

RUNFIT

Project Report

<Version 1.0>

Project Work Phase-2 (ECS899)

Degree
BACHELOR OF TECHNOLOGY (CSE)

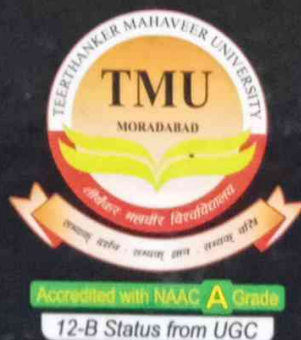
PROJECT GUIDE:

Mr. Rupal Gupta
(Assistant Professor)

SUBMITTED BY:

Gautam Jain (TCA2009014)
Ishika Jain (TCA2009019)

May, 2024



FACULTY OF ENGINEERING
TEERTHANKER MAHAVEER UNIVERSITY, MORADABAD

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DECLARATION

We hereby declare that this Project Report titled "RUNFIT" submitted by us and approved by our project guide, Faculty of Engineering & Computing Sciences, Teerthanker Mahaveer University, Moradabad, is a bonafide work undertaken by us and it is not submitted to any other University or Institution for the award of any degree diploma / certificate or published any time before.

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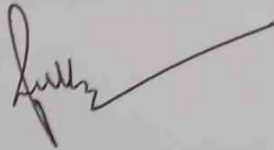


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1 Project Title

RunFit

2 Problem Statement

In today's technology-driven world, many individuals lead increasingly sedentary lifestyles, spending extended periods sitting at desks or in front of screens. This lack of physical activity has significant implications for overall health and well-being, contributing to a wide range of health problems, including obesity, diabetes, cardiovascular diseases, and mental health issues.

The "RunFit" application aims to address this problem by providing users with a convenient and accessible tool for tracking their running and walking activities. By empowering users to monitor their physical activity levels and set achievable fitness goals, "RunFit" seeks to promote a more active and healthy lifestyle among individuals of all ages and fitness levels.

3 Project Description

The RunFit application is positioned as a standalone mobile application. While independent, it interacts seamlessly with external services such as Firebase for secure authentication, Google API for real-time tracking, and Room Database for local data storage. The app serves as a pivotal component within the broader health and wellness framework, offering a user-friendly interface for individuals seeking a personalized and engaging fitness experience.

3.1 Scope of the Work

In-Scope:

- **Development of Core Modules:** The development of essential modules such as login, signup, real-time tracking, statistics, personalized workout plans, product management, and earning module are within the scope of work.
- **Integration with Google Firebase:** Integration with Google Firebase for authentication, real-time database, cloud storage, and hosting is included in the scope.
- **User Interface Design:** Designing and implementing user interfaces for seamless navigation and interaction with the application.
- **Backend Development:** Developing backend functionalities to support data storage, retrieval, and processing, ensuring smooth operation of the application.
- **Testing and Quality Assurance:** Conducting thorough testing, including unit testing, integration testing, and user acceptance testing, to ensure the reliability, performance, and usability of the application.
- **Documentation:** Creating comprehensive technical documentation, user manuals, and guides to assist users and developers in understanding and utilizing the application effectively.

- **Deployment and Release Management:** Deploying the application to production environments and managing subsequent releases, ensuring smooth deployment and minimal downtime.

Out of Scope:

- **Hardware Development:** Development of hardware devices or sensors for tracking fitness activities is not within the scope of this project.
- **Integration with Third-party Services (Except Google Firebase):** Integrations with third-party services other than Google Firebase, such as health services, payment gateways, or social media platforms, are considered out of scope.
- **Legal and Regulatory Compliance:** Compliance with legal and regulatory requirements, such as GDPR or HIPAA, is not explicitly included in the scope. However, adherence to relevant regulations should be considered and addressed as needed.
- **Advanced AI/ML Features:** Development of advanced artificial intelligence or machine learning features for personalized coaching or predictive analytics is not within the scope of this project.
- **Advanced Augmented Reality (AR) Features:** Implementation of advanced augmented reality features for immersive workout experiences is considered out of scope.
- **Internationalization and Localization:** Localization of the application for different languages and regions is not included in the scope but may be considered in future iterations.
- **Hardware and Software Platform Limitations:** Limitations associated with specific hardware or software platforms, including device compatibility or operating system versions, are considered out of scope but should be taken into account during development and testing.

3.2 Project Modules

The "RunFit" application is comprised of several interconnected modules, each serving a specific function or aspect of the overall fitness experience. Here's a detailed explanation of each project module:

- **Signup Module:** The Signup module enables users to create new accounts within the application. It guides users through the process of providing necessary details, such as name, email address, password, and profile information. Upon completion, the module securely stores the user's information in the backend database, ensuring data integrity and privacy. Integration with Google Firebase facilitates seamless account creation and management.
- **Real-Time Tracking Module:** The Real-Time Tracking module is the core feature of the "RunFit" application, allowing users to track their running and walking activities in real-time. It captures essential metrics such as speed, distance covered, time elapsed,

calories burned, and route taken using GPS and accelerometer sensors. Integration with Google Maps API enables users to visualize their activity routes and landmarks in real-time, enhancing the overall tracking experience.

- **Statistics Module:** The Statistics module transforms raw tracking data into meaningful insights and performance metrics. Users can delve into detailed monthly reports showcasing achievements in distance covered, time spent, paths taken, steps conquered, calories torched, and average speed. The module offers visualizations such as charts and graphs to help users track their progress over time, set new goals, and celebrate achievements.
- **Personalized Workout Plans Module:** The Personalized Workout Plans module presents users with a library of pre-defined workout plans categorized by difficulty, duration, and goals. Users can select a pre-defined plan tailored to their fitness level and objectives or create a custom workout plan based on personal preferences. The module provides detailed instructions, exercises, and progress tracking features to guide users through their workouts effectively.
- **Activity Module:** The "Activities" module within the "RunFit" app offers a diverse range of fitness activities tailored to different age groups, including yoga, running, skipping, swimming, basketball, and pushups. Each activity features instructional videos, tracking tools, and personalized guidance to support users in achieving their fitness goals effectively.

By breaking down the application into distinct modules, "RunFit" ensures a modular and scalable architecture, facilitating ease of development, maintenance, and extensibility. Each module plays a vital role in delivering a comprehensive and user-centric fitness experience, empowering users to achieve their health and wellness goals effectively.

Functions

Secure Login with Firebase

- **Detailed Description:** The secure login functionality serves as the gateway to the RunFit experience. By leveraging Firebase authentication, the app ensures not only the security of user data but also a seamless and convenient entry point for users. This feature sets the tone for a user-centric approach, providing a foundation for personalized interactions within the application.
- **User Interaction:** Users initiate the login process by entering their credentials. The app securely communicates with Firebase to authenticate the user. Upon successful authentication, users gain access to personalized features and functionalities.
- **Use Case Scenario:** A user launches the RunFit app on their Android device. The app prompts the user to enter their login credentials. The user submits the information, triggering a secure authentication process with Firebase. Upon successful authentication, the app displays the user's personalized dashboard.
- **Security Considerations:** Encryption: All user credentials transmitted between the app and Firebase are encrypted to ensure data security.
- **Secure Storage:** User credentials are securely stored using industry-standard practices within the Firebase authentication system.
- **Output:** A seamless and secure entry point into the RunFit app, establishing trust and setting the stage for personalized fitness experiences.

Personalized User Profile

- **Detailed Description:** The "Personalized User Profile" feature is the cornerstone of the user-centric approach in RunFit. This functionality empowers users to customize their fitness experience by providing essential information such as name, weight, and height. The personalized profile serves as the foundation for tailoring workouts and recommendations based on individual characteristics.
- **User Interaction:** Users access the "Personalized User Profile" section from the app's main menu. The app prompts users to enter or update their personal information, including name, weight, and height. Users have the option to review and modify their profile settings at any time.
- **Use Case Scenario:** A new user installs RunFit and launches the app for the first time. The app guides the user to the "Personalized User Profile" section. The user enters their name, weight, and height, providing the app with crucial data for personalization. Returning users can revisit the profile section to update information as needed.
- **Personalization Algorithm:** The app employs a sophisticated algorithm that takes into account the user's profile information to tailor workout plans, recommendations, and progress tracking. For example: Users with specific weight loss goals may receive workout plans emphasizing calorie burning. Height and stride length contribute to more accurate distance and step calculations during real-time tracking.
- **Output:** A dynamic and personalized fitness experience that aligns with individual characteristics, enhancing the overall user engagement and satisfaction.
- **Data Privacy and Security:** To ensure user privacy and comply with data protection standards. Profile information is stored securely using Firebase's authentication and Cloud Firestore. RunFit follows best practices for data encryption during transmission and storage.

