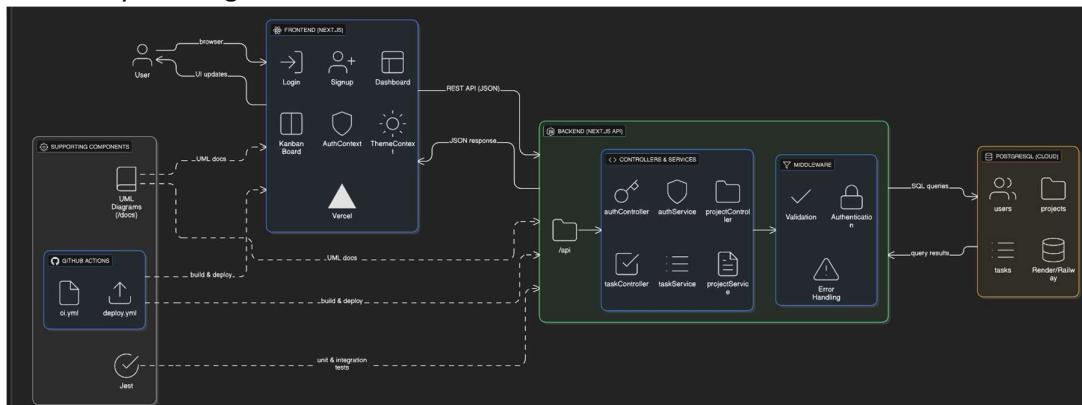
### 2. User Stories

1. As a user, I want to sign up so I can create my workspace.
2. As a user, I want to log in securely so I can access my tasks.
3. As a user, I want to create projects so I can group related tasks.
4. As a user, I want to view all projects so I can switch easily.
5. As a user, I want to create tasks with title/description.
6. As a user, I want to edit/delete tasks as needed.
7. As a user, I want to move tasks between To Do / Doing / Done.
8. As a user, I want a dashboard with an overview of my tasks.

### 3. System Architecture & System Design

TaskNest follows a **3-tier architecture**:

- Presentation Layer: Next.js frontend.
- Application Layer: Next.js API/Express for business logic.
- Data Layer: PostgreSQL with Prisma ORM.



Major modules include Authentication, Project Management, Task Management, Dashboard, and Database.

Design follows SOLID principles, RESTful API conventions, and clean separation of concerns.

### **Database Schema:**

- User(id, name, email, emailVerified, password, createdAt, updatedAt)
- Account(id, userId, type, provider, providerAccountId, refresh\_token, access\_token, expires\_at, token\_type, scope, id\_token, session\_state)
- Session(id, sessionToken, userId, expires)
- VerificationToken(identifier, token, expires)
- Project(id, name, description, ownerId, createdAt, updatedAt)
- Task(id, title, description, status, projectId, assigneeId, createdAt, updatedAt)
- TaskStatus(TODO, DOING, DONE)

## **4. Design of Tests**

Unit Tests (Jest, React Testing Library):

- Auth service
- Project service
- Task service
- Component rendering

Integration Tests:

- API endpoints
- Authentication and access control

## **5. Appendix**

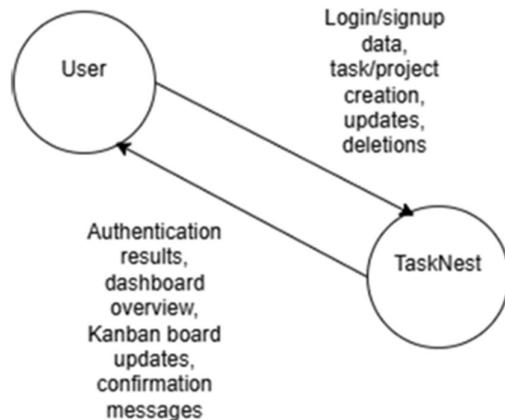
### **SRS**

The Software Requirements Specifications (SRS) document is attached along with this file. It can also be found at :

