**Documentation of Functional and Non-Functional Requirements**

**for**

**FitBuds**

Version 1.0 approved

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1st September 2022

Revision History

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| **Name** | **Date** | **Reason For Changes** | **Version** |
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## **Target Users**

The target users are individuals in Singapore who are eligible for Individual Physical Proficiency Test (IPPT).

## **Requirements Elicitation**

1. The app must prompt the user for their registration information for first timers.
   1. The app must prompt for the user’s login details.
      1. The app must prompt for the user’s username, which must have at least one character and less than 10 characters.
      2. The app must prompt for the user’s account password which length must be at least 8, have at least 1 letter, have at least 1 number and must not contain the user’s username.
      3. The app must securely upload the user’s login details to the database.
   2. The app must prompt for the user’s personal details.
      1. The app must prompt for the user’s name.
      2. The app must prompt for the user’s date of birth.
         1. The app will calculate the user’s age, which must be between 18 and 45 years old.
         2. The app must prompt for the user’s residential postal code, which must be a valid address.
   3. The app must prompt for the user’s current fitness abilities.
      1. The app must prompt for the user’s current number of push-ups he can perform in a minute, which must be between 0 and 100.
      2. The app must prompt for the user’s current number of sit-ups he can perform in a minute which must be between 0 and 100.
      3. The app must prompt for the user’s current timing for his 2.4km run in seconds, which must be between 0 and 1100.
      4. The app must calculate the user’s current IPPT score grading using his current fitness abilities and the IPPT scoring metrics.
      5. The app must calculate the user’s current IPPT grade using his current IPPT score.
   4. The app must prompt for the user’s target IPPT score.
      1. The app must prompt for the user’s target number of push-ups performed in a minute, which must be between 0 and 100.
      2. The app must prompt for the user’s target number of sit-ups performed in a minute, which must be between 0 and 100.
      3. The app must prompt for the user’s target 2.4km run timing in seconds, which must be between 0 and 1100.
      4. The app must calculate the user’s target IPPT score grading using his target fitness abilities and the IPPT scoring metrics with correctness.
      5. The app must calculate the user’s target IPPT grade using his target IPPT score with correctness.
2. The app must authenticate the user whenever he logs in.
   1. The app must prompt for the user’s login details.
      1. The app must prompt for the user’s username.
      2. The app must prompt for the user’s password.
   2. The app must react to the status of the login attempt.
      1. Upon successful login, the app will redirect the user to the Plan Screen and fetch user details
      2. Upon unsuccessful login, the app will display an error message.
      3. The user should not be given any information about other user’s login details.
3. The app must create a personalized training plan according to the user’s provided registration information.
   1. The app must display the number of days from the current date until the user’s IPPT test date within 5 seconds upon loading the plan screen.
   2. The app must recommend the nearest IPPT testing venue from the user’s residential location within 5 seconds.
      1. The app must query the database for the IPPT testing venue nearest to the user’s residential location.
      2. The app must display the nearest IPPT testing venue for the user’s reference.
   3. The app must recommend the appropriate daily training, consisting of sit-ups, push-ups and 2.4km run timings to be performed based on the exercise algorithm.
      1. The app must recommend the appropriate repetition of push-ups for the user to be complete within a minute correctly.
      2. The app must recommend the appropriate repetition of sit-ups for the user to be complete within a minute correctly.
      3. The app must recommend the appropriate timing for the user to complete a 2.4km run correctly.
      4. For each activity, the app must display the status of the activity.
         1. The app must allow users to mark the completion of a particular activity without delay.
   4. The app must recommend additional related exercises that can improve the user’s fitness abilities after the user has completed his daily training exercises.
      1. The app must query from its database for a recommended workout that is suitable for the fitness activities in which the user needs to improve upon within a minute.
      2. The database must return a recommended workout that is catered to those areas for improvement.
      3. The app must display the recommended workout to users in an appropriate format.
         1. For each exercise on the recommended workout, the exercise information must include the name of the exercise.
         2. For each exercise on the recommended workout, the exercise information must include how many repetitions to perform.
         3. For each exercise, on the recommended workout, the exercise information must contain the status of each exercise.
            1. The app must allow users to mark the completion of a particular exercise.
      4. The app must recommend a suitable nearby venue for the user to engage in exercise.
         1. The app must query from its database for an exercise venue that has the required equipment to do the workout and is the closest to the user’s residential address within 5 seconds.
4. The app must be able to track the completion of user’s push-ups, sit-ups and 2.4km run.
   1. The app must be able to accurately track and correct the user’s push-ups during his attempts.
      1. The app must allow the user to begin an attempt which will start a 60 second timer.
      2. The app must accurately classify the correct push-up form from an incorrect one.
      3. The app must count the number of correct push-ups performed by the user within the attempt.
      4. The app must display immediate live feedback on the screen to correct the user’s form during the attempt.
      5. The app must have the option for users to submit the results of their attempt to be stored.
      6. The app must have the option for users to redo their attempt as many times as desired.
   2. The app must be able to accurately track and correct the user’s sit-ups during his attempts.
      1. The app must allow the user to begin an attempt which will start a 60 second timer.
      2. The app must accurately classify the correct sit-up form from an incorrect one.
      3. The app must count the number of correct sit-ups performed by the user within the attempt.
      4. The app must display immediate live feedback on the screen to correct the user’s form during the attempt.
      5. The app must have the option for users to submit the results of their attempt to be stored.
      6. The app must have the option for users to redo their attempt as many times as desired.
   3. The app must be able to track the user’s 2.4km run timing.
      1. The app must be able to retrieve the user’s latest running information from Strava through API calls.
         1. The app must retrieve the run’s details of distance and duration.
      2. The app must calculate the duration the user takes to complete a 2.4km within 1 minute from activating the API call.
      3. The app must store the estimated duration.
5. The app must allow the user to discover other nearby users.
   1. The app shall recommend to the user a maximum of 10 users who are within a distance of 300m from the user’s residential addresses within 30 seconds.
      1. For each of the recommended users, the app must display the user’s details which includes name, profile picture, IPPT score and IPPT grade
   2. The app must allow the user to be able to start a private chat with recommended users.

