

Project Proposal: Fitness Tracker Dashboard with React

Overview

The Fitness Tracker Dashboard is a web application designed to help users monitor their workout activities, set fitness goals, and track progress over time. The application will feature an interactive and user-friendly interface built with React, integrated with a Node.js backend for managing user data. It will include data visualization through charts and graphs, allowing users to see their progress in an intuitive way.

Objective

- Develop a fitness tracking dashboard to provide real-time statistics and goal monitoring.
- Enable users to log daily workouts, set fitness goals, and track their improvements.
- Implement secure user authentication so individuals can manage their own records.
- Use charts and graphs (Chart.js or D3.js) for clear data visualization.

Scope

The project will cover:

- **User Registration & Authentication** – Secure login and personalized access.
- **Workout Logging System** – Users can input and update their daily activities.
- **Fitness Goal Tracking** – Set and track progress toward fitness milestones.
- **Data Visualization** – Graphs and charts to display real-time progress.
- **Backend Integration** – Node.js for managing user data and interactions.
- **API Integration** – Connecting external fitness APIs for additional insights.

Fitness Tracker Dashboard Project Plan

This project plan outlines the development of a fitness tracker dashboard using React, Node.js, and other specified technologies.

Project Timeline :

TASKS	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Environment Setup				
Wireframes Design				
Basic Layout Implementation				
Fitness Data Logging Forms				
Backend API Development				
Redux Integration				
Data Visualization (Chart.js/D3.js)				
Unit Testing				
Responsive Design Implementation				
User Authentication Implementation				
End-to-End Testing				
Deployment				
Documentation				

Milestones :

- **Week 1** : Project Setup Complete - Environment configured, wireframes designed, and basic layout implemented.
- **Week 2** : Core Functionality Implemented - Data logging forms functional, backend API operational, and Redux integrated.
- **Week 3** : Visualizations and Testing Complete - Charts and graphs integrated, unit tests passed, and responsive design implemented.
- **Week 4** : Project Completion - User authentication implemented, end-to-end testing complete, application deployed, and documentation finalized.

Deliverables :

- **Week 1 :**
 1. React and Node.js environment set up.
 2. Wireframes for the fitness dashboard.
 3. Basic layout for the dashboard and input forms.
- **Week 2 :**
 1. Functional form for logging fitness data.
 2. Backend API connected to MongoDB.
 3. Redux managing global fitness data.
- **Week 3 :**
 1. Graphs and charts visualizing fitness progress.
 2. Tested and working components.
 3. Responsive layout for the fitness dashboard.
- **Week 4 :**
 1. User authentication integrated.
 2. Deployed fitness tracker app.
 3. Complete documentation with API details and user instructions.

Resource Allocation

- **Frontend Developer :** Responsible for React development, UI implementation, data visualization, and responsive design. (All weeks)
- **Backend Developer :** Responsible for Node.js API development, database integration, and user authentication. (Weeks 2-4)
- **Tester :** Responsible for unit testing and end-to-end testing. (Weeks 3-4)
- **Project Manager :** Oversees project progress, manages communication, and ensures timely delivery. (All weeks)

Task Assignment & Roles

General Tasks

Task	Role	Assigned To
UI/UX Wireframe	UI/UX	Omnya Tarek
MongoDB Tables ERD Diagram	Database	Mariam Helmy / Esraa Mostafa
Dockerize Project	Docker	Samah Ali
Create a Project on GitHub	GitHub	Samah Ali

Backend Development

Task	Role	Assigned To
Sign-up Backend Endpoint	Backend	Samah Ali
Unit Test: Sign-up Backend Endpoint	Backend	Samah Ali
Sign-in Backend Endpoint	Backend	Esraa Mostafa
Unit Test: Sign-in Backend Endpoint	Backend	Esraa Mostafa
Profile Backend Endpoint - Add User Fitness Data	Backend	Mariam Helmy
Unit Test: Profile Add User Fitness Data	Backend	Mariam Helmy
Profile Backend Endpoint - Edit User Fitness Data	Backend	Omnya Tarek
Unit Test: Profile Edit User Fitness Data	Backend	Omnya Tarek
Profile Backend Endpoint - View User Fitness Data	Backend	Samah Ali
Unit Test: Profile View User Fitness Data	Backend	Samah Ali

Profile Backend Endpoint - Delete User Fitness Data	Backend	Esraa Mostafa
Unit Test: Profile Delete User Fitness Data	Backend	Esraa Mostafa
Profile Backend Endpoint - List All User Fitness Data	Backend	Mariam Helmy
Unit Test: Profile List All User Fitness Data	Backend	Mariam Helmy
Reset Password Backend Endpoint	Backend	Omnya Tarek
Forget Password Backend Endpoint	Backend	Omnya Tarek
Unit Test: Forget Password Backend Endpoint	Backend	Samah Ali
Unit Test: Reset Password Backend Endpoint	Backend	Samah Ali