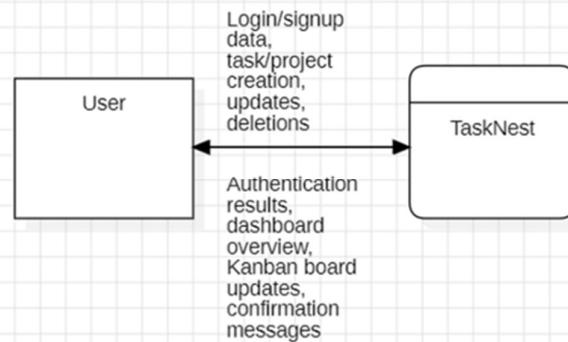
[https://github.com/krishnasharmak05/TaskNest/blob/main/docs/Software\\_Requirements\\_Specification.pdf](https://github.com/krishnasharmak05/TaskNest/blob/main/docs/Software_Requirements_Specification.pdf)

### **Data Flow Diagram (DFD)**

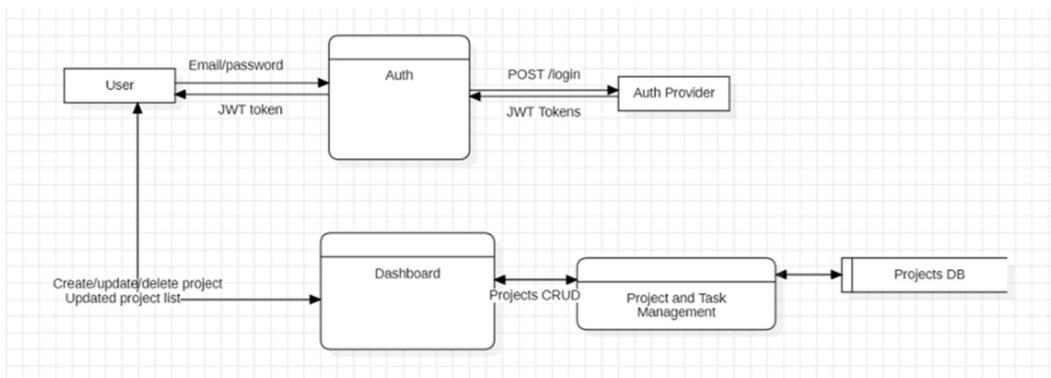
