

## Project Design Phase

### Solution Architecture

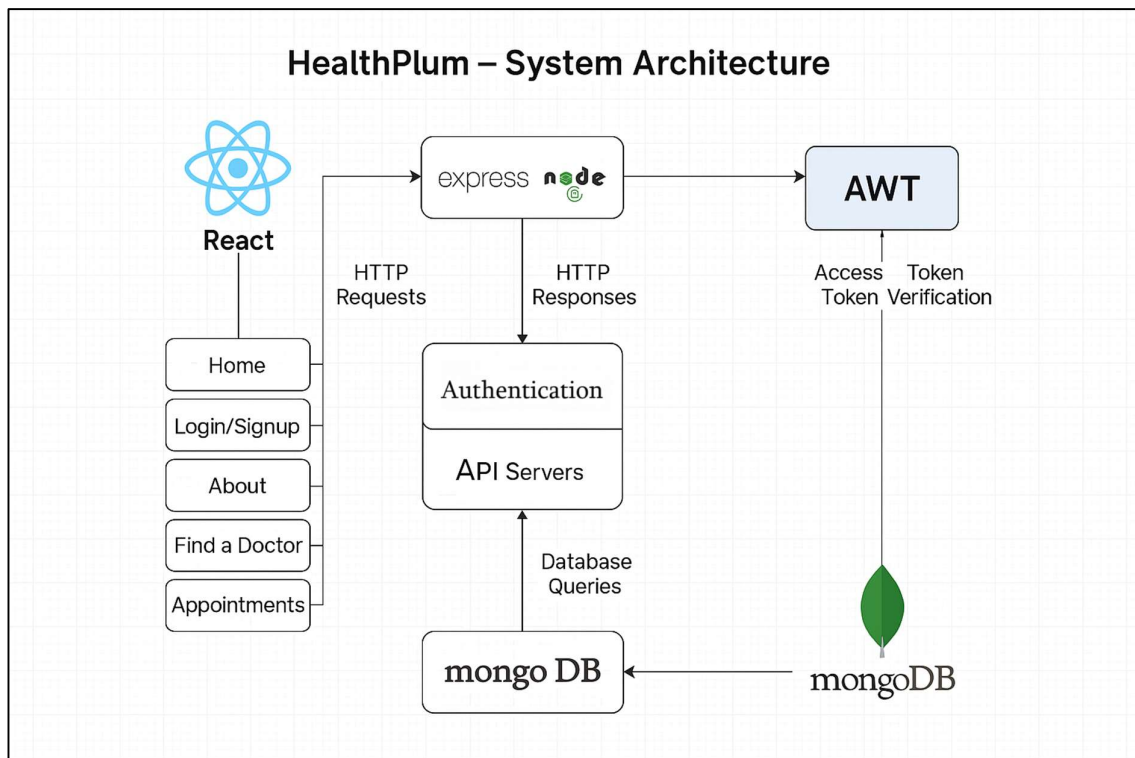
Date	15 February 2025
Team ID	SWTID1744100849
Project Name	HealthPlum
Maximum Marks	4 Marks

#### Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

#### Example - Solution Architecture Diagram:



## Architecture Breakdown:

### 1. Client Side (React.js)

- The user (doctor or patient) interacts via the browser.
- Pages like Home, About, Find a Doctor, Appointment Booking, Dashboards.
- Uses Axios/Fetch to communicate with the backend via RESTful APIs.
- Stores JWT tokens.

### 2. API Gateway (Express + Node.js)

- **Routes:**
  - /api/authentication – login, signup for both roles.
  - /api/doctors – list, filter, profile view.
  - /api/appointments – create, update, cancel, fetch.
  - /api/patients – patient data, dashboard info.
- **Middleware:**
  - Auth middleware verifies JWTs before granting access.
  - Role-based access control (Doctor/Patient).
  - Input validation & error handling.

### 3. MongoDB Database

- Collections:
  - **Users** (doctors & patients, roles, hashed passwords)
  - **Doctors** (name, department, schedule, ratings)
  - **Appointments** (time, doctorId, patientId, status)
- Relations via ObjectIds – efficient querying and filtering.

#### **4. Authentication Layer (JWT)**

- On login/signup, JWT is issued and returned to client.
- Frontend stores token and includes it in the Authorization header.
- Backend verifies token for protected routes.