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Personalized daily-weekly workout arrangement application "cardio fit"

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ABSTRACT

Having mobile applications has become an indispensable part of our lives in recent years. There are many mobile applications that are already being used in the field of fitness. By using these apps, people can lead a more organized and planned lifestyle. However, many apps fail to offer personalized programs for individuals. This makes mobile applications an inefficient method for users to reach their goals. Our mobile application aims to enable users to reach their fitness level effectively and quickly with a program suitable for their body type, physical characteristics, training goals and exercise preferences. Body mass indexes are calculated based on the body measurements that users enter and their maximum oxygen capacity is determined according to their age, the user chooses their fitness goals, selects the equipment they will train with, and indicates whether they have heart rate monitors. Based on this, the appropriate program is presented to the user. This app is not suitable for users over 50 years old. Users have two goal options for the app: "Feeling Good – Breaking a Sweat" and "Achieving Fitness Level (Firming-Fat Burning)." In the "Reach Fitness Level" option, a tightening program is recommended if the user's weight is above their ideal weight, while a fat burning program is recommended for users who are significantly above their ideal weight. The Kotlin programming language was used to develop this application, and the Firebase database was used to speed up the development process to ensure the effectiveness of fitness programs, the cardio program was provided by a fitness trainer who is an expert in the field. This app retrieves the necessary user information from the database and provides them with the most suitable fitness program. As a result, users can achieve their goals without needing a fitness trainer or going to the gym.

Keywords: Mobile app, kotlin, firebase, fitness, fitness app

INTRODUCTION

With the widespread use of technology, having mobile applications is an indispensable part of our lives. Also, people can save time by using mobile apps to accomplish many tasks. Many people equally use mobile apps to perform their daily activities. Fitness applications are also among the mobile applications that are frequently used in daily life (Azar, Lesser, Laing et al. 2013; Fanning 2012).

Through fitness apps, users can create personalized workouts, track their progress, receive social support, and find motivation to achieve their goals (Direito, 2017). Fitness apps are mobile app services that offer programs such as exercise, nutritional guidance, and monitoring children's health. It is possible to exemplify some of the most used applications according to the number of downloads and popularity as follows (Azar et al, 2013).

- Nike Training Club: A workout app that provides users with features such as a variety of fitness exercises, training programs, video guides, and progress tracking (MyFitnessPal: Calorie counter and nutrition tracking app, 2023).
- MyFitnessPal: A health and nutrition system with features such as nutrition tracking, calorie calculation, food diarying, meal planning, and a macronutrient breakdown app (Wang et al, 2016).
- Strava: It is a fitness tracking application that tracks users' outdoor sports such as Running, Walking, Horseback Riding, Swimming, Cycling using GPS data. You can record your activities and track data such as speed, distance and time, as well as interact with other athletes
- Seven-7 Minute Workout: High-intensity 7-minute workout routines. It is an application for users. Users can

practice exercises at home, in the office, or while traveling and survive in a short time by having an effective training experience (Seven: Fitness and Workout App, 2023).

- Fitbit: An app and accessory that offers a variety of features for a combination of fitness and health tracking. Users can track steps, calories burned, sleep quality, and heart rate. It can track its speed. You can also set activity goals and work within the community. Can compete with other users (Google Fit: Health & Fitness Tracking App, 2023).
- Google Fit: Allows users to track their daily activities, count steps, calories It is a fitness app that offers features such as calculating your mileage and setting goals. It also has the ability to automatically recognize different sports activities (Fitbit: Activity and Health Trackers, 2023).

These apps often help users set their health and fitness goals and provide preventative training programs and diet plans to achieve them (Peterson et al, 2017). In addition, some fitness apps offer rewards, achievement badges, and motivational features to achieve social share (Azar et al, 2013).

In addition, Fitness apps allow users to exercise with more motivation and enjoyment according to their interests (Wang et al, 2016).

Research shows that the use of fitness apps increases users' physical activity levels, increases their motivation and engagement, and helps them achieve their health goals (Wang et al, 2016; Fanning et al, 2012).

The aim of this study is to develop an application that is easily accessible to everyone and allows to achieve a fitness level in a short time with a professional program that can be applied in the gym or to provide an exercise routine without the need for fitness trainers. Another purpose is to create an application that is different from other applications in the current market, apart from being more useful. This application primarily stores the necessary information about individuals in its database. For convenience, the user has been advised to use a simple and visually appealing interface during data collection. The data collected is information such as whether there is a smart watch, body measurements, age, gender, fitness goals, equipment such as exercise information, and heart rate monitors, and in the light of this information, it is aimed to offer the most suitable fitness programs to the users. Research studies show that the fitness market is growing every year and the usage rate is increasing (Farrokhi et al, 2021).