**RRPM**



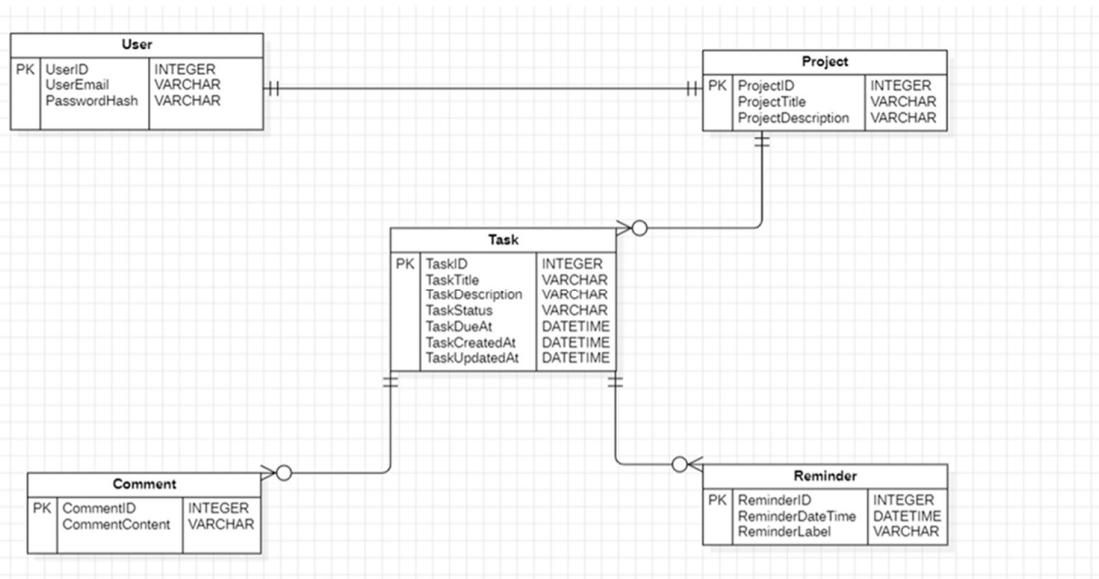
**Context Diagram:**



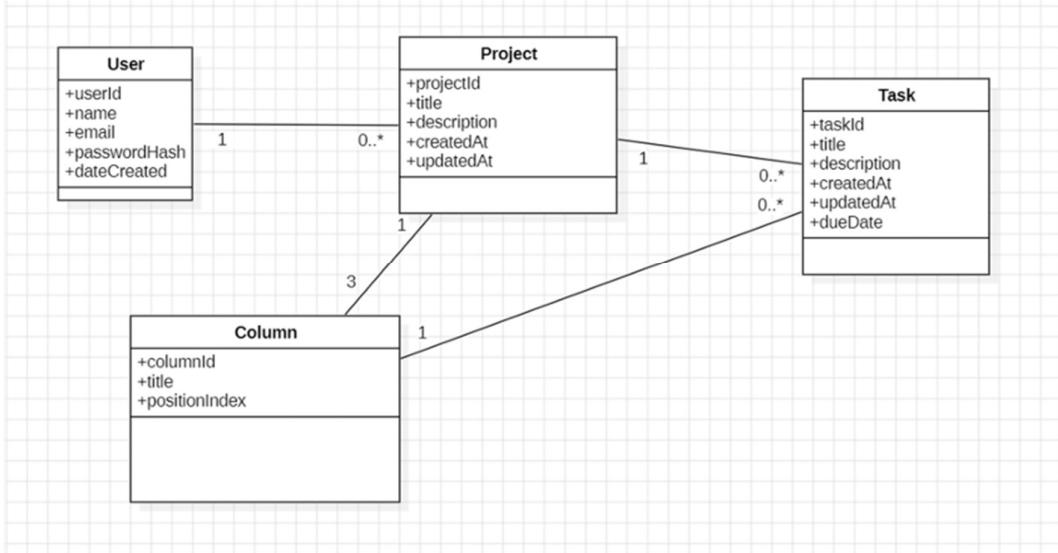
**DFD Level 1:**



**Entity Relationship Diagram (ERD)**

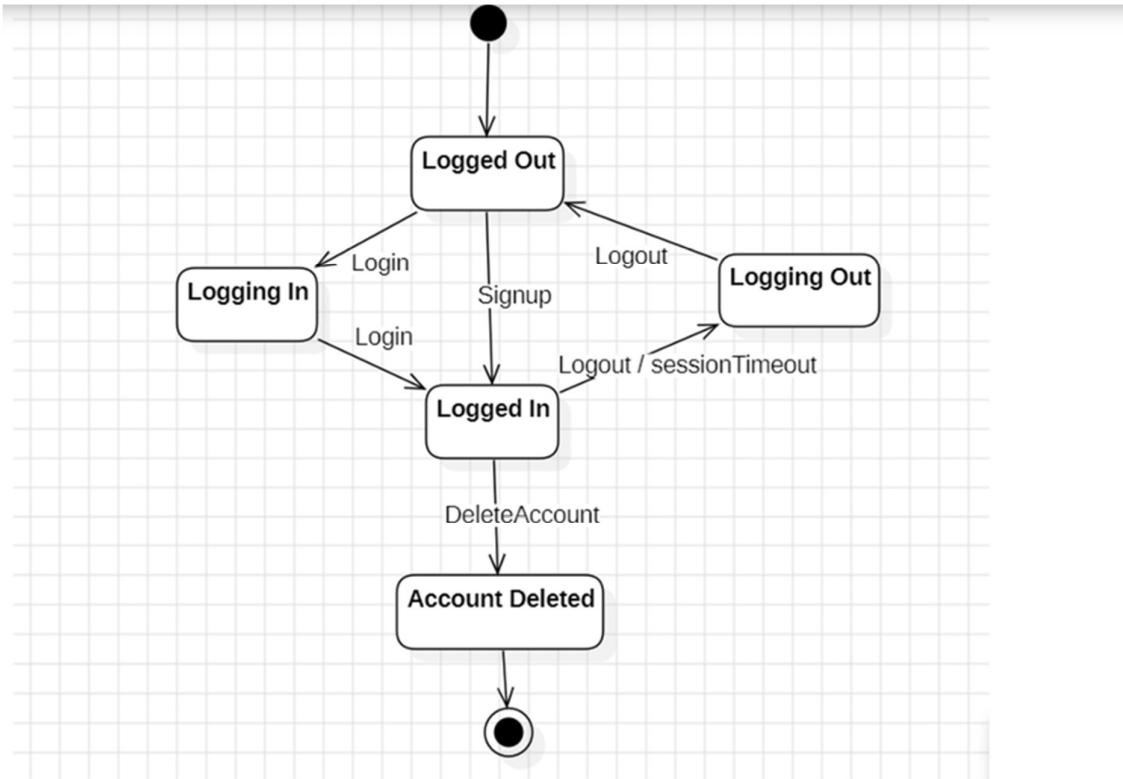


**Analysis Level Class Diagram:**

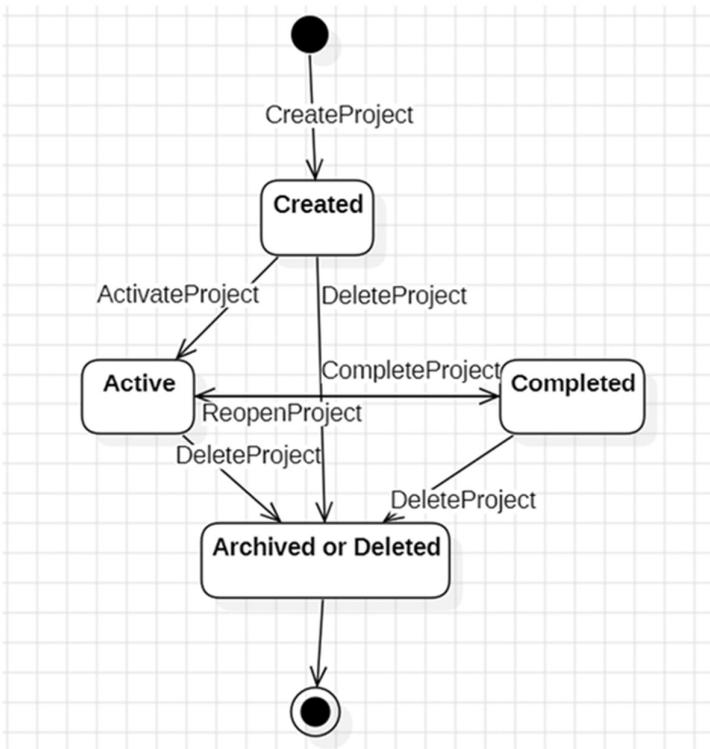


**Statechart Diagram:**

