# 

**CONTENTS**

1. **ABOUT PROJECT…………………………………………..…..8**
2. **ANALYSIS DESIGN………………………………………..…...9**
3. **MODULAR DESIGN…………………………………………..16**
4. **TECHNICAL DESIGN…………………………………...……18**
5. **CONCEPTUAL DESIGN………………………………...……20**
6. **SCALABLE ARCHITECTURE……………………..……..…22**

**ekran görüntüsü, metin, diyagram, tasarım içeren bir resim

Açıklama otomatik olarak oluşturulduWeb and Mobile Pages:**

**metin, ekran görüntüsü, web sitesi, multimedya yazılımı içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin, ekran görüntüsü, yazılım, multimedya yazılımı içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin, yazılım, multimedya yazılımı, ekran görüntüsü içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**metin, yazılım, bilgisayar simgesi, işletim sistemi içeren bir resim

Açıklama otomatik olarak oluşturuldu**

metin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, mobil telefon, ekran görüntüsü, küçük alet içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, mobil telefon, İletişim Cihazı, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldu

metin, ekran görüntüsü, sayı, numara, mobil telefon içeren bir resim

Açıklama otomatik olarak oluşturulduekran görüntüsü, multimedya, küçük alet, mobil telefon içeren bir resim

Açıklama otomatik olarak oluşturuldumobil telefon, metin, küçük alet, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldu

metin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, küçük alet, mobil telefon içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, İletişim Cihazı içeren bir resim

Açıklama otomatik olarak oluşturulduküçük alet, metin, ekran görüntüsü, İletişim Cihazı içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil telefon, tasarım içeren bir resim

Açıklama otomatik olarak oluşturuldu

metin, ekran görüntüsü, mobil telefon, mobil cihaz içeren bir resim

Açıklama otomatik olarak oluşturuldumetin, ekran görüntüsü, mobil cihaz, mobil telefon içeren bir resim

Açıklama otomatik olarak oluşturuldu

1. **ABOUT PROJECT**

Our project is a mobile application designed to connect fitness athletes and fitness trainers. This platform allows users to purchase subscription packages determined by the coaches. Once subscribed, users can follow the exercise and nutrition programs prepared by their coaches and track their weekly progress. The app also facilitates messaging between users and their coaches and allows regular monitoring of users' body measurements. We also have a dedicated website exclusively for coaches. The purpose of this website is to create new coaches, allow coaches to view and edit the training programs of their respective students, and to contact the administrator in case of any problems.

**ABOUT RUNNING THE PROJECT**

To run the project, the attached zip file must be extracted. For the mobile application, open the project in Android Studio and complete the necessary setup. For the website, open the project in Visual Studio and perform the required configurations. Once these setups are completed, the mobile application can be launched from Android Studio, and the website can be accessed by opening it in a web browser.

1. **ANALYSIS DESIGN**

**Requirements Gathering**

Surveys and Interviews:

* During the project, online surveys were conducted to understand user requirements. Additionally, regular gym-goers were interviewed to gather direct feedback.
* Direct communication was established to better understand the needs and expectations of the users.

Document Review:

* Existing similar applications were reviewed to identify gaps and areas for improvement, which were then implemented in the project.

**Requirements Definition**

Functional Requirements:

1. User registration and login
2. Creation and tracking of workout programs
3. Nutrition tracking
4. Calendar and reminders
5. Payment processing
6. Messaging
7. Coach management
8. Package and pricing adjustments
9. Membership cancellation
10. Admin panel

Performance Requirements:

The application is expected to run smoothly and respond quickly to user interactions.

**Requirements Validation:**

**Prototype Testing:**

Initial prototypes will be tested by users, and improvements will be made based on their feedback.

**Review Meetings:**

Regular review meetings will be held between the project team and users to discuss necessary improvements and adjustments. These meetings will ensure the mobile application becomes more efficient for both athletes and coaches.