A study conducted by Azar, which focuses on the theoretical study analysis of content mobile applications, is based on weight management. This research showed that; These apps are effective in helping users set weight loss goals, create meal plans, and track their exercise activity (Azar et al, 2013). Another study by Wang aimed to increase the physical activity levels of overweight and obese adults. used a wearable device called; These results show "Fitbit One and SMS" text messages. This combination led to a significant physical increase in activity level (Wang et al, 2016).

Another lesson in the study was to increase user motivation and have a positive impact on exercise frequency The researchers find that rewards, achievement badges, and social sharing features expand with fitness apps provided for exercise motivation, encouraging users to exercise regularly (Direito et al, 2017). Another study shows the effectiveness of smart fitness apps in improving exercise performance Researchers have determined that smart fitness apps provide feedback to users, which helps improve exercise techniques, optimize workout times, and achieve target heart rates (Martin et al, 2015).

Studies by Smith et al. have shown that the use of a smart bracelet and a compatible mobile app increases users' physical activity levels and increases the frequency of exercise (Smith et al, 2016).

In another study by Direito et al.; It showed that the use of a smartphone-based fitness app increased physical activity levels and helped users achieve their health goals (Direito et al, 2017).

METHODS

Firebase was used as the database in the work. Firebase Authentication is used for user authentication, and Firebase Database uses the programming language using Firestore, the Android Studio runtime tool, and Kotlin using GitHub, dividing tasks among team members. Firebase Authentication, a cloud-based authentication service, simplifies user authentication and authorization (Getting Started with Firebase Authentication: A Comprehensive Guide, 2023). Firestore is a scalable, reliable, and flexible database that supports real-time data synchronization (Firebase Realtime Database, 2023). Android Studio supports Java or Kotlin programming languages and provides rich documentation, error analysis, and autocomplete features (Comparison Java to Kotlin, 2023). Kotlin is a modern programming language that can run on an advanced Jet Brains Java Virtual Machine (JVM) (Trust in Collaborative Automation in High Stakes Software Engineering Work: A Case Study at NASA, 2023). IT offers the ease of hybrid migration to Kotlin and Java projects and the ability to convert existing Java code to Kotlin (Comparison Java to Kotlin, 2023).

GitHub is a web-based platform. It allows to manage, share, and collaborate on software development projects (Dabbish et al, 2012). IT promotes open source development projects and enables millions of developers to collaborate on projects. (Kalliamvakou et al, 2014). Developers can store their projects on GitHub, store their code, track the release date, and collaborate with other developers (Trust in Collaborative Automation in High Stakes Software Engineering Work: A Case Study at NASA, 2023). A fitness trainer provided provides its users' age range, body mass index, goals, use of equipment to exercise, and heart rate monitors monitoring schedules (Nike Training Club: NTC App, 2023).

Figure 1 provides a summary of the firming program for individuals with a body mass index above and below ideal weight.

1.-2. Weeks	3.-4. Weeks	5.-6. Weeks	7.-8. Weeks
10 dk Warm-Up Run 5 dk Stretch Vo2 Max =%55-65 3 Days in A Week 600 Kcal /3 Target Time= 30dk Cooling Down 5 dk	10 dk Warm-Up Run 5 dk Stretch Vo2 Max = %60-65 4 Days in A Week 1200 Kcal /4 Target Time= 40 dk Cooling Down 5 dk	10 dk Warm-Up Run 5 dk Stretch Vo2 Max = %70-75 4 Days in A Week 1000 Kcal /4 Target Time= 30 dk Cooling Down 5 dk	10 dk Warm-Up Run 5 dk Stretch Vo2 Max = %70-75 4 Days in A Week 1600 Kcal /4 Target Time= 50 dk Cooling Down 5 dk

Figure 1. Sample exercise protocol for 8 weeks

As you can see, the application starts the page with a greeting, it welcomes the user If the user has registered, he can log in from the application. If this page is not registered, they can create a new page. It is a program prepared

according to the information entered by the users who will enter the application for the first time, on the registration page for this account, on the gender selection page. needs are created. For the first time, they were redirected directly to the homepage, if it is not theirs, then they can view the page of their current workout. By clicking on their profile page, they can view their personal information or create a new program.