Frontend Development

Task	Role	Assigned To
Sign-in Form Design + Call Backend Endpoint	Frontend	Esraa Mostafa
Unit Test: Sign-in Form Call Backend	Frontend	Esraa Mostafa
Sign-up Form Design + Call Backend Endpoint	Frontend	Mariam Helmy
Unit Test: Sign-up Form Call Backend	Frontend	Mariam Helmy
Profile Form Design - Add User Fitness Data	Frontend	Omnya Tarek
Unit Test: Profile Add User Fitness Data	Frontend	Omnya Tarek
Profile Edit Mode - Call Backend Endpoint	Frontend	Samah Ali
Unit Test: Profile Edit User Fitness Data	Frontend	Samah Ali
Profile View Mode - Call Retrieve Endpoint	Frontend	Esraa Mostafa
Unit Test: Profile Retrieve User Fitness Data	Frontend	Esraa Mostafa
Profile Delete Specific Fitness Record - Call Backend	Frontend	Mariam Helmy

Unit Test: Profile Delete Specific Fitness Record	Frontend	Mariam Helmy
Dashboard Design - List All User Fitness Data	Frontend	Omnya Tarek
Unit Test: Dashboard List All User Fitness Data	Frontend	Omnya Tarek
Reset Password Form Design + Call Backend Endpoint	Frontend	Samah Ali
Unit Test: Reset Password Call Backend	Frontend	Samah Ali
Forget Password Form Design + Call Backend Endpoint	Frontend	Esraa Mostafa
Unit Test: Forget Password Call Backend	Frontend	Esraa Mostafa

Risk Assessment & Mitigation Plan – Fitness Tracker Dashboard

Risks	Solutions
Data Integrity Risks Loss or corruption of user data due to system crashes or database issues.	Implement automated database backups, use transaction management in the database, validate all user inputs, and employ error handling mechanisms to prevent data corruption.
Scalability Risks System may not handle increased users and data over time.	Use load balancing, optimize API endpoints and consider cloud-based solutions like AWS or Firebase for scalability.
User Experience (UX) Risks Poor UI/UX design leading to low user engagement.	Conduct user testing, gather feedback, implement responsive design principles, and continuously iterate on design improvements based on analytics.
Third-Party Dependency Risks External libraries (Chart.js, D3.js) may become outdated or introduce vulnerabilities.	Regularly update dependencies, monitor security advisories, have fallback solutions, and consider alternative libraries if needed.

Project Timeline & Delivery Risks Delays in development due to unforeseen technical challenges or scope creep.	Follow Agile methodology, set clear milestones, conduct regular sprint reviews, allocate buffer time for unexpected issues, and ensure strong project management practices. By proactively addressing these risks with effective solutions, the Fitness Tracker Dashboard will be secure, efficient, and user-friendly, ensuring a seamless experience for users.
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KPIs (Key Performance Indicators)

1. System Performance & Reliability

- ✓ **API Response Time:** Backend API calls should return responses within **≤ 200ms** on average.
 - ✓ **System Uptime:** Maintain **99.9% uptime** for backend services.
 - ✓ **Error Rate:** Less than **1% API failure rate** (measured via logs & monitoring tools).
 - ✓ **Database Query Performance:** MongoDB queries should execute within **≤ 500ms**.
 - ✓ **Page Load Speed:** Ensure the dashboard loads in **≤ 2 seconds**.
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2. Code Quality & Testing

- ✓ **Unit Test Coverage:** Achieve at least **85% test coverage** for backend & frontend.
 - ✓ **Bug Resolution Time:** Critical bugs resolved within **24 hours**, high-priority within **48 hours**.
 - ✓ **Code Review Turnaround:** PRs reviewed & merged within **48 hours**.
 - ✓ **CI/CD Build Success Rate:** At least **90% successful builds** in the continuous deployment pipeline.
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3. User Adoption & Engagement

- ✓ **User Sign-ups:** At least **X new users per week** (defined based on goals).
- ✓ **Daily Active Users (DAU):** Aim for **at least 50% of signed-up users** logging workouts daily.