**Business Analysis**

**Current State Analysis:**

System Capabilities: Review of existing systems to analyze and determine how the new system can integrate with these capabilities if needed.

**Business Processes:**

Gap Analysis: Identification of gaps between current and target systems and analysis of how these gaps can be bridged.

Requirement Comparison: Comparison of existing applications' offerings and user requirements to update the task list accordingly.

**Business Process Modeling:**

A diagram of a program

Description automatically generatedUse Case Diagrams: Modeling how users will interact with the system and what operations they can perform using use case diagrams.

Workflow: Detailed modeling of workflows within the system using EER (Extended Entity-Relationship) diagrams.

A diagram of a company

Description automatically generated

**Technical Analysis**

**System Requirements:**

Hardware Requirements:

For Mobile:

* Android 11.0 operating system
* 2 GB RAM

For Web:

* Windows 10 operating system
* Intel Core i7 CPU
* 16 GB RAM

**Data Analysis:**

Analysis of how user data, workout, and nutrition programs will be stored and processed.

**Database Design:**

Database structures were created using Firebase for user authentication, data storage, and retrieval.

**User Requirements**

**User Interface Design:**

User-Friendly Interface: Development of an easy-to-use and understandable interface for the Fitness App. The interface is enriched with colorful images, stored in the assets folder.

**Mobile Compatibility:** Responsive design to ensure easy access from mobile devices.

**Usability Analysis:** Evaluation of how easily and efficiently users can use the system.

**Usability Testing:** Testing with real users and evaluation of feedback. The results were positive, with only a recommendation to improve response times for questions asked by users.

Security and Performance Analysis

**Security Requirements:**

Data Security: Encryption and access control mechanisms will be established to ensure the security of user data.

**Server Security:** Server and port entries will be fixed and protected with security measures.

**Performance Requirements:**

**Response Time:** The application should respond quickly to user interactions, with an average response time target of 2 seconds.

**Capacity:** Ensuring the database and system resources can handle high user loads.

**Risk Analysis**

**Risk Identification:**

**Technical Risks:** Identification of software and hardware issues, and data security risks. For example, the risk of the application not running on low-performance devices.

**Project Management Risks:** Evaluation of risks related to time management and budget overruns.

**Risk Management:**

**Preventive Measures**: Identification of measures to prevent the occurrence of risks.

**Contingency Plans:** Development of emergency plans to be implemented in case the risks materialize.

1. **MODULAR DESIGN**

Our blockchain-based donation platform boasts a modular and user-friendly design. Users can easily browse campaigns, make donations, and obtain detailed information about campaigns. This document elucidates the modular structure and components of the platform.

**General Structure**

The overall structure of our platform consists of the following components:

* **Header**: The header section features a Fitness App text on the left, symbolizing the platform's identity, while the right side includes navigation links for "Home" and "My Account," enabling users to swiftly access essential pages for exploring and contributing to ongoing donation campaigns.
* **Footer**: In the footer section, we proudly highlight our dedication to supporting important causes by featuring the names of renowned global organizations.

**Home Page**

There are ‘My Information’, ‘Settings’, ‘Support’ and ‘Logout’ fields on our home page.

**My Information Page**

On this screen, there is a page where the logged in coach's own information is displayed.

At the same time, there is an ‘Edit Profile’ button to update their information.

**Profile :**

The fields on this page are as follows:

* **Email**: Coach email.
* **Name**: Coach name.
* **Surname:** Coach surname.
* **Username**: Coach username.
* **User Type**: Coach name.

**Settings Page**

In this field, the user updates coach own information:

**Update Information Page:**

The fields on this page are as follows:

* **Email**: Update coach email.
* **Name**: Update coach name.
* **Surname:** Update coach surname.
* **Username**: Update coach username.
* **User Type**: Update coach name.

