Project Design Phase-2

Technology Stack (Architecture & Stack)

Date	2 NOVEMBER 2025
Team ID	NM2025TMID05988
Project Name	Optimizing User, Group, and Role Management with Access Control and Workflows
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and he information as per the table 1 & table2

Table-1 : Components and Technologies:

S.No	Component	Description	Technology
1	User Interface	Frontend where Admin & Team Member login, manage roles & tasks	React / Angular (Web)
2	Application Layer-1	Business logic for Users, Roles, Groups	Node.js / Spring Boot APIs
3	Application layer-2	Task Workflow Engine (To-Do → In-Progress → Review → Done)	Node.js / Spring Boot APIs
4	Database	Stores users, roles, tasks, workflow states	PostgreSQL
5	Caching	Faster access for permissions & tokens	Redis
6	Cloud storage	Stores attachments / proof updates for tasks	AWS S3 / MinIO
7	External API-1	Email notifications for task/role changes	SMTP / SendGrid
8	Massage Queue	Async background processing: notifications, audit logging	RabbitMQ / Kafka
9	Authorization Engine	Evaluates permission rules	RBAC Engine / OPA
10	Infrastructure	Deployment on cloud / on-prem server	Docker + Kubernetes

Table-2 : Application Characteristics:

S.No	Characteristics	Description	Technology
1	User Experience	Simple dashboard for role/task management	Responsive Web UI
2	Security	Only assigned roles can do specific actions (PM can assign task, TM can't delete users)	JWT, RBAC
3	Scalable Architecture	Support more users, roles and tasks in future	Microservice Architecture
4	Availability	System should work without downtime	Cloud deployment with Kubernetes
5	Performance	Task workflow transitions & access checks should happen instantly	API + Redis cache