Data Dictionary

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| Term | Definition |
| IPPT | Individual Physical Proficiency Test. An annual fitness test administered to Singaporeans males who have undergone National Service and are between the ages 18 to 45 years old. |
| Fitness ability | Refers to a collection of repetition of push-ups within a minute, repetition of sit-ups within a minute, and duration for a 2.4km run timing |
| IPPT score | Measured using a standardized IPPT scoring metrics which depends on the user’s fitness ability and adjusts for the age of individuals. |
| IPPT grade | Pass, Pass with Incentives, Silver or Gold  Grade awarded according the standardized IPPT grading system which solely depends on the IPPT score |
| IPPT test date | The date of the user’s IPPT test date is determined by the day before his date of birth. |
| API | Refers to application programming interface, which is a set of definitions and protocols for building and integrating application software. |
| Exercise venue | Refers to parks, training facilities and gyms. |
| Correct form | Refers to IPPT’s standard for a push-up or a sit-up respectively. |
| Distance/Nearest | Euclidean distance will be used for distance measurement requirements of the app. |
| Database | Refers to an organised collection of structured information, or data, typically stored electronically in a server. |
| Record | Writing to a cloud database |
| Strava | A popular external mobile application that users use to track user’s running information such as distance and duration. |
| Appropriate repetition | Recommended fitness ability must be reasonable for the user to accomplish without being too ambitious while ensuring users are progressively challenged to improve through the usage of the exercise algorithm |
| Exercise algorithm | A function that considers the user’s past fitness abilities while taking into consideration his target fitness level and duration to his IPPT test, to recommend the appropriate target fitness ability. |
| Workout | A collection of different exercises a user can perform to improve his fitness ability. |