**Support Page**

The page where they can contact us for their necessary requests and complaints by contacting our company

**Conclusion**

The coach will make all the updates on our website from top to bottom for our users and will be able to edit the programmes of our users and update their own information.

1. **TECHNICAL DESIGN**

**System Architecture**

The technical design of the project encompasses database and data management, backend, model integration, frontend, and testing and integration stages.

**1. Database and Data Management:**

**Database Selection:** Firebase's real-time database is used. User data, workout, and nutrition programs are stored and processed here.

**Data Structures:** Necessary data structures for user authorization, data logging, and data retrieval have been established.

**Security:** Encryption and access control mechanisms are implemented to ensure user data security.

**2. Backend:**

**.NET Core:** .NET Core is used for backend development of the web application, chosen for its high performance and scalability.

**Server-Side Operations:** Business logic, data processing, and database communication are handled here.

**API Integration:** Integration of various APIs and third-party services is facilitated using .NET Core.

**3. Model Integration:**

**MVC (Model-View-Controller) Architecture:** MVC architecture is used for the web application. This structure modularizes and makes the application components easily manageable by separating them.

**MVP (Model-View-Presenter) Architecture:** MVP architecture is used for the mobile application. This structure allows for the separation of business logic and user interface into different layers, enhancing testability and maintainability.

**4. Frontend:**

**Web Interface:** Developed using CSHTML (Razor Pages), CSS, and JavaScript. Razor Pages provide a powerful templating engine compatible with ASP.NET, while CSS and JavaScript manage dynamic styling and user interactions.

**Mobile Interface:** Developed using Android Studio to ensure the application runs natively on mobile devices with the necessary tools and libraries.

**5. Testing and Integration:**

**Data Collection and Preprocessing:** User feedback and test data are collected and preprocessed.

**Model Review:** Developed models undergo testing and validation processes.

**Integration and Testing:** Integration of all components is performed, followed by testing through various scenarios.

**Deployment:** After passing the testing stages, the application is deployed to the end users.

Technical Infrastructure

**Server:**

**Development Tools:**

**.NET Core:** Used for web application development.

**Android Studio:** Used for mobile application development.

**Data Preprocessing:** Appropriate tools and methods are used for data collection and analysis processes.

By leveraging these architectures and tools, the fitness application is designed to be robust, scalable, and user-friendly, ensuring a seamless experience across both web and mobile platforms.

1. **CONCEPTUAL DESIGN**

**Project Goal:**

To develop a comprehensive fitness application that allows users to create and track personalized workout and nutrition programs, communicate with coaches, and manage memberships efficiently.

**Objectives:**

Provide an easy-to-use mobile and web application for fitness enthusiasts and coaches.

Ensure secure and seamless data management for user information and workout programs.

Optimize user interaction and engagement through a responsive and interactive user interface.

Integrate AI and machine learning for personalized recommendations and progress tracking.

**2. User Requirements**

**Easy Access:**

The application should be accessible on both mobile and web platforms, with a user-friendly interface that allows users to easily navigate and utilize the app's features.

**Enhanced Interaction:**

Improve user engagement through interactive features such as messaging, reminders, and real-time notifications.

**3. Main Components and Relationships**

**Database Integration:**

The system will use Firebase for data storage and management, ensuring secure handling of user data, workout programs, and nutrition plans.

**Logic and Imagination Mechanisms:**

Incorporate algorithms for personalized workout and nutrition recommendations based on user inputs and goals.

**User Interface:**

Design a visually appealing and intuitive interface for both mobile and web platforms to enhance user experience.

**Information Architecture:**

Structuring the application to ensure logical flow and easy access to different features and sections.

**Database:**

Firebase will be used for storing user data, workout routines, nutrition plans, and other relevant information securely.

Artificial Intelligence and Natural Language Processing:

Implement AI and NLP to provide personalized suggestions, analyze user progress, and improve user interaction through chatbots or virtual assistants.