- ✓ **Feature Usage Rate:** 80% of users log fitness data at least once per week.
 - ✓ **User Retention Rate:** At least 60% of users return within a month.
 - ✓ **Avg. Session Duration:** Users spend at least 5 minutes per session engaging with charts and data.
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4. Security & Compliance

- ✓ **Authentication Success Rate:** Less than 2% login failures.
 - ✓ **Security Vulnerabilities:** No high-severity issues detected in security scans.
 - ✓ **Data Privacy Compliance:** Ensure compliance with **GDPR (if applicable)**.
 - ✓ **API Authorization:** No unauthorized data access incidents.
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5. Deployment & Infrastructure

- ✓ **Deployment Frequency:** Push new features & fixes at least every 2 weeks.
 - ✓ **Scalability:** System should handle 100+ concurrent users without performance degradation.
 - ✓ **Infrastructure Cost Optimization:** Ensure server costs do not exceed budgeted limits.
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6. Dashboard & Data Visualization

- ✓ **Data Accuracy:** Fitness data displayed on charts must match database records 100%.
- ✓ **Chart Load Time:** Charts render within 2 second after API response.
- ✓ **Responsiveness:** Dashboard UI must pass 100% responsive tests across devices.

3. Requirements Gathering

- **Stakeholder Analysis**

Internal	External
Owner	Shareholders (Investors or Business Partners)
Engineers	Suppliers (Third-Party API Providers & Hosting Services)
Employees	Customers (End Users - Fitness Enthusiasts & Trainers):
Competitors	Health & Fitness Organizations (Gyms, Personal Trainers, Wellness Coaches)

- **External Stakeholders**

- **Owner:**

- **Interests:** Responsible for project funding, overseeing development, ensuring product value, and making strategic decisions regarding software versions and updates.
- **Interdependence:** Plays a key role in the success, continuity, and growth of the project by managing resources and setting long-term goals.

- **Engineers (Developers):**

- **Interests:** Responsible for designing, developing, and maintaining the fitness tracking dashboard, ensuring smooth functionality, security, and user experience.
- **Interdependence:** Ensure product quality, performance, and usability meet project requirements and user expectations.

- **Employees (Development Team):**

- **Interests:** Execute assigned tasks, such as coding, UI/UX design, API integration, and testing, to ensure the project's successful completion.
- **Interdependence:** Work collaboratively to develop and deliver a high-quality application, ensuring all features function as intended.

- **Competitors:**

- **Interests:** Provide similar fitness tracking solutions, often at competitive prices or with enhanced features, to capture a larger market share.
- **Interdependence:** Their presence drives innovation and continuous improvement of the fitness tracker dashboard to maintain competitiveness in the market.

- **External Stakeholders**

1. **Shareholders (Investors or Business Partners):**

- **Interests:** Generate profit from the platform, contribute to its expansion, and support marketing efforts to attract more users.
- **Interdependence:** Their investment and support contribute to the financial growth and sustainability of the project.

2. **Suppliers (Third-Party API Providers & Hosting Services):**

- **Interests:** Provide essential APIs (e.g., fitness data APIs, authentication services) and hosting solutions to support the platform's performance.
- **Interdependence:** Ensuring reliable API services and hosting enhances the functionality and accessibility of the dashboard.

3. **Customers (End Users - Fitness Enthusiasts & Trainers):**

- **Interests:** Use the platform to track fitness goals, log workout data, and analyze progress through charts and statistics.
- **Interdependence:** Their engagement and feedback drive feature updates and improvements, making the product more successful.


4. **Health & Fitness Organizations (Gyms, Personal Trainers, Wellness Coaches):**

- **Interests:** Utilize the platform to manage client progress, recommend workouts, and track fitness performance.
- **Interdependence:** Increased adoption by gyms and trainers enhances platform credibility, user base, and overall success.

User Stories & Use Cases

1. User Authentication & Profile Management


User Story 1: Sign Up & Login

 As a user, I want to sign up and log in securely to access my personalized fitness data.

Use Case

- Trigger: The user visits the login/signup page.
- Steps:
 1. The user enters email, password, and optional profile details.
 2. The system validates credentials and creates an account or logs in.
 3. The user is redirected to the dashboard.
- Success: The user successfully logs in and accesses their profile.
- Failure: Incorrect credentials show an error message.

User Story 2: Reset & Forget Password


 As a user, I want to reset my password in case I forget it so that I can regain access.

Use Case

- Trigger: The user clicks "Forgot Password" on the login screen.
 - Steps:
 1. The user enters their registered email.
 2. The system sends a password reset link.
 3. The user clicks the link and sets a new password.
 - Success: The user logs in with the new password.
 - Failure: Expired or incorrect reset link.
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2. Fitness Data Logging & Tracking


User Story 3: Log Workout Activities

 As a user, I want to log my daily workout activities so that I can track my fitness progress.

Use Case

- Trigger: User visits the "Log Activity" section.
- Steps:
 1. The user selects the activity type (running, cycling, weightlifting, etc.).
 2. User inputs details (duration, calories burned, distance, etc.).
 3. The user submits the entry, and the system stores it.
- Success: Entry appears in the dashboard.
- Failure: Invalid inputs prompt an error message.

