BILKENT UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

CS 353 - Database Systems

Section 2 | Group 27

Project Proposal

24/02/2024

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1. Introduction

In the era of digital health and wellness, there is a considerable need for an easy-to-use app that you can use to monitor, plan, and enhance your fitness activities. Our Fitness Tracker and Trainer project is designed to meet the growing demands of fitness enthusiasts and professional trainers for a comprehensive, user-friendly, and secure system to track and improve health and fitness on their journey of self-improvement. This proposal outlines the application system and its database usage and defines the requirements and limitations of such a system.

Additionally, we have separately listed the functional and non-functional requirements of the project. The functional requirements are the functions provided by the system, and they define the interaction between the system and the user based on the inputs provided. The non-functional requirements focus on meeting the user's expectations of how the system should behave and specify the measures that will ensure that the system will operate functionally and how it will handle incidents.

Lastly, we will also mention the limitations of our system and how and why we found workarounds to problems that arose while designing the app.

2. Project Description

The Fitness Tracker and Trainer system will be a multifunctional app intended to be a comprehensive solution for individuals seeking to maintain or improve their physical health or professional trainers aiming to support their clients' fitness journeys.

The system will offer a suite of features such as:

- User Profiles contain personal information, fitness goals, and past achievements to provide a personalised experience.
- Workout Routines: A repository of exercises and pre-designed workout plans catering to various fitness levels and goals.
- Nutrition Plans: Guidelines and tracking capabilities for daily nutritional intake, helping users align their diet with fitness objectives.
- Progress Tracking: Tools for logging daily exercises, tracking weight and body measurements, and visualising progress over time.
- Personalised Recommendations: Dynamic suggestions for workouts and nutrition based on user goals, preferences, and progress.
- Trainer Interface: Specialised access for professional trainers to create customised plans, monitor client progress, and provide feedback.

3. Role of Database

Due to the large amounts of data needed for an application like the one being proposed, a robust, scalable, and secure database is required. It will serve several critical functions:

- Data Storage: Efficiently store vast amounts of user data, workout routines, nutritional information, and progress logs.
- Data Retrieval: To allow for quick searching, filtering, and retrieval of data to ensure a responsive user experience.
- Data Security: Implement robust security measures to protect sensitive health-related data and personal information.
- Data Analysis: Facilitate the aggregation and analysis of data to generate

personalised recommendations and reports for users and trainers.

- Scalability: Support scalability to accommodate increasing users and expand data requirements.

4. Requirements

The system must meet the following requirements to ensure its effectiveness and reliability:

- User Authentication and Authorization: Secure login mechanisms and role-based access control to protect user information and privacy.
- Data Integrity and Security: Use encryption and secure data handling practices to safeguard health data and personal information.
- Responsive Interface: A user-friendly interface that adjusts to various devices and screen sizes, enhancing accessibility and usability.
- Real-Time Updates: Ability to handle real-time data input and updates for progress tracking and feedback.
- Analytics and Reporting: Advanced analytics for personalised recommendations and generating reports for users and administrators.

5. Limitations

While the system aims to be comprehensive, certain limitations must be acknowledged:

- Data Accuracy: The reliability of progress tracking and nutritional logging depend on accurate user input.
- Personalisation Limits: Recommendations are based on generalised algorithms and may not suit every individual's unique health conditions or preferences.

- Technology Dependence: Users must have access to compatible devices and internet connectivity, potentially limiting accessibility for some.
- Data Privacy: Despite robust security measures, the inherent risks of data breaches and privacy concerns cannot be eliminated.

6. ER Diagram