Real-time Walk/Run Tracking

- Detailed Description: The "Real-time Walk/Run Tracking" feature positions RunFit as a reliable companion during users' physical activities. Integrated with Google API, this functionality captures essential details such as distance, time, path, steps, calories burned, and speed in real-time.
- User Interaction: Users initiate the tracking feature before starting a walk or run session. The app utilizes GPS functionality to track the user's movement and provide real time feedback. Users can view ongoing tracking information and summary reports during and after sessions.
- Use Case Scenario: A user decides to go for a morning run and opens the RunFit app. The user selects the "Start Tracking" option, and the app begins capturing real time data. During the run, the user can glance at the app to see distance covered, calories burned, and pace. After completing the session, the user reviews a detailed summary, including the route taken on a map.
- Integration with Google API: RunFit leverages the Google API to ensure accurate and reliable real-time tracking. The app accesses Google's mapping and location services to deliver precise information about the user's activity.
- Accessibility Features: To cater to users with diverse needs, RunFit includes accessibility features such as: Voice-guided real-time tracking updates for users with visual impairments. Vibrational feedback for users who may not be able to view the screen during activities.
- Output: A seamless and informative real-time tracking experience that empowers users to monitor and optimize their physical activities.

Comprehensive Statistics

- Detailed Description: The "Comprehensive Statistics" feature transforms raw tracking data into meaningful insights. Users can delve into detailed monthly reports, showcasing achievements in distance covered, time spent, paths taken, steps conquered, calories torched, and average speed.
- User Interaction: Users navigate to the "Comprehensive Statistics" section from the main menu. The app presents a visual dashboard summarizing key metrics and trends. Users can filter statistics based on customizable time periods (e.g., weekly, monthly, yearly).
- Use Case Scenario: A user completes a month of consistent running and wants to review their progress. The user accesses the "Comprehensive Statistics" section and selects the desired time range. The app generates a detailed report, visualizing achievements in various fitness metrics. Users can compare performance over different periods, setting new goals based on insights.
- Personalized Recommendations: Based on statistical data, RunFit provides personalized recommendations for: Adjusting workout intensity to optimize progress. Setting realistic and achievable goals aligned with past achievements.
- Output: Empowered users equipped with actionable insights, fostering motivation, and informed decision-making in their fitness journeys.

Personalized Workout Plans

- **Detailed Description:** The "Personalized Workout Plans" feature is a testament to RunFit's commitment to individuality. Recognizing that every runner is unique, this functionality offers a diverse range of pre-defined fitness plans tailored to different levels and goals. Users can also create entirely custom workout plans, ensuring that their fitness routines align precisely with their individual objectives.
- **User Interaction:** Users navigate to the "Personalized Workout Plans" section from the main menu. The app presents a library of pre-defined plans categorized by difficulty, duration, and goals. Users can select a pre-defined plan or choose to create a custom workout plan based on personal preferences.
- **Use Case Scenario:** A user with a goal of preparing for a marathon accesses the "Personalized Workout Plans." The user filters plans by "Advanced" difficulty and selects a marathon training plan. Alternatively, the user opts to create a custom plan, specifying preferred distances, durations, and intensity levels. The app generates a structured workout plan tailored to the user's specifications.
- **AI-Enhanced Personalization:** RunFit employs AI algorithms that consider user performance data and goals to dynamically adjust workout plans over time. The app learns from user progress, ensuring ongoing personalization for optimal results.
- **Output:** Users benefit from structured and personalized workout plans that cater to their unique fitness levels, preferences, and aspirations.

Daily Weather Reports

- **Detailed Description:** The "Daily Weather Reports" feature addresses the significance of external conditions in users' running experiences. RunFit provides real-time weather updates, allowing users to plan their workouts with confidence, taking into account factors such as temperature, precipitation, and wind speed.
- **User Interaction:** Users access the "Daily Weather Reports" section from the main menu or as a prompt before starting a run. The app displays current weather conditions, forecasts, and relevant advisories. Users receive notifications for significant weather changes that might impact their planned activities.
- **Use Case Scenario:** A user plans an evening run and checks the "Daily Weather Reports" before heading out. The app indicates that rain is expected, prompting the user to reschedule or prepare accordingly. Users can set preferences for weather notifications, ensuring timely updates on conditions during runs.
- **Safety Considerations:** RunFit prioritizes user safety by providing weather-related advisories and recommendations. For instance, if extreme weather conditions are forecasted, the app may suggest indoor workouts.
- **Output:** Informed users capable of adapting their running plans based on real time weather information, enhancing both safety and enjoyment.

Various Activities

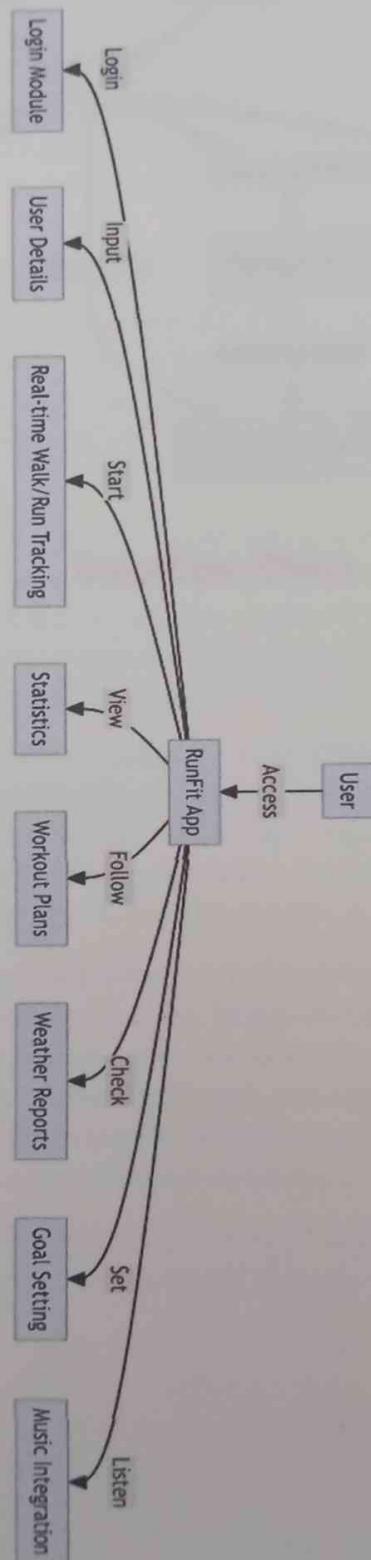
- Yoga:
 - Offers a wide range of yoga poses and routines suitable for practitioners of all ages and skill levels.
 - Provides instructional videos demonstrating proper technique and alignment for each yoga pose.
 - Includes beginner-friendly sequences as well as advanced poses for experienced practitioners.
 - Incorporates breathing exercises (pranayama) and meditation techniques to promote relaxation and stress relief.
 - Offers modifications and variations for individuals with different levels of flexibility and mobility.
 - Provides guidance on yoga props and equipment usage, such as mats, blocks, and straps, to enhance practice.
- Running:
 - Facilitates outdoor and indoor running activities with customizable timer and distance tracking features.
 - Allows users to set goals and targets for distance, time, and pace to tailor workouts to their fitness level.
 - Provides real-time feedback on running speed, distance covered, and average pace during workouts.
 - Offers interval training options with customizable intervals for alternating between running and walking.
 - Integrates GPS functionality to map running routes and track progress over time.
 - Includes audio cues and prompts to keep users motivated and informed during their runs.
- Skipping:
 - Presents a variety of skipping exercises and techniques to improve cardiovascular endurance and coordination.
 - Provides tutorial videos demonstrating proper skipping form and technique for different styles, such as single leg, double dutch, and criss-cross.
 - Sets daily skipping targets based on user preferences and fitness goals to encourage regular practice.
 - Tracks skipping performance metrics, including total skips, duration, and calories burned, to monitor progress over time.
 - Offers warm-up and cool-down routines to prevent injury and enhance recovery before and after skipping sessions.
 - Includes challenges and rewards to incentivize consistent skipping practice and engagement.