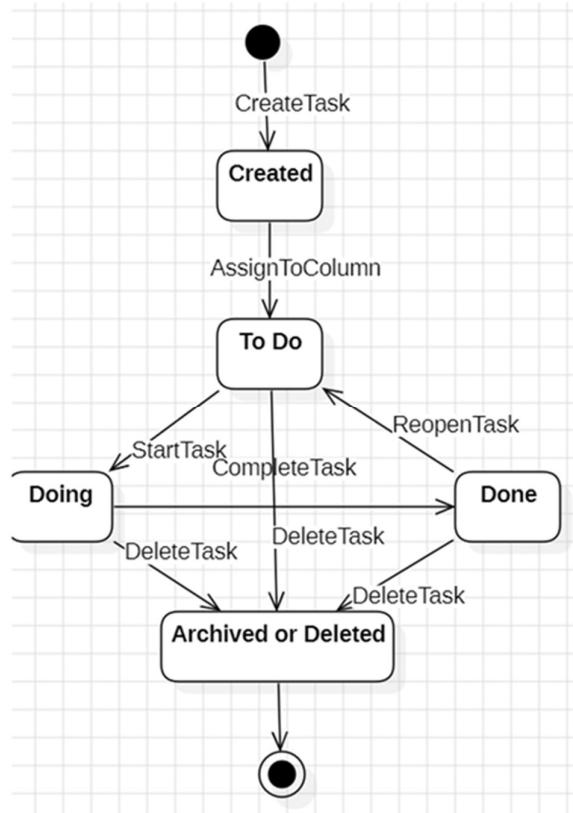
**For Authentication:**



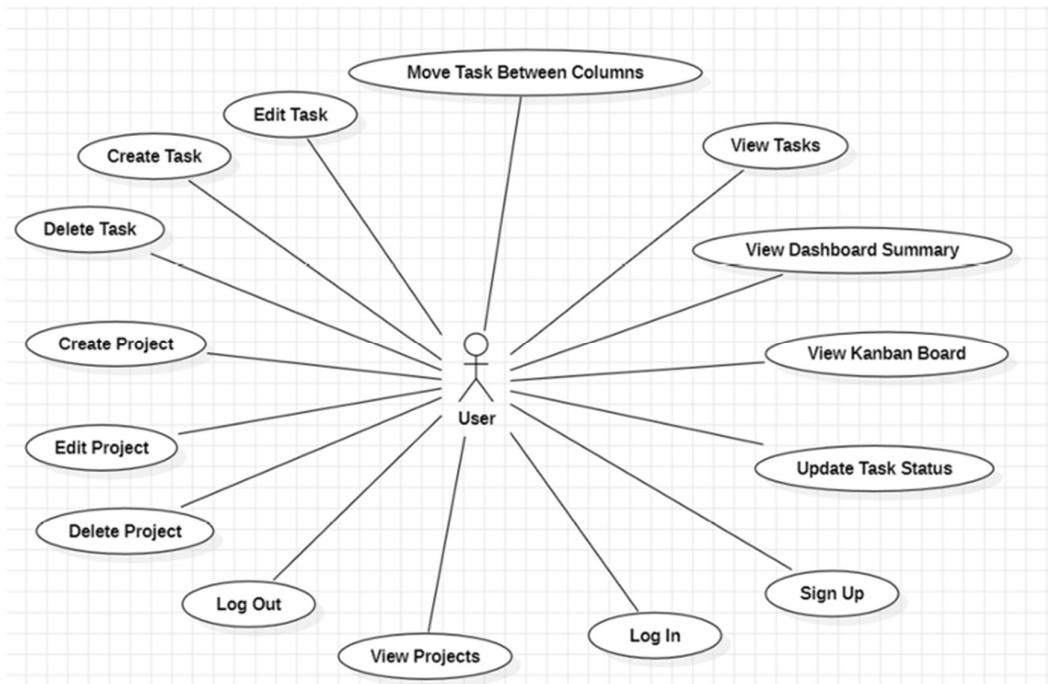
**For Project Management:**



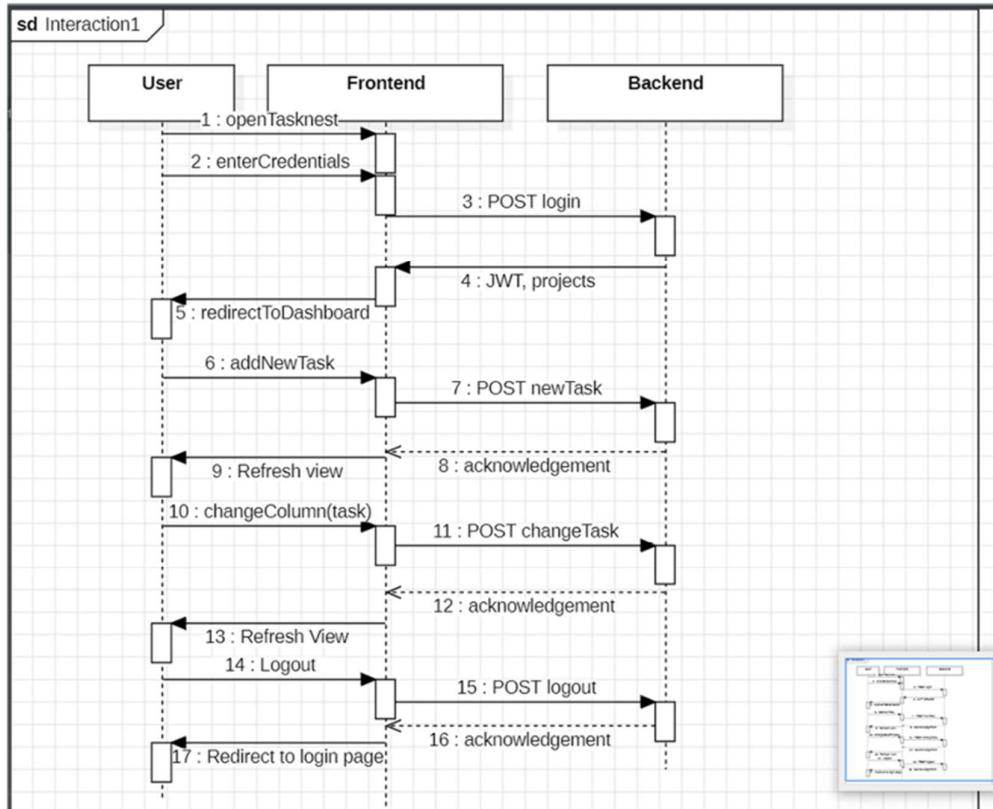