**Web Interface:**

Develop a responsive web interface that mirrors the functionality and user experience of the mobile application.

**5. Development and Testing Stages**

**Data Collection and Preprocessing:**

Gather user data, workout plans, and nutrition information, and preprocess this data to ensure it is suitable for analysis and recommendation algorithms.

**Model Review:**

Review and fine-tune machine learning models used for personalized recommendations and progress tracking.

**Backend Development:**

Develop backend services to handle data storage, authentication, and business logic, ensuring seamless integration with the database and frontend.

**Frontend Development:**

Create a user-friendly and responsive frontend for both mobile and web applications, focusing on usability and aesthetic appeal.

**Integration and Testing:**

Integrate all components and conduct extensive testing to ensure the application functions correctly and meets user requirements.

**Deployment:**

Deploy the application to app stores for mobile users and a web server for web users, ensuring accessibility and availability.

**6. Conclusion and Evaluation**

**Performance and Accuracy:**

Evaluate the application's performance and accuracy in delivering personalized recommendations and tracking user progress.

**Optimization Requirements**:

Identify areas for optimization to enhance performance, reduce response times, and improve overall user satisfaction. Regular updates and maintenance will be planned to keep the application efficient and up-to-date.

1. **SCALABLE ARCHITECTURE**

**CSHTML (Razor Pages)**

**Why Chosen?**

Razor Pages were chosen for their seamless integration with ASP.NET Core, providing a modern and efficient way to build dynamic web pages with minimal coding overhead.

**Integrated Solution:**

Compatible with ASP.NET, Razor Pages offer a powerful templating engine for server-side rendering, making it easy to create dynamic and responsive web applications.

**Performance:**

Razor Pages enable fast and reliable page load times by rendering on the server side, reducing the load on the client-side and improving overall performance.

**Usage:**

**Campaign Card Module:** Separate card modules are used for each donation campaign, allowing for modular and reusable components.

**Donation and View Buttons:** Users can easily donate to campaigns or view more details through intuitive buttons on each campaign card.

**CSS and JavaScript**

**Why Chosen?**

CSS and JavaScript are fundamental technologies for web development, offering wide browser support and ease of use.

**Flexibility:**

These technologies provide flexibility in design and functionality, enabling developers to create visually appealing and interactive web pages.

**Dynamic Styling and Interaction:**

CSS handles the layout and styling, while JavaScript manages in-page dynamic changes and user interactions, ensuring a smooth and engaging user experience.

**Usage:**

**Layout and Design:** CSS is used to style the pages and components, ensuring a consistent and attractive design.

**Progress Bar:** JavaScript dynamically updates the donation progress bar after each donation, providing real-time feedback to users.

Firebase

**Why Chosen?**

Firebase was chosen for its robust real-time database capabilities and comprehensive user authentication mechanisms.

**Real-Time Database:**

Firebase reflects user interactions instantly, providing fast updates to all users without the need for page reloads.

**User Authentication:**

Firebase offers reliable and secure user authentication processes, simplifying the management of user accounts and login sessions.

**Usage:**

**Campaign Data:** Firebase stores all campaign information and donation history, ensuring data is always up-to-date and accessible.

**User Management:** Firebase handles user login and authentication processes, providing a secure and streamlined experience for users.

**Android Studio**

**Why Chosen?**

Android Studio is the official Integrated Development Environment (IDE) for Android development, offering comprehensive tools and features for building Android apps.

**Development Efficiency:**

It provides a robust environment for coding, testing, and debugging Android applications, improving development efficiency and productivity.

**Support for Modern Android Features:**

Android Studio supports the latest Android features and libraries, ensuring the application stays up-to-date with current standards and capabilities.

**Usage:**

**Mobile App Development:** Android Studio is used for developing the Android version of the fitness application, ensuring a seamless and native user experience.

**Testing and Debugging:** It provides tools for testing and debugging the app on various Android devices and emulators, ensuring high quality and performance.