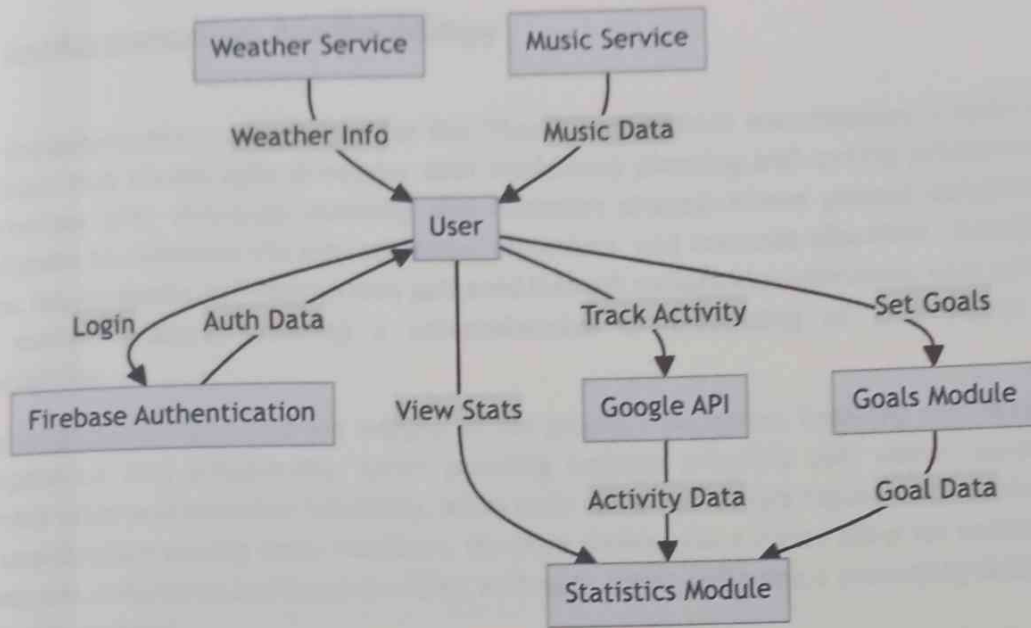
- Swimming:
 - Supports users in tracking swimming workouts with a built-in stopwatch feature for timing laps and intervals.
 - Allows customization of swim sets and drills based on individual preferences and skill levels.
 - Provides stroke technique tips and instructional videos to improve swimming efficiency and form.
 - Integrates pool length settings to calculate distance swum accurately and monitor progress.
 - Offers beginner-friendly swim workouts for novice swimmers and advanced training programs for competitive athletes.
 - Incorporates interval training and pace tracking features to help users improve speed and endurance in the water.
- Basketball:
 - Facilitates basketball practice and gameplay with a digital scoreboard for tracking points, fouls, and timeouts.
 - Allows users to create and manage teams, rosters, and player profiles for organized play.
 - Provides coaching tips and strategies for offense, defense, and set plays to improve basketball skills and tactics.
 - Offers video tutorials on shooting technique, dribbling drills, and defensive footwork for individual skill development.
 - Includes scrimmage and game modes for simulated gameplay experiences and friendly competitions.
 - Integrates social features for sharing game highlights, stats, and achievements with friends and teammates.
- Pushups:
 - Guides users through a variety of pushup variations and progressions to target different muscle groups and fitness goals.
 - Offers instructional videos and step-by-step tutorials for proper pushup form and technique.
 - Sets specific goals for pushup reps, sets, and rest intervals based on user preferences and fitness level.
 - Incorporates pushup challenges and workout plans to increase strength, endurance, and muscle definition.
 - Tracks pushup performance metrics, including total reps, sets completed, and progress over time.
 - Provides modifications and regressions for users with limited upper body strength or mobility to safely perform pushup exercises.

- BMI Calculator:
 - Calculates Body Mass Index (BMI) based on user input of height and weight to assess overall health status.
 - Provides a visual representation of BMI categories (underweight, normal weight, overweight, obese) to help users interpret their results.
 - Offers personalized recommendations and goal setting based on BMI classification and health goals.
 - Includes educational resources and information on the significance of BMI in relation to overall health and disease risk.
 - Integrates with user profiles to track BMI changes over time and monitor progress towards health and fitness goals.
 - Empowers users to make informed decisions about diet, exercise, and lifestyle modifications to improve BMI and overall well-being.

3.3 Context Diagram (High Level)

Level 0 DFD RunFit





DataFlow Chart

4 Implementation Methodology

The implementation methodology for the "RunFit" application encompasses a systematic approach that blends agile principles with meticulous planning and testing procedures. It commences with thorough planning and initiation phases, where project stakeholders collaborate to delineate the project scope, objectives, and resource allocation. During this phase, requirements are meticulously gathered through stakeholder interviews, user surveys, and market analysis, ensuring a comprehensive understanding of user needs and expectations.

Agile development practices are integral to the project's execution, fostering collaboration, transparency, and adaptability. Sprint planning sessions prioritize user stories based on business value and technical feasibility, while daily stand-ups ensure regular communication and coordination among team members. Iterative development cycles allow for continuous refinement of features and functionalities, with each sprint delivering a potentially shippable product increment.

Quality assurance and testing are paramount throughout the development process, ensuring the reliability and performance of the application. A robust testing strategy encompasses unit testing, integration testing, user acceptance testing, and performance testing to validate all aspects of the application. Continuous integration and delivery pipelines automate build, test, and deployment processes, streamlining the release of new features and updates.

Deployment and release management processes are orchestrated with precision, leveraging continuous deployment pipelines and feature flagging techniques to facilitate seamless deployments and phased rollouts. Monitoring and incident response mechanisms ensure the health, performance, and availability of the application in production environments, with proactive monitoring enabling early detection and resolution of issues.

Documentation and knowledge sharing efforts are fundamental to maintaining project transparency and facilitating knowledge transfer. Technical documentation, user manuals, and knowledge sharing sessions empower team members to understand and contribute to the project effectively. Continuous improvement and adaptation are emphasized through retrospectives, feedback loops, and adaptive planning, enabling the team to respond dynamically to changing requirements and market dynamics.

Overall, the implementation methodology for the "RunFit" application prioritizes efficiency, quality, and responsiveness, ensuring the successful delivery of a robust and user-centric fitness application.

5 Technologies to be used

The "RunFit" application leverages a comprehensive suite of technologies to deliver its features and functionalities effectively. These technologies span across various layers of the application stack, encompassing frontend development, backend infrastructure, data management, and integration with third-party services.

5.1 Software Platform

a) Front-end

- **Android Development (Kotlin):** Kotlin is employed as the primary programming language for Android app development, offering concise syntax, null safety, and interoperability with Java. It enables the development of robust, performant, and maintainable codebases, enhancing developer productivity and code quality.
- **Android Jetpack:** Android Jetpack components, including ViewModel, LiveData and google firebase are utilized to accelerate Android app development, improve app architecture, and facilitate data management and UI interactions.
- **XML (Extensible Markup Language):** XML is utilized for designing and defining the layout and structure of user interface elements within the application. It provides a platform-independent markup language for describing UI components and their properties, facilitating UI design and customization.

b) Back-end

- **Google Firebase:** Firebase serves as the backend infrastructure for the "RunFit" application, providing a suite of cloud-based services for authentication, real-time database, cloud storage, and hosting. Firebase Authentication ensures secure user authentication and authorization, while Firebase Realtime Database enables real-time data synchronization across devices. Firebase Cloud Storage is utilized for storing user-generated content, such as profile images and workout data, securely in the cloud.
- **Google Cloud Platform (GCP):** GCP services, such as Google Cloud Functions and Google Cloud Firestore, complement Firebase by providing additional serverless computing and scalable NoSQL database capabilities. Google Cloud Functions enable the execution of backend logic in response to events triggered by user actions or system events, while Google Cloud Firestore offers a flexible and scalable database solution for storing and querying structured data.

c) Integration with Third-Party Services:

- Google Maps API: The Google Maps API is integrated into the application to provide mapping and geolocation services, enabling users to visualize their running and walking routes, view points of interest, and obtain directions. Google Maps API offers extensive mapping functionality, including interactive maps, geocoding, and route optimization, enhancing the user experience and functionality of the application.