**For Task Management:**



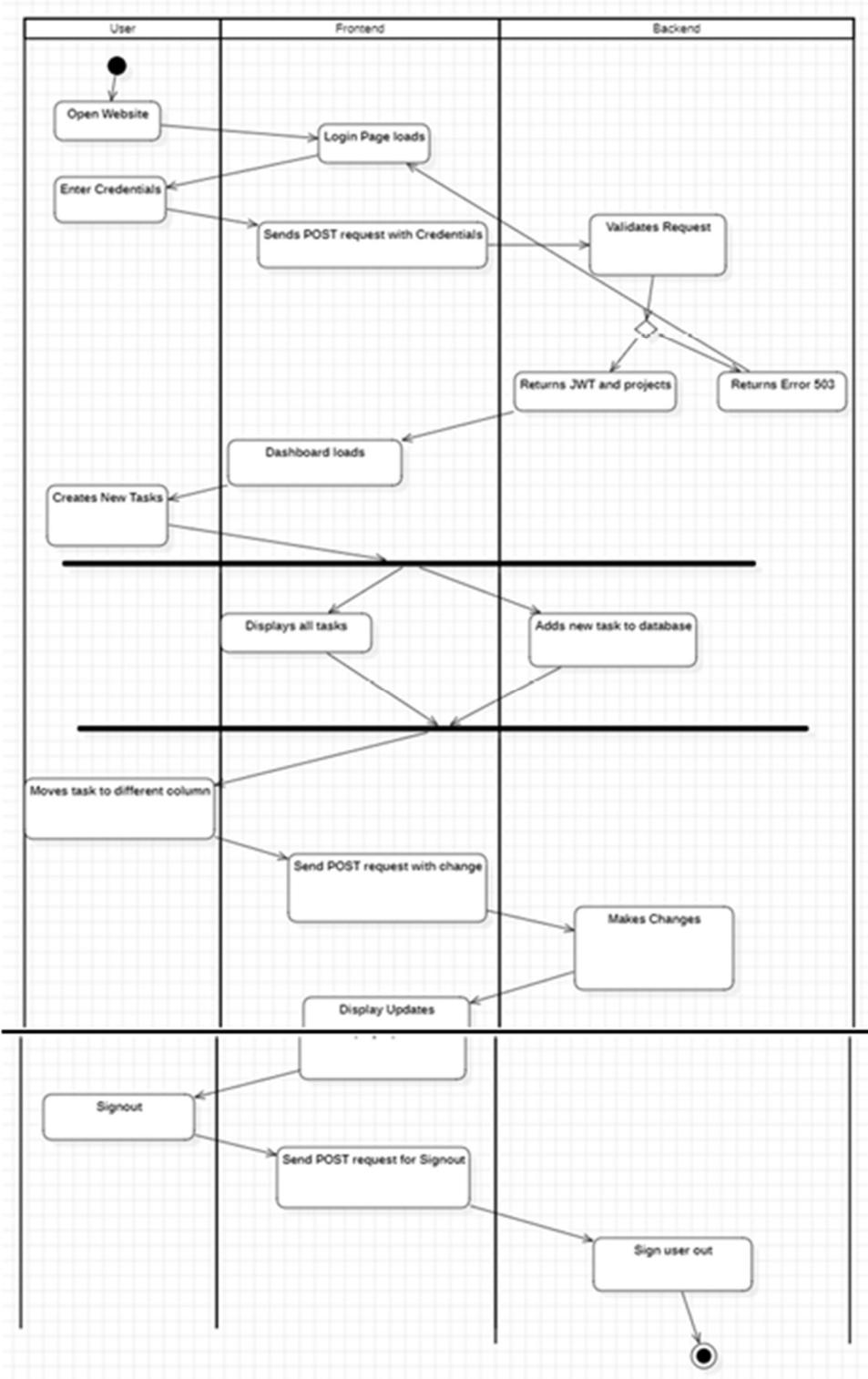
## Use Case Diagram



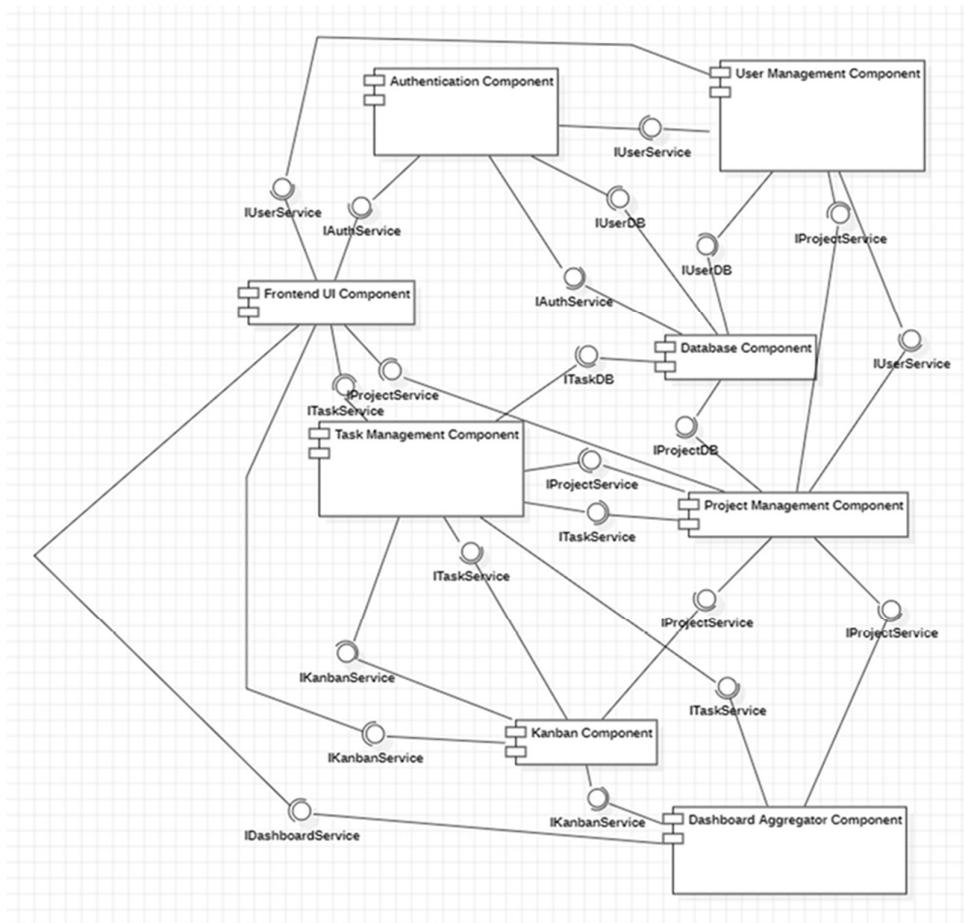
## Sequence Diagram:



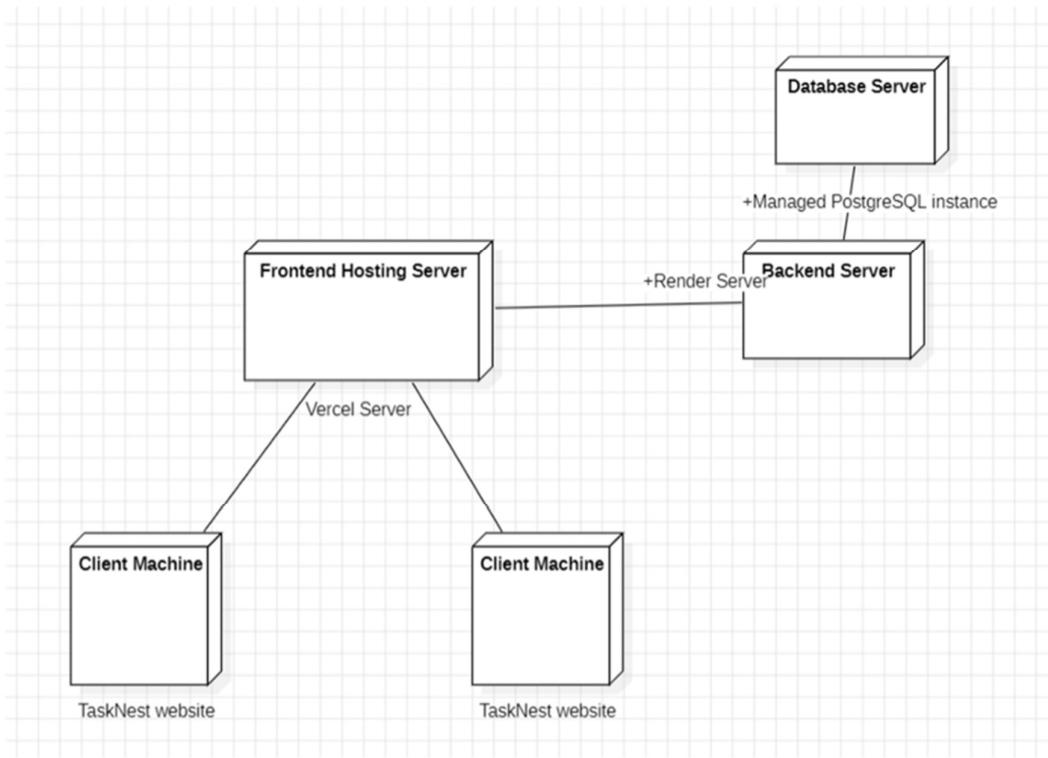
**Activity Diagram:**



**Component Diagram:**



**Deployment Diagram:**



GitHub Link: <https://github.com/krishnasharmak05/TaskNest>