**INTRODUCTION**

**.PROFECT TITLE:**

FITFLIX:YOUR PERSONAL FITNESS COMPANION

**TEAM ID:**

NM2025TMID37062

**TEAM LEADER:**

VARSHA S [-varshashankar102@gmail.com](mailto:-varshashankar102@gmail.com)

**TEAM MEMBERS:**

SAJITHA.D.R – [sajitharamakrishnan007@gmail.com](mailto:sajitharamakrishnan007@gmail.com)

SANJANA.J – [jayavelsanjana07@gmail.com](mailto:jayavelsanjana07@gmail.com)

SANDHIYA [-sandysandhiya5802@gmail.com](mailto:-sandysandhiya5802@gmail.com)

🎯 **Objective**

~The objective of FitFlex is to create a comprehensive and interactive fitness companion application that simplifies the process of managing personal health and wellness. The system is designed to assist users in tracking workouts, logging nutrition, monitoring progress, and receiving personalized recommandation based on their goals and lifestyle. By integrating features such as workout and diet planning, real-time progress dashboards, reminders, and reports, FitFlex aims to provide a holistic fitness management experience.

~The platform also focuses on enhancing motivation and accountability by offering insights into performance trends, generating weekly/monthly progress reports, and supporting optional integration with fitness wearables and external health data sources. With an intuitive user interface, robust backend, and secure data management, FitFlex ensures that both beginners and advanced users can efficiently manage their fitness journey.

~Ultimately, the system seeks to empower individuals to adopt healthier habits, prevent lifestyle-related health issues, and achieve sustainable fitness outcomes through consistent tracking, data-driven insights, and smart automation.

🧩 **Key Features:**

**Fitness Dashboard**: Real-time view of workouts, calories, steps, and active goals.

**Workout Tracking**: Log exercises, sets, reps, duration, and intensity.

**Nutrition Management**: Add daily meals, calories, macros, and water intake.

**Personalized Plans**: Create or follow tailored workout and diet plans.

**Progress Tracking**: Charts and stats on strength, endurance, and weight changes.

**Reminders & Notifications**: Alerts for workouts, meals, hydration, and rest.

**Community & Sharing**: Option to connect with friends or coaches.

**Reports Modules**: Generate weekly/monthly health reports.

🛠️ **Technologies (Suggested Stack)**

**Frontend**: React.js (with Tailwind CSS / Material UI)

**Backend**: Node.js with Express.js

**Database**: MongoDB (for workouts, users, nutrition logs)

**Optional**: Integration with fitness wearables (Fitbit, Apple Watch, Google Fit)

👥 **Target Users**

Fitness enthusiasts

Beginners looking for structured guidance

Personal trainers managing clients

General users seeking a healthier lifestyle

📈 Benefits

Encourages consistent fitness habits

Provides personalized, data-driven insights

Eliminates the need for manual workout/nutrition tracking

Helps users stay accountable and motivated

🏗️ **Architecture of FitFlex – Fitness Companion App**

🔹 **1. Client Layer (Frontend)**

**Purpose**: User-facing interface for logging, tracking, and viewing progress

**Technologies**: React.js + Tailwind CSS

**Components**:

**\*** Dashboard (stats, progress charts)

**\*** Workout/Nutrition forms

**\*** Goal setting & reminders

**\*** Reports and insights

🔹 **2. Application Layer (Backend)**

**Purpose**: Manages fitness logic, data processing, and APIs

**Technologies**: Node.js + Express.js

**Responsibilities**:

**\*** User authentication & role management

**\*** Process workout/nutrition logs

**\*** Generate progress reports

**\*** Trigger reminders and alerts

🔹 **3. Data Layer (Database)**

**Purpose**: Store fitness and user data

**Technology**: MongoDB

**Entities:**

**Users**: ID, name, email, password, role

**Workouts**: exercise type, sets, reps, duration, calories burned

**Nutrition**: meals, calories, macros, timestamp

**Progress**: weight, BMI, body measurements

**Plans**: workout plans, diet plans

**Reminders**: type, frequency, time

🔹 **4. Integration Layer (Optional)**

Fitness wearables (Fitbit, Apple Health, Google Fit)

Nutrition databases (calorie APIs)

Cloud storage for reports

🔄 **Data Flow Example**

User → Frontend → Backend → Database → Backend → Frontend → User

**Example**: A user logs a workout → backend updates database → progress chart updates on dashboard.

☁️ **Deployment Architecture**

**Cloud-Based**: AWS/Azure/Firebase for scalability & remote access

**On-Premise**: Rare case (gyms with internal servers)

⚙️ **Setup Instructions for FitFlex**

✅ Prerequisites

Node.js installed

MongoDB installed locally or Atlas for cloud

📁 **Step-by-Step Setup**

**1. Initialize Project**

mkdir fitflex

cd fitflex

npm init -y

**2. Install Dependencies**

npm install express mongoose dotenv body-parser cors

**3. Folder Structure**

fitflex/

│

├── server.js

├── .env

├── models/

│ └── User.js

│ └── Workout.js

│ └── Nutrition.js

├── routes/

│ └── userRoutes.js

│ └── workoutRoutes.js

│ └── nutritionRoutes.js

├── controllers/

│ └── userController.js

│ └── workoutController.js

│ └── nutritionController.js

**4. Environment Config (.env)**

PORT=5000

MONGO\_URI=mongodb://localhost:27017/fitflex

**5. Start Backend**

node server.js

📁 **Complete Project Structure: FitFlex**

FitFlex/

│

├── client/ # React Frontend

│ ├── public/

│ ├── src/

│ │ ├── components/ # UI (WorkoutCard, ProgressChart, Navbar)

│ │ ├── pages/ # (Dashboard, Workouts, Nutrition, Reports)

│ │ ├── services/ # API calls (axios)

│ │ ├── context/ # User/Auth context

│ │ ├── App.js

│ │ └── index.js

│ └── package.json

│

├── server/ # Backend

│ ├── controllers/

│ ├── models/

│ ├── routes/

│ ├── middleware/

│ ├── config/

│ ├── utils/

│ ├── server.js

│ └── .env

│

├── README.md

└── package.json

📘 **API Documentation – FitFlex Fitness System**

🌐 **Base URL**

http://localhost:5000/api

🔐 **Authentication**

POST /auth/register → Register user

POST /auth/login → Login user

🏋️ **Workout Management**

Method Endpoint Description

GET /workouts Get all workouts

GET /workouts/:id Get specific workout

POST /workouts Log new workout

PUT /workouts/:id Update workout

DELETE /workouts/:id Delete workout

🍎 **Nutrition Management**

Method Endpoint Description

GET /nutrition Get all meals

POST /nutrition Log a new meal

PUT /nutrition/:id Update meal log

DELETE /nutrition/:id Delete meal

📊 **Progress & Reports**

GET /progress → View weight/BMI/body stats progress

GET /reports/weekly → Weekly summary

GET /reports/monthly → Monthly performance

⚠️ **Error Handling**

200 OK – Success

400 Bad Request – Invalid input

404 Not Found – Resource not found

500 Internal Server Error – Server issue