5.2 Hardware Platform

- Smartphones: The "RunFit" application is optimized for smartphones, leveraging their portability and ubiquity to enable users to track their fitness activities on the go. It supports various smartphone models and screen sizes, ensuring a consistent user experience across devices.
- GPS and Internet Connectivity: The application relies on hardware features such as GPS and internet connectivity to track users' activities accurately and synchronize data with backend servers. These hardware components are essential for providing real-time location-based services and ensuring seamless data transmission.
- Other hardware platforms used are 8 GB RAM, Solid State Drive(SSD), Windows OS and Android Studio.

6 Advantages of this Project

The "RunFit" application offers a plethora of advantages that distinguish it as a comprehensive and user-centric fitness solution. By leveraging advanced technology and innovative features, "RunFit" addresses the diverse needs and preferences of its users, empowering them to achieve their fitness goals effectively and sustainably.

- **Convenience and Accessibility:** "RunFit" provides users with unparalleled convenience and accessibility, allowing them to track their running and walking activities anytime, anywhere, using their smartphones or wearables. Whether at home, in the gym, or outdoors, users can seamlessly access the application and monitor their progress in real-time, eliminating barriers to entry and facilitating consistent engagement with their fitness regimen.
- **Personalization and Customization:** One of the standout features of "RunFit" is its emphasis on personalization and customization. The application offers tailored workout plans and recommendations based on users' fitness goals, preferences, and abilities. Whether users are beginners looking to start a fitness journey or seasoned athletes seeking to optimize their training, "RunFit" adapts to their individual needs, providing personalized guidance and support every step of the way.
- **Motivation and Accountability:** "RunFit" incorporates social features, challenges, and leaderboards to foster a sense of motivation and accountability among users. By connecting with friends, participating in challenges, and sharing achievements on social media platforms, users can stay motivated, accountable, and engaged with their fitness goals. The competitive element adds an extra layer of motivation, inspiring users to push themselves and celebrate their progress together.
- **Insights and Analytics:** The application generates detailed statistics and reports based on users' activity data, offering valuable insights into their progress and performance. Users can track metrics such as distance covered, time spent, calories burned, and average speed, enabling them to monitor their progress over time, set new goals, and make informed decisions about their fitness regimen. These insights empower users to optimize their training, identify areas for improvement, and celebrate their achievements.

7 Assumptions, if any

None

8 Future Scope and further enhancement of the Project

The "RunFit" application exhibits immense potential for future growth and enhancement, offering numerous opportunities to expand its features, capabilities, and user base. By embracing emerging technologies, addressing user feedback, and exploring new avenues for innovation, "RunFit" can continue to evolve as a leading fitness solution, catering to the evolving needs and preferences of its users.

Future Scope:

1. Integration with Health Services:

"RunFit" can explore partnerships and integrations with healthcare providers, insurers, and telemedicine platforms to promote preventive healthcare and wellness initiatives. By integrating with health services, the application can offer users access to personalized health assessments, telehealth consultations, and preventive care programs, thereby fostering holistic well-being and proactive health management.

2. AI-driven Personalization:

Implementing artificial intelligence (AI) and machine learning (ML) algorithms, "RunFit" can offer advanced personalization and adaptive coaching features. By analyzing user data and behavior patterns, the application can provide personalized workout recommendations, adaptive training plans, and real-time feedback tailored to individual fitness levels, preferences, and goals, enhancing the efficacy and relevance of the user experience.

3. Virtual Coaching and Community Engagement:

"RunFit" can introduce virtual coaching and community engagement features, leveraging video conferencing, live streaming, and interactive sessions with fitness experts and peers. Virtual coaching sessions, group workouts, and live events can enhance user engagement, accountability, and motivation, fostering a sense of community and support among users, regardless of their location or schedule.

4. Augmented Reality (AR) Experiences:

Exploring augmented reality (AR) technologies, "RunFit" can offer immersive workout experiences, gamification elements, and interactive challenges. By overlaying digital information and virtual objects onto the physical environment, the application can enhance the user experience, making workouts more engaging, enjoyable, and interactive.

Further Enhancements:**1. Enhanced Analytics and Insights:**

Continuously refining analytics and insights capabilities, "RunFit" can offer more granular and actionable data to users. Advanced metrics, trend analysis, and predictive analytics can provide deeper insights into user performance, progress, and risk factors, empowering users to make informed decisions and optimize their training strategies.

2. Advanced Tracking and Biometric Sensors:

Integrating with advanced tracking technologies and biometric sensors, "RunFit" can offer more accurate and comprehensive fitness tracking capabilities. Heart rate monitoring, blood oxygen saturation, and sleep tracking sensors can provide users with a holistic view of their health and fitness, enabling them to optimize their training, recovery, and overall well-being.

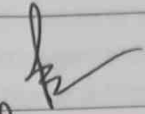
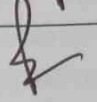
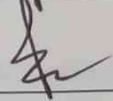
3. Gamification and Rewards:

Expanding gamification elements and rewards systems, "RunFit" can incentivize user engagement and adherence to fitness goals. Challenges, badges, and rewards for achieving milestones can motivate users to stay active, track their progress, and celebrate their achievements, fostering a sense of accomplishment and satisfaction.

4. Accessibility and Inclusivity:

Continuously improving accessibility features and inclusivity options, "RunFit" can ensure that the application caters to users of all abilities and backgrounds. Customizable workouts, adaptive interfaces, and inclusive language can create a welcoming and inclusive environment for users with diverse needs and preferences.

9 Project Repository Location

S#	Project Artifacts (softcopy)	Location	Verified by Project Guide	Verified by Lab In-Charge
1.	Project Synopsis Report (Final Version)			
2.	Project Progress updates			
3.	Project Requirement specifications			
4.	Project Report (Final Version)			
5.	Test Repository			
6.	Project Source Code (final version) with executable			

10 Definitions, Acronyms, and Abbreviations

Abbreviation	Description
API(Application Programming Interface)	A set of functions and protocols that allow different software applications to communicate with each other.
AR (Augmented Reality)	A technology that overlays digital information, such as images and sounds, on the real-world environment.
AI (Artificial Intelligence)	The simulation of human intelligence in machines that are programmed to think and learn.
GPS (Global Positioning System)	A satellite-based navigation system that provides location and time information.

11 Conclusion

In conclusion, the "RunFit" application represents a significant milestone in the realm of health and fitness technology, offering a comprehensive and user-centric solution for individuals striving to lead healthier, more active lifestyles. Through its seamless integration of advanced technology, personalized coaching, and community engagement features, "RunFit" empowers users to take control of their fitness journey, one step at a time.

The journey with "RunFit" begins with its intuitive and user-friendly interface, designed to streamline the tracking of running and walking activities. From logging in with secure authentication powered by Google Firebase to accessing real-time tracking features integrated with Google Maps API, users are greeted with a seamless experience that fosters engagement and motivation. The application's modular design, encompassing features such as signup, login, real-time tracking, statistics, personalized workout plans, and product management, ensures that users have all the tools they need to achieve their fitness goals effectively.

One of the standout features of "RunFit" is its emphasis on personalization and customization. By analyzing user preferences, fitness levels, and goals, the application tailors workout plans and recommendations to suit individual needs, providing users with the guidance and support they need to succeed. Whether users are beginners looking to kickstart their fitness journey or seasoned athletes aiming to push their limits, "RunFit" adapts to their unique requirements, empowering them to achieve their full potential.

Moreover, "RunFit" fosters a sense of motivation and accountability through its social features, challenges, and leaderboards. By connecting with friends, participating in challenges, and sharing achievements on social media platforms, users stay motivated, engaged, and accountable, fostering a sense of camaraderie and support within the community. The competitive element adds an extra layer of excitement, inspiring users to push themselves and celebrate their progress together.

Furthermore, "RunFit" offers valuable insights and analytics based on users' activity data, enabling them to track their progress, set new goals, and make informed decisions about their fitness regimen. With detailed statistics on distance covered, time spent, calories burned, and average speed, users gain valuable insights into their performance and can identify areas for improvement, fostering continuous growth and development.