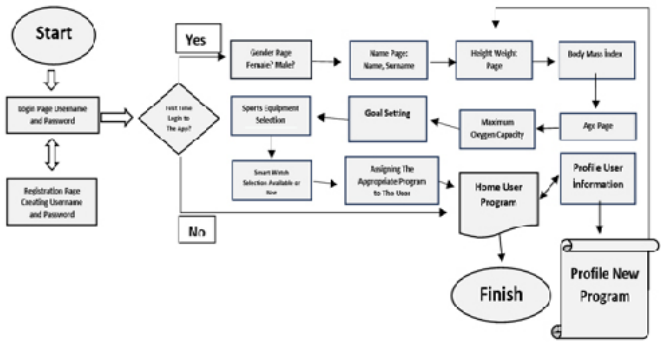

Figure 2. Module steps and personalized working principle of the application

When the application was first opened, the user greeted the screen with a splash After the splash screen, the user was presented with the login screen. On the login screen, the user can enter their email and password to log in to the application If the user is not registered, they can create a new account by entering their email and password of their choice and pressing the "Sign Up" button. If the user forgets their password, they can click on the "Forgot" option. To reset your passwords? From the password recovery screen, type "Password" and send it.

After logging in, the user is greeted with a motivation screen. This screen contains motivational quotes to inspire the user. First, the user is asked for gender information, addresses the user in the application, and first and last name information is collected. Next, the user enters their height (in cm) and weight (in kg). Once this information is entered, the reference calculates the user's body mass index (BMI) and displays it to the user according to the user's age, the maximum oxygen capacity is calculated, and the user is displayed.

On the next page, the user is asked to choose an exercise objective that is suitable for their fitness level to reduce stress and sweating by feeling good. Next, the user is asked to choose the equipment they will use to perform the exercise. The user's heart rate monitor indicates whether they have a wristwatch or not. Based on the information provided by the user reference, it displays the appropriate workouts on the home screen Clicking on an exercise with the user is directed to the exercise screen.

On the training screen, the user can start the timer by pressing the "Start" button to start the training session. In the profile section, users can view their information, as well as log out. Reference by pressing the "Log Out" button. By pressing the "New Program" button, the user can create a new program for himself.

RESULTS AND DISCUSSION

The purpose of this beginning was to provide. This app was to provide people with a useful fitness app, and this was the goal that many people achieved with a more efficient approach of personalized exercise trainers in the gym, but many users may not have time, may prefer to exercise at home.

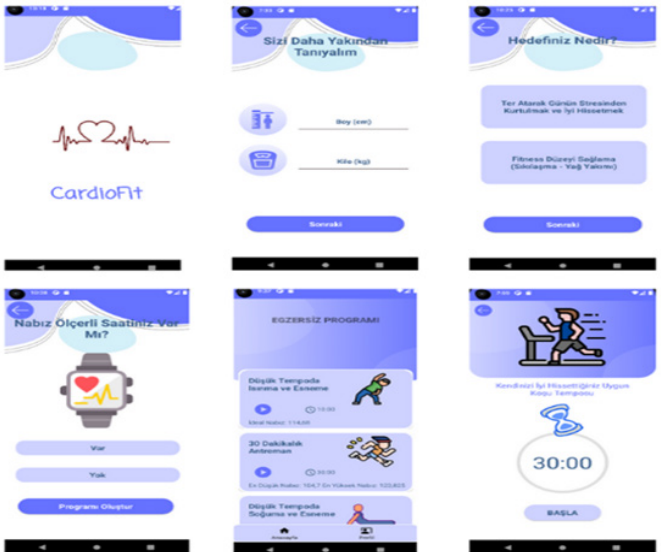

Figure 3. Application steps and program interface

For this reason, fitness apps are widely used by many people: it is worth working to improve the app, which can be used both at home and in the gym. Many fitness apps don't provide personalized programs for users fitness apps that offer personalized programs usually only offer a few options. These applications often rely on several features to form the basis of the programs. These obstacles prevent users from making progress in following an effective program and make it more difficult to achieve their goals, plus fitness apps are often developed without the cooperation of knowledgeable fitness professionals, ultimately making them less effective apps.

In this study, a fitness trainer was collaborated to ensure that it is the most beneficial exercise program for users. When preparing programs for users in gyms, there are several user-specific factors that are taken into account. Similarly, in this study, these factors were used to offer the most suitable program to the users.

CONCLUSION

There are many areas in this regard, there are still incomplete studies, this work is not completed in the current state and there are many areas for further improvement.

With the sudden advancement of technology, there are planned developments for the future, and the proliferation of artificial intelligence can also be used to create various areas of intelligence. In order for the programs to train the users more efficiently, the most appropriate exercises for the users can be obtained by using "artificial intelligence", and the ability to communicate with a fitness trainer when there is a need for users to go to the gym without the necessary facilitator in achieving their fitness goals. The need to go to the gym can be made easier with these features.

ETHICAL DECLARATIONS

Peer Review Process: Externally refereed.

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