**Project Design Phase**

**Solution Architecture**

| Date | 10 March 2025 |
| --- | --- |
| Team ID | SWTID1741257475147583 |
| Project Name | FitFlex |
| Maximum Marks | 4 Marks |

### **Solution Architecture – FitFlix**

The solution architecture for the **FitFlix** fitness web application ensures a scalable, efficient, and user-friendly platform for discovering and accessing exercise routines based on body parts and equipment.

## **Goals of the Solution Architecture**

### **1. Identify the Best Tech Solution**

* Leverage **React.js** for a dynamic and responsive front-end.
* Integrate **ExerciseDB API** to fetch real-time workout data.
* Use **Node.js and Express.js** for a lightweight backend (if needed for user authentication or workout tracking).
* Store user preferences and progress using **MongoDB/Firebase** for a seamless experience.

### **2. Define Structure & Characteristics**

* **Modular Architecture:** Implement reusable components for maintainability.
* **Scalability:** Ensure the system can support increased user activity.
* **Security:** Implement authentication (OAuth, JWT) for user profiles.
* **Performance Optimization:** Lazy loading, caching, and efficient API calls.

### **3. Outline Features & Development Phases**

#### **Phase 1: Core Development**

* Build the front-end UI with React.js.
* Integrate ExerciseDB API for exercise search and filtering.

#### **Phase 2: User Experience & Engagement**

* Implement workout tracking and progress-saving features.
* Enhance mobile responsiveness.

#### **Phase 3: Advanced Features**

* Personalized workout recommendations based on user preferences.
* Social features (sharing progress, challenges).

### **4. Establish Specifications for Development & Delivery**

* **Front-End Framework:** React.js with Tailwind CSS for UI design.
* **Back-End (Optional):** Node.js with Express.js (for user data management).
* **Database (Optional):** MongoDB/Firebase for storing user data.
* **API Integration:** ExerciseDB API for real-time workout details.
* **Hosting & Deployment:** Vercel/Netlify for front-end, Firebase for backend (if applicable).

This architecture ensures a **smooth**, **scalable**, and **engaging** fitness experience for users while keeping the platform **efficient and easy to expand**. 🚀