Looking towards the future, "RunFit" holds immense potential for further growth and enhancement. By embracing emerging technologies such as artificial intelligence, augmented reality, and integrations with health services, the application can offer even more personalized and immersive fitness experiences. Advanced features such as virtual coaching, AR workouts, and integrations with telemedicine platforms can elevate the user experience to new heights, promoting holistic well-being and proactive health management.

In conclusion, the "RunFit" application embodies the spirit of innovation, empowerment, and community that defines the modern fitness landscape. By empowering users to lead

healthier, more active lives through personalized coaching, social engagement, and advanced tracking capabilities, "RunFit" stands as a beacon of inspiration and transformation in the health and wellness industry. As the application continues to evolve and grow, it holds the potential to make a meaningful impact on the lives of individuals worldwide, driving positive change and fostering a culture of health and vitality for generations to come.

12 References

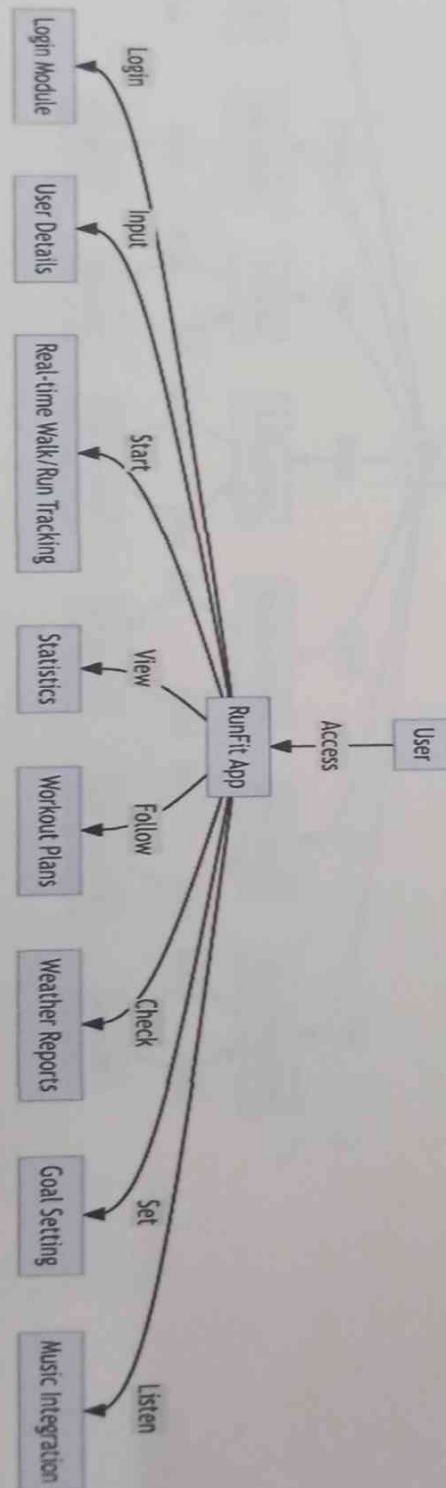
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- <https://developers.google.com/maps/documentation>
- <https://developer.android.com/develop>
- <https://developer.android.com/reference/app-actions/built-in-intents/health-and-fitness>
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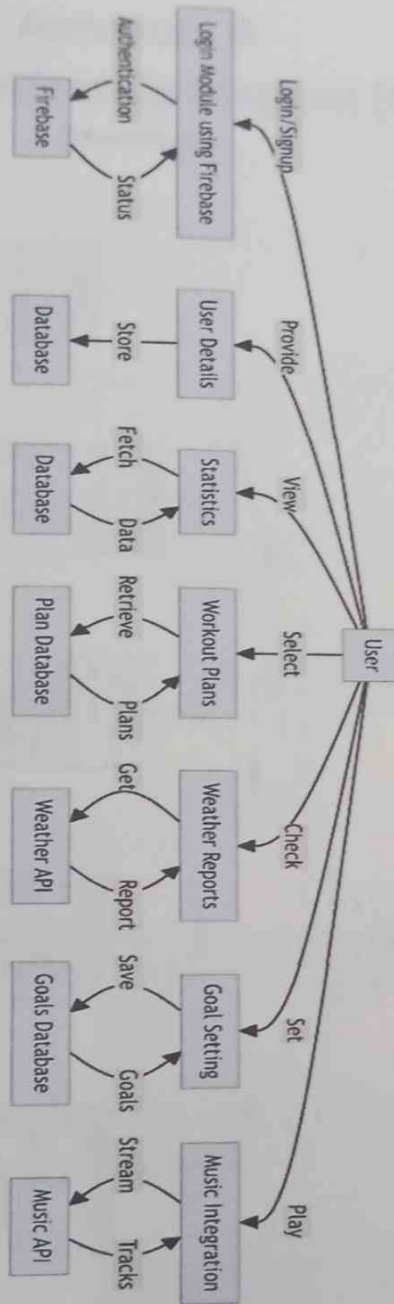
Annexure A

Data Flow Diagram (DFD)

(Mandatory)

Level 0 DFD RunFit





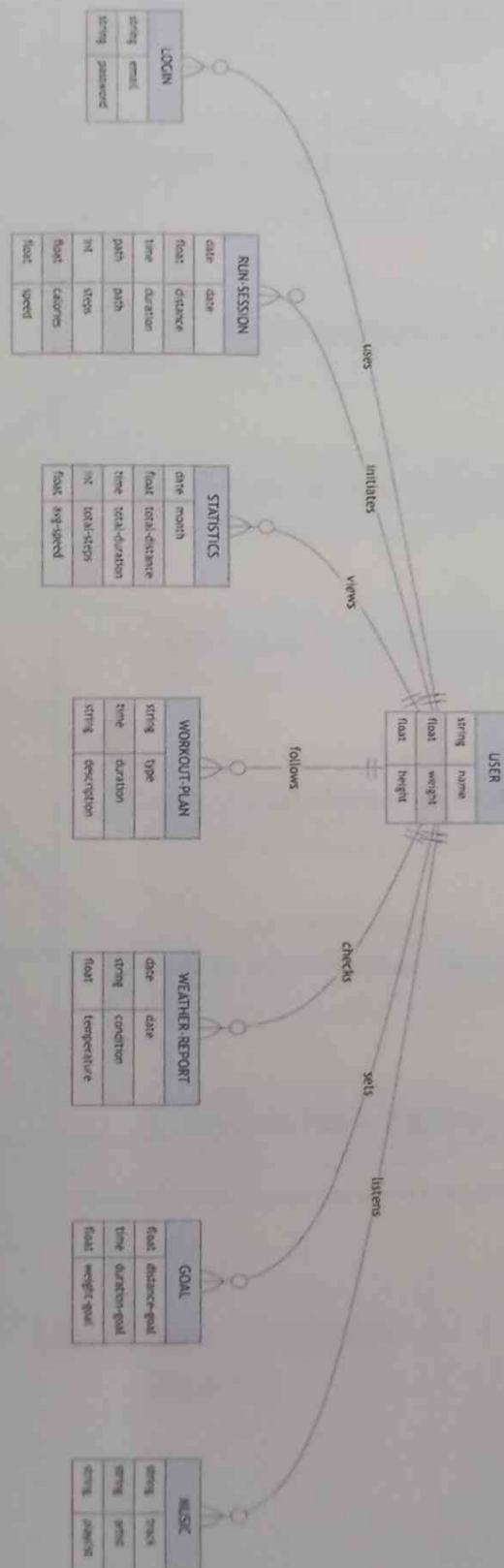
Level 1 DFD Combined RunFit

Annexure B

Entity-Relationship Diagram (ERD)

