

Assignment 6

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Subject: Software Analysis and Design

Topic: To prepare Component and Deployment diagram for a defined problem.

1. Component Diagram (Fitness Web Application)

A **Component Diagram** shows the **structural view** of the system—how different software components (modules, services, UI, DB) interact.

Components for Fitness Web App:

- **Frontend (React/Tailwind)**
 - Home Page
 - Login/Signup Page
 - Dashboard (Workout, Diet, Sleep, Water Tracker)
 - Recipe Section
 - Community & Challenges
- **Backend (Node.js / Express / Django etc.)**
 - Authentication Service
 - User Profile Service
 - Fitness Tracker Service
 - Recipe Management Service
 - Community Service
- **Database (MySQL / MongoDB)**
 - User DB
 - Workout DB
 - Nutrition DB
 - Community DB
- **External APIs**
 - Google Fit / Apple Health API (Step Tracking)
 - YouTube API (Workout Videos)
 - Notification API (Water Reminder, Sleep Alerts)

Diagram (Component Connections)

[Frontend UI]

- | ---> [Authentication Service] --> [User DB]
 - | ---> [Fitness Tracker Service] --> [Workout DB] + [Nutrition DB]
 - | ---> [Recipe Management Service] --> [Recipe DB]
 - | ---> [Community Service] --> [Community DB]
 - | ---> [External APIs: Google Fit, YouTube, Notifications]
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2. Deployment Diagram (Fitness Web Application)

A **Deployment Diagram** shows **hardware nodes** (client devices, servers, databases) and how software components are deployed.

Deployment Nodes:

- **Client Devices (Mobile, Laptop, Tablet)**
 - Users access the application through a **Web Browser**.
 - The frontend is loaded here and connects to the backend through HTTP/HTTPS requests
- **Web Server (Application Server)**
 - Hosts the backend services (Authentication, Fitness Tracker, Recipe, Community).
 - Handles all business logic and API processing.
 - Ensures secure communication between client and server.
- **Database Server**
 - Stores and manages persistent data (users, workouts, recipes, community posts).
 - Provides data access services to the application server.
- **External Services**
 - **Google Fit / Apple Health API** for step and activity tracking.
 - **YouTube API** for fitness and recipe videos.
 - **Notification Service** for sending alerts (Email, Push, SMS).

Diagram (Deployment Connections)

[Client Device: Browser/Mobile]

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[Web Server: Fitness App Backend]

- Authentication Module
- Fitness Tracker Module
- Recipe Module
- Community Module

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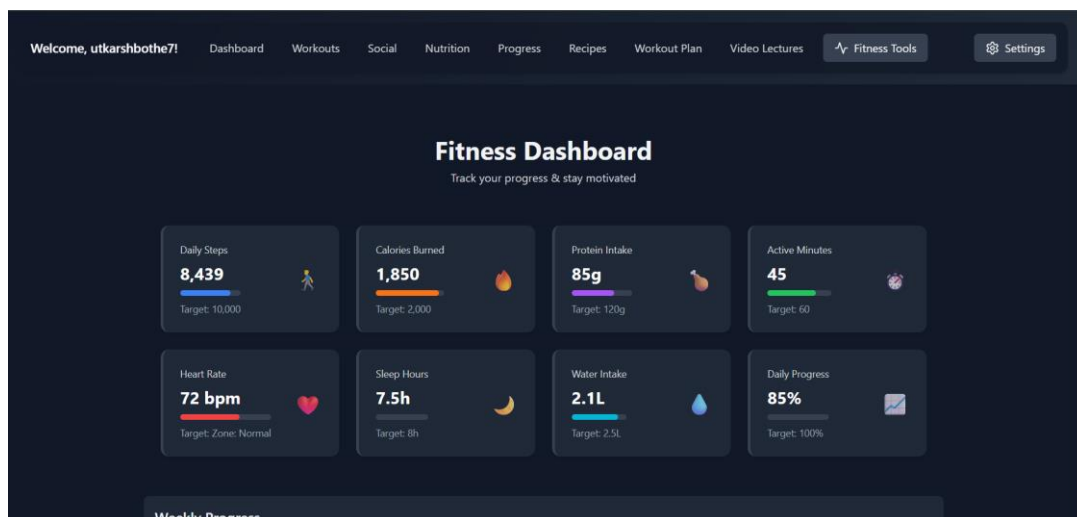
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[Database Server]

- User DB
- Workout DB
- Recipe DB
- Community DB

[External Services]

- Google Fit / Apple Health
- YouTube API
- Notification Service



Welcome, utkarshbothe7!

DashboardWorkoutsSocialNutritionProgressRecipesWorkout PlanVideo LecturesFitness ToolsSettings

Your Workout Plan

Create Custom Workout

Full Body HIIT

30 mins

Intermediate

300-400 cal

Mon, Wed, Fri

Start Workout

Upper Body Strength

45 mins

Advanced

250-350 cal

Tue, Sat

Start Workout

Core & Cardio

25 mins

Beginner

200-300 cal

Thu, Sun

Start Workout

Yoga Flow

40 mins

All Levels

150-250 cal

Daily

Start Workout

Lower Body Burn

35 mins

Intermediate

280-380 cal

Tabata Training

20 mins

Advanced

350-450 cal

Pilates Core

30 mins

Beginner

180-250 cal

Functional Fitness

40 mins

Intermediate

250-350 cal

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Maharashtrian Meal Plan

Customize Meal Plan

Breakfast

7:00 AM

480 cal

Protein22g

Carbs50g

Fats15g

Thalipeeth with curd

Sprouted Usal

Green tea

Morning Snack

10:00 AM

220 cal

Protein18g

Carbs25g

Fats12g

Roasted chana

Maharashtrian Superfoods

Horse Gram (Kulith)

High protein, helps digestion

Aliv (Garden Cress Seeds)

Rich in iron, great for hair growth

Vaal (Field Beans)

Packed with fiber, boosts immunity

Tilgul (Sesame)

Good for bones, rich in calcium

Welcome, utkarshbothe7!

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Sleep Tracker

Sleep Time

Wake Time

Log Sleep

Sleep Log

Sleep Stats

Trends

Sleep Analysis

Sleep Stages

Light Sleep 50%

Deep Sleep 23%

REM 16%

Awake 11%

Deep Sleep

Light Sleep

REM

Awake

Sleep Statistics

Avg. Duration7.3h

Avg. Quality76%

Avg. Wake-ups3.0

Heart Rate62 bpm

Recommendations

Maintain consistent sleep schedule