User Story 4: Edit/Delete Workout Entries

 As a user, I want to modify or delete my fitness entries so that I can keep my records accurate.

Use Case

- Trigger: The user selects an existing workout entry.
 - Steps:
 1. The user clicks "Edit" and updates the entry.
 2. The user clicks "Delete" to remove the entry.
 3. The system updates or removes the entry.
 - Success: Updated or deleted entries are reflected on the dashboard.
 - Failure: Unauthorized access prevents modifications.
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3. Fitness Goals & Progress Tracking

User Story 5: Set Fitness Goals

 As a user, I want to set fitness goals so that I can track my progress over time.

Use Case

- Trigger: The user navigates to the "Set Goals" section.
- Steps:
 1. The user sets a goal (e.g., run 5km daily, lose 5kg in a month).
 2. The system stores the goal and tracks progress.
 3. The dashboard displays the goal with a progress bar.
- Success: The goal is saved and displayed on the dashboard.
- Failure: Invalid goal inputs prevent saving.
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User Story 6: Track Progress with Charts

📌 As a user, I want to see my fitness progress visualized in graphs so that I can analyze my improvements.

Use Case

- Trigger: The user opens the dashboard.
 - Steps:
 1. The system retrieves fitness data.
 2. Charts display weekly/monthly progress.
 3. The user interacts with filters to customize views.
 - Success: Accurate data visualization helps users analyze trends.
 - Failure: The empty dataset displays a "No data available" message.
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4. User Profile & Data Management

User Story 7: View & Update Profile

📌 As a user, I want to update my profile so that I can personalize my experience.

Use Case

- Trigger: User navigates to "Profile" settings.
- Steps:
 1. User updates details (name, age, weight, fitness level).
 2. The system validates and saves changes.
- Success: Updated profile reflects immediately.
- Failure: Invalid inputs show an error.

5. System Administration & Monitoring

User Story 8: Monitor System Uptime & Performance

📌 As a system administrator, I want to monitor API response time and server health so that I can ensure smooth operation.

Use Case

- Trigger: Admin accesses monitoring tools.
- Steps:
 1. The system logs API response times and uptime.
 2. Alerts notify if response time exceeds 200ms.
 3. Admin reviews logs and takes corrective action.
- Success: The system operates within performance thresholds.
- Failure: Alerts notify the admin of slow performance.

Functional Requirements – System Capabilities & Constraints:

1. User Registration and Account Management:

- User Registration:
 - The user should be able to create a new account using a username/email and password.
 - Email validation should be implemented (optional).
- User Login:
 - The user should be able to log in using their username/email and password.
 - A "Forgot Password" option should be provided.
- Profile Editing:
 - The user should be able to edit their profile information (e.g., name, height, weight).
- User Logout:
 - The user should be able to log out of their account.

2. Fitness Data Logging:

- Activity Data Entry:

- The user should be able to enter daily fitness activity data (e.g., activity type, duration, calories burned, steps, distance).
 - The user should be able to specify the activity date.
- Activity Log Display:
 - The user should be able to view a log of recorded fitness activities.
 - The user should be able to edit and delete activity data.

3. Goal Management:

- Goal Setting:
 - The user should be able to set fitness goals (e.g., daily step count, calories burned, workout time).
 - The user should be able to set a goal start and end date.
- Goal Display:
 - The user should be able to view their set goals and their progress towards achieving them.
- Goal Editing and Deletion:
 - The user should be able to edit and delete their goals.

4. Data Visualization and Display:

- Daily Activity Summary:
 - The system should display a summary of daily fitness activity (steps, calories burned, workout time).
- Chart Display:
 - The system should display charts to visualize the user's progress in activities and goals over time (weekly, monthly).

- Chart.js or D3.js should be used to create the charts.
- Detailed Data Display:
 - The system should display activity data in a detailed format.

5. User Interface and Interaction:

- Responsive UI:
 - The UI should be responsive and function correctly on various devices (desktops, tablets, smartphones).
- User Interaction:
 - The system should provide a smooth and user-friendly interaction.
 - Visual feedback should be provided to the user upon interaction.

6. API Backend:

- Data Storage:
 - The API should provide the ability to store user, activity, and goal data in a MongoDB database.
- Data Retrieval:
 - The API should provide the ability to retrieve user, activity, and goal data.
- Data Update and Deletion:
 - The API should provide the ability to update and delete data.
- Data Validation:
 - The API should validate incoming data.

7. Authentication:

- User Authentication:

- The system should provide user authentication to protect user data.
- Secure password storage methods should be used.