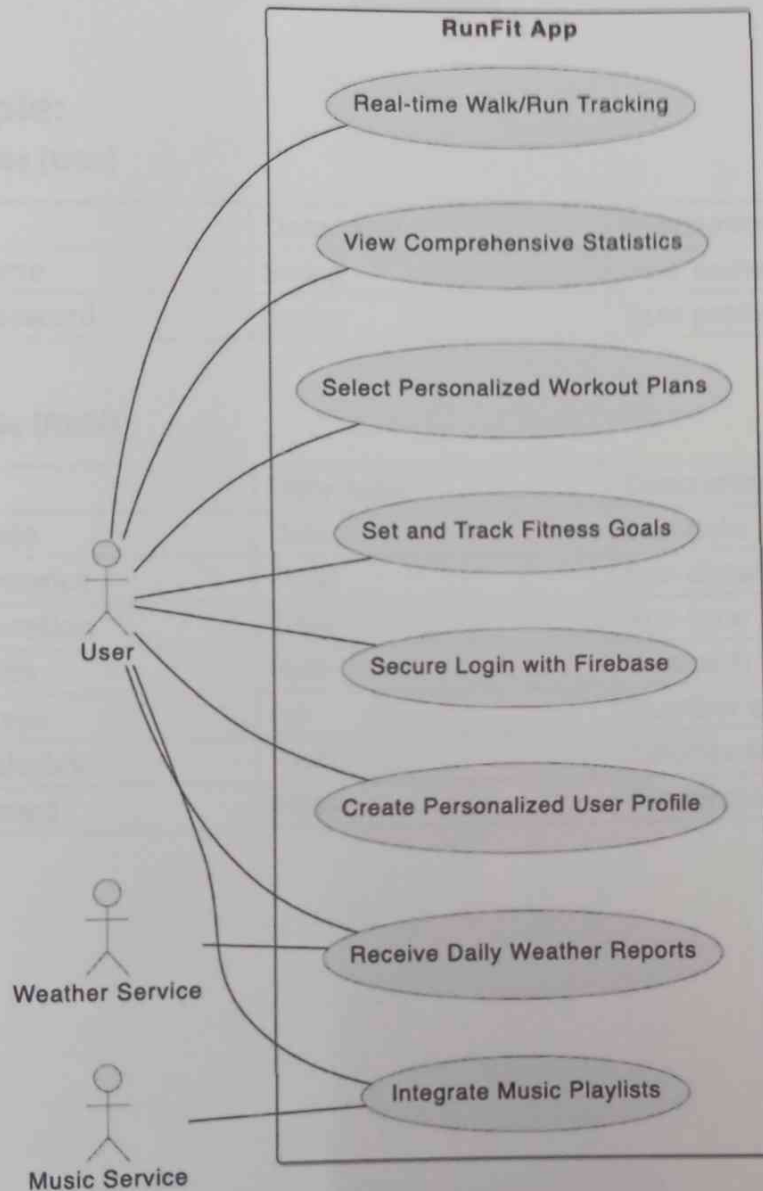
(Mandatory)

ER Diagram RunFit



Annexure C

Use-Case Diagram (UCD)



Use Case Diagram RunFit

Annexure D

Data Dictionary (DD)

(Mandatory)

Example:

User Table (USR)

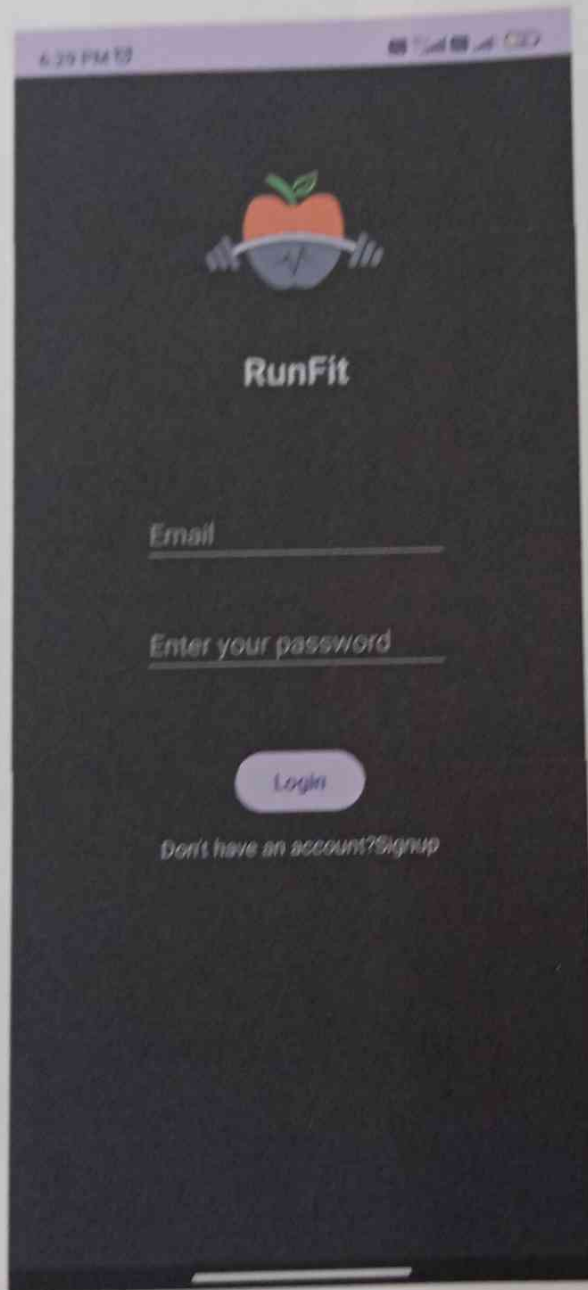
Fields	Data type	Description
USR-Name	String	User name
USR-Password	String	User password

Run Table (RUN)

Fields	Data type	Description
RUN-Date	Date	Run date
RUN-Distance	Float	Run distance
RUN-Duration	Time	Run time
RUN-Path	Path	Run path line
RUN-Steps	Int	Number of steps taken
RUN-Calories	Float	Calories burnt
RUN-Speed	Float	Running speed

Annexure E Screen Shots

Login Page:



SignUp Page:



6:29 PM

Name

Enter your weight

Enter your height

Email

Enter your password

Confirm your password

[Sign Up](#)

[Already have an account? Click here to Login](#)



6:30 PM

Ishaan

70

165

ishika.32725@tmu.ac.in

[Sign Up](#)

[Already have an account? Click here to Login](#)

Activities Module:



BMI Calculator:

6:44 PM

Body Mass Index



BMI Calculator

Enter Your Weight (in kg)

Enter Your Height (in cm)

Calculate

Your result will appear here

clear

6:45 PM

Body Mass Index



BMI Calculator

Enter Your Weight (in kg)

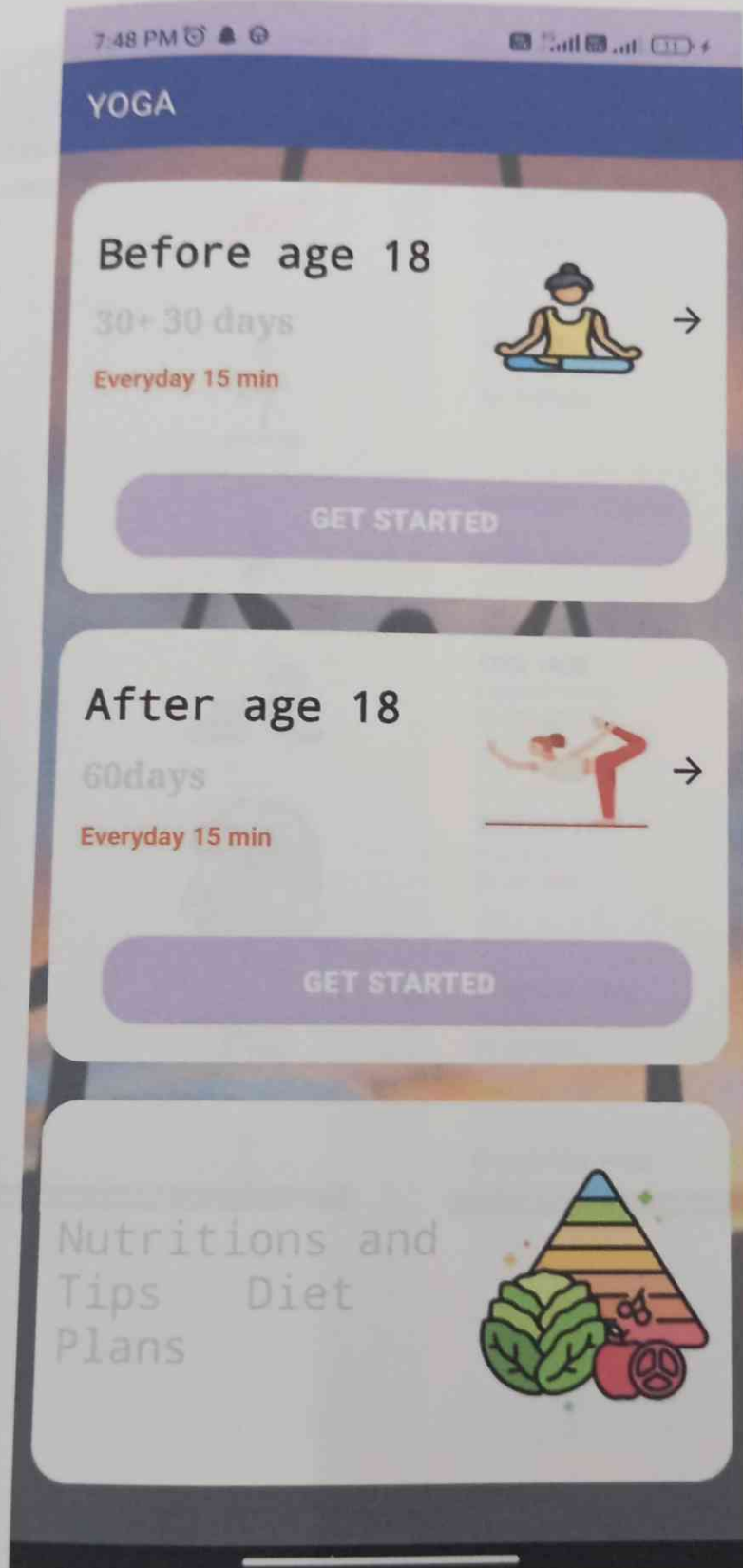
Enter Your Height (in cm)

Calculate

BMI = 25.711664

clear

Yoga Page:



7:48 PM ET

7:48 PM ET

YOGA (Below Age 18)

MOUNTAIN CLIMBER

Repeat 3 Times

01:00 MIN



TREE POSE

Repeat 3 Times

01:00 MIN



CHAIR POSE

Repeat 1 Times

30 SEC



RESTING POSE

Repeat 3 Times

01:00 MIN



BACKBEND POSE

Repeat 1 Times

30 SECONDS



BALANCING POSE

Repeat 2 Times

01:00 MIN



STANDING POSE

Repeat 1 Times



7:48 PM ET

7:48 PM ET

YOGA (After Age 18)

CHAIR POSE

Repeat 1 Times

30 SECONDS



BACKBEND POSE

Repeat 1 Times

30 SECONDS



MOUNTAIN CLIMBER

Repeat 3 Times

01:00 MIN



TREE POSE

Repeat 2 Times

01:00 MIN



RESTING POSE

Repeat 2 Times

01:00 MIN



STANDING POSE

Repeat 2 Times

01:00 MIN

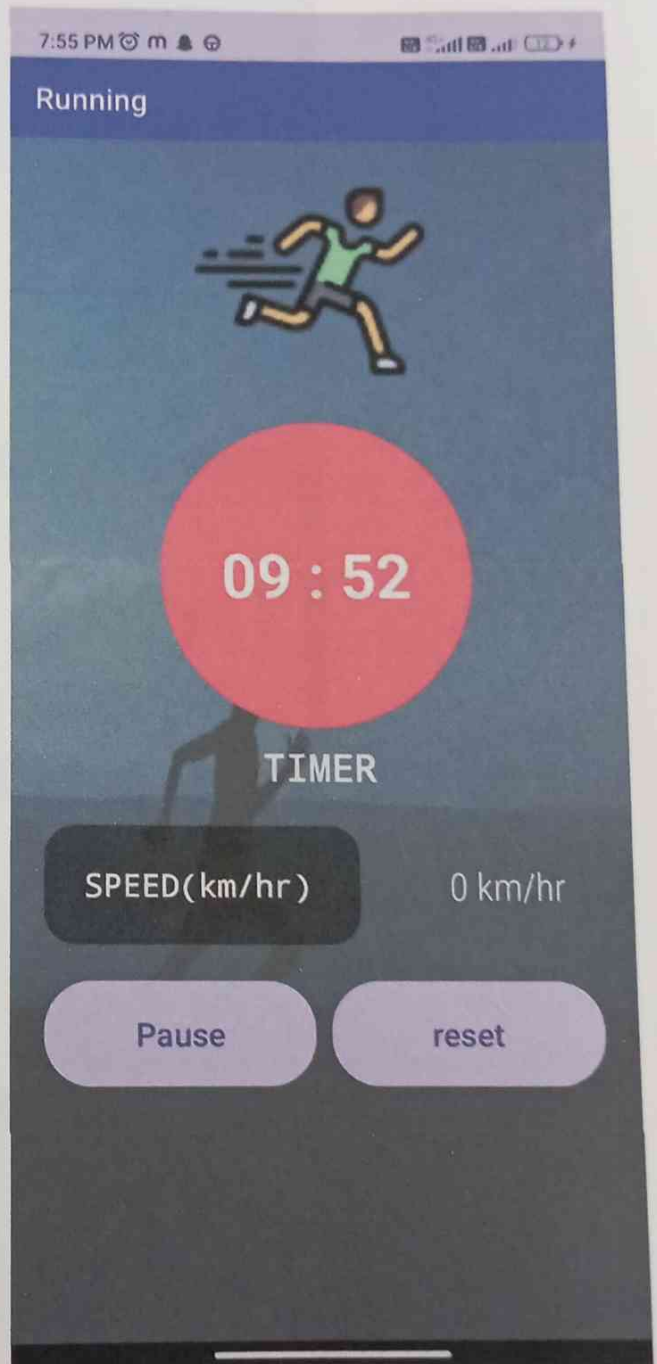


BALANCING POSE

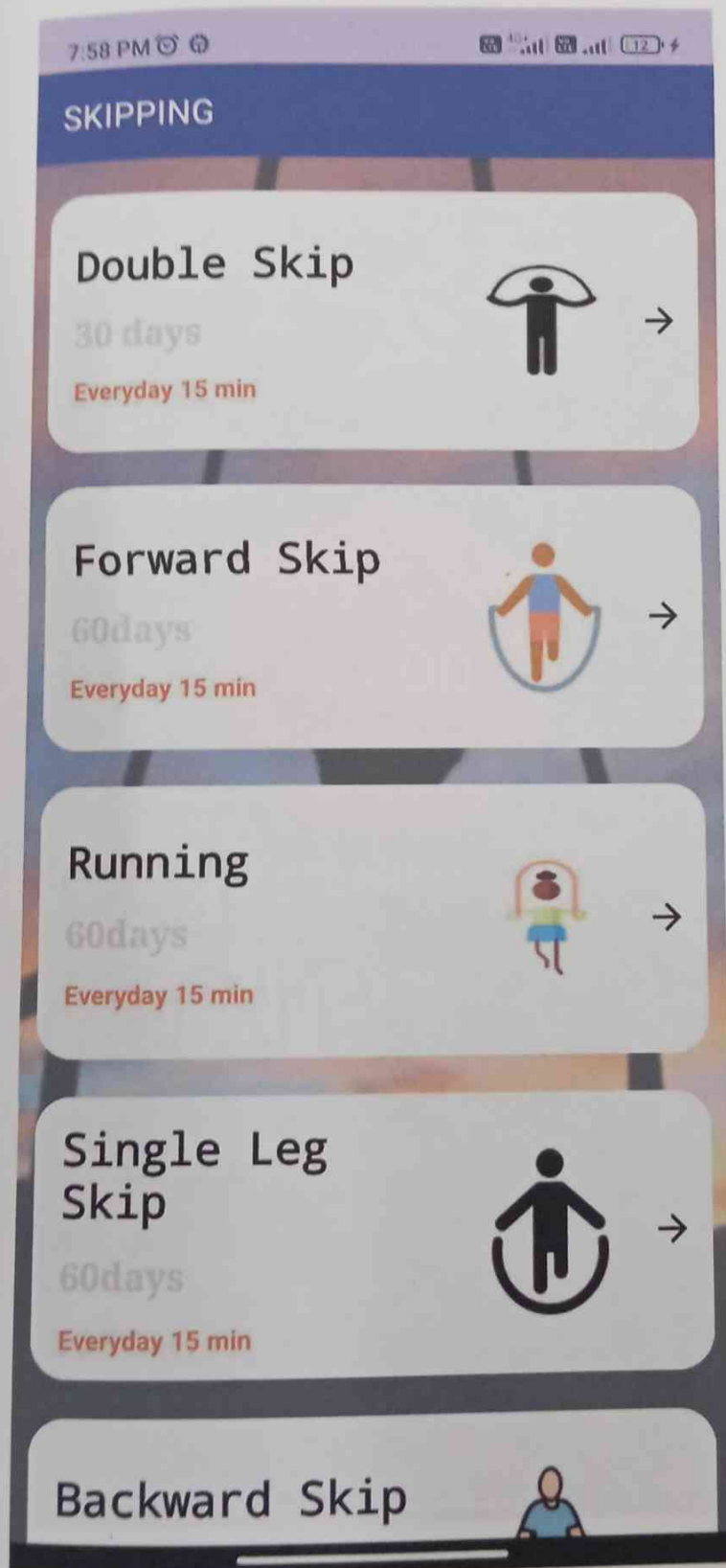
Repeat 3 Times



Running Activity Page:



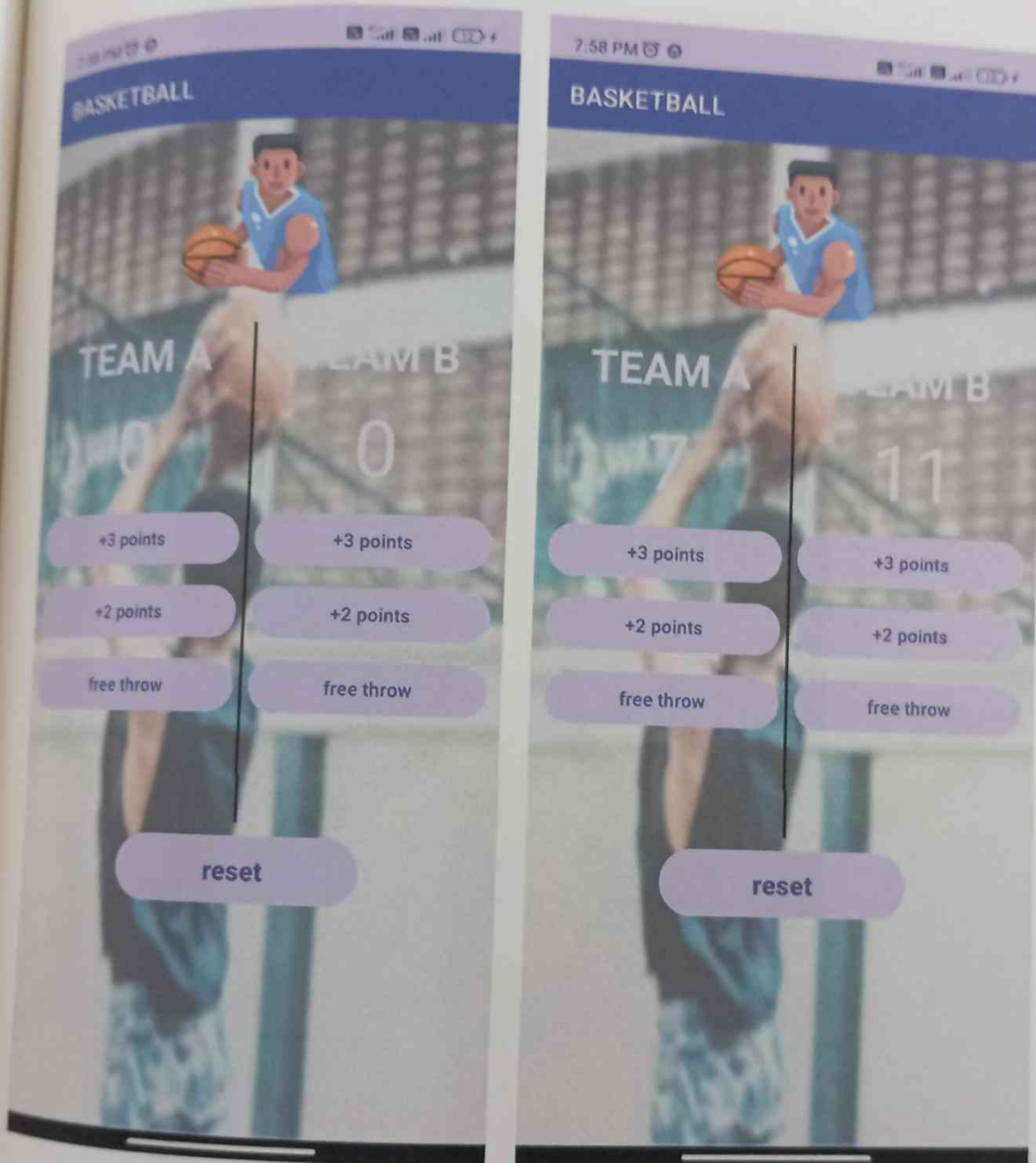
skipping Activity Page:



Swimming Activity Page:



Basketball Activity Page:



00:00:14

5.0m

0kcal

1.2m/sec

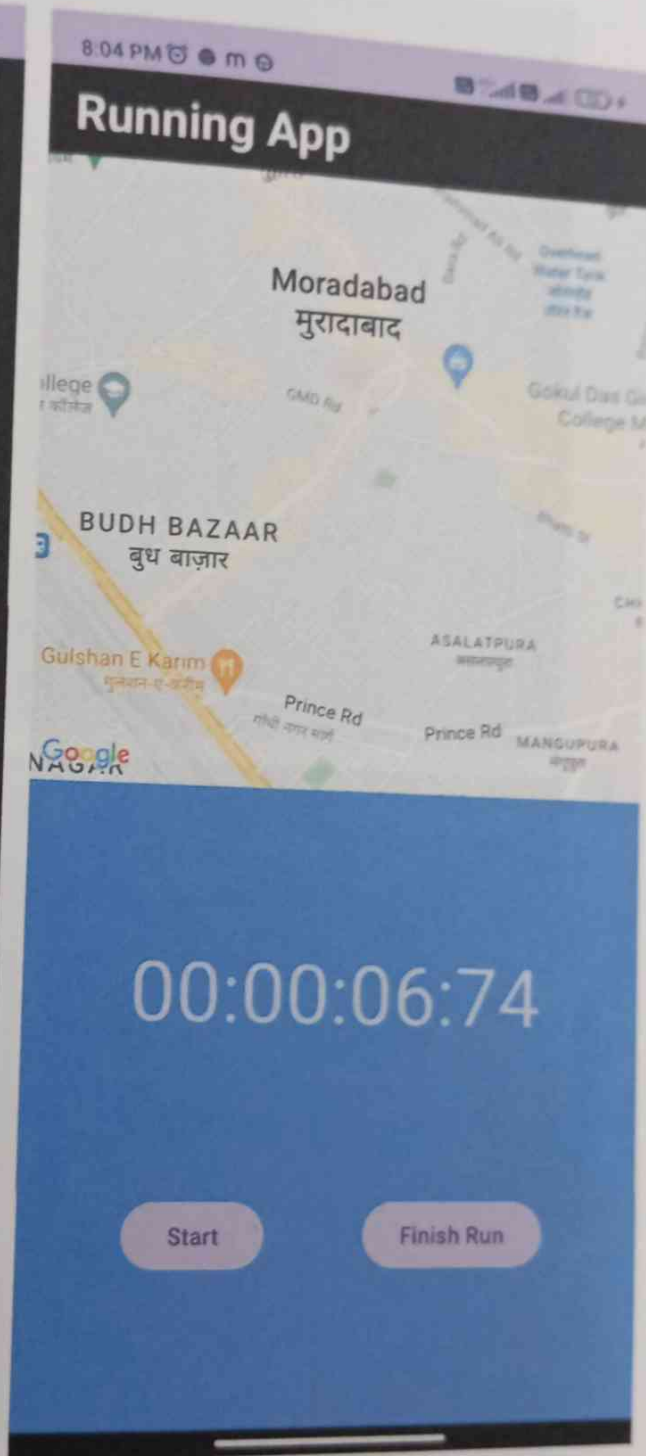


Your Runs

Statistics


Activities

Run Page:



The screenshot shows the Google Cloud Platform console interface for a Firestore database. The left sidebar contains the navigation menu with 'Firestore' selected. The main area displays the 'users' collection in the 'myapp-123456789' database. The 'users' collection is expanded, showing a list of documents. The first document is selected, and its details are shown on the right. The details include fields like 'name', 'email', 'password', 'age', and 'gender'.

Project Title: *RUNFIT*