Use Cases

for

FitBuds

Version 1.0 approved

Prepared by Team SAMMY

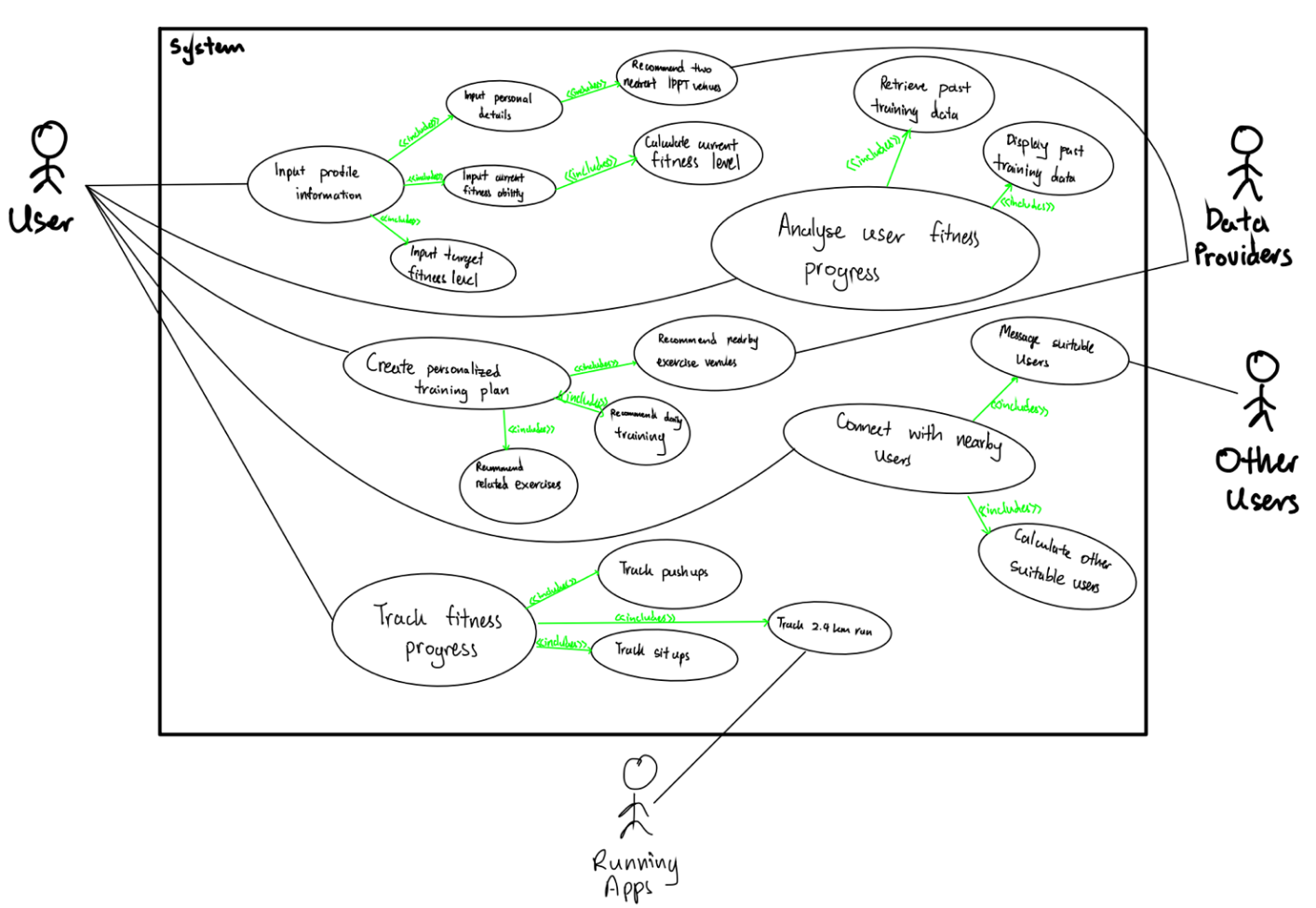
Nanyang Technological University

15th September 2022

Revision History

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| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
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Use Case Diagram



Use Cases

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| --- | --- | --- | --- | --- |
| Use Case ID: | 1.1 | | | |
| Use Case Name: | INPUT PROFILE INFORMATION | | | |
| Created By: | Aaron | | Last Updated By: | Mingyang |
| Date Created: | 05/09/22 | | Date Last Updated: | 25/10/22 |
| Actor: | | User | | |
| Description: | | The app will input key profile information so the app can be customized to their personal needs. | | |
| Preconditions: | | - | | |
| Postconditions: | | Included Use Cases should be triggered | | |
| Priority: | | High | | |
| Frequency of Use: | | One-Time | | |
| Flow of Events: | | 1. The user opens the app. 2. The app prompts the user to key in username and password 3. The app will validate the input information. | | |
| Alternative Flows: | | 1.1.AF.1  If user input is invalid, the system will change the border color of the relevant input field to red and display a message under the input field element that states the error. The input field will revert only when the user input becomes valid | | |
| Exceptions: | | - | | |
| Includes: | | * Input username and password * Input Current Fitness Abilities * Input Target Fitness Abilities | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 1.2 | | | |
| Use Case Name: | INPUT Personal details | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | User | | |
| Description: | | The user will input personal details into the app | | |
| Preconditions: | | INPUT PROFILE INFORMATION use case triggers this use case | | |
| Postconditions: | | Included Use Cases should be triggered | | |
| Priority: | | High | | |
| Frequency of Use: | | One-Time | | |
| Flow of Events: | | 1. The user inputs their name, birthday and residential location 2. The system triggers the included use case 3. The system displays the IPPT testing venue recommendations returned by the included use case | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | Recommend Two Nearest IPPT testing venues | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 1.3 | | | |
| Use Case Name: | RECOMMEND TWO NEAREST IPPT VENUES | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | NULL | | |
| Description: | | The app will recommend the two IPPT testing venues that are nearest to the user’s residential address | | |
| Preconditions: | | Input personal details use case triggers this use case | | |
| Postconditions: | | The app returns the recommendations to the calling use case | | |
| Priority: | | High | | |
| Frequency of Use: | | One-Time | | |
| Flow of Events: | | 1. The app will use Euclidean distance to calculate the nearest IPPT venues based on the user’s residential address 2. The app will return the calculated recommendations to the calling use case | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | The keys in the data returned by the Data Providers will not change over time. | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 1.4 | | | |
| Use Case Name: | INPUT current fitness ABILITIES | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | User | | |
| Description: | | The user will input their current Push-Ups per minute, Sit-Ups per minute and 2.4km Run timing into the app, or IPPT exemptions if any | | |
| Preconditions: | | - | | |
| Postconditions: | | - | | |
| Priority: | | High | | |
| Frequency of Use: | | One-Time | | |
| Flow of Events: | | 1. The user inputs personal details 2. The system triggers the included use case 3. The system displays the data returned by the included use case | | |
| Alternative Flows: | | - | | |
| Exceptions: | |  | | |
| Includes: | | Calculate Current Fitness Level | | |
| Special Requirements: | | The app must only allow Push-Ups per minute and Sit-Ups per minute to be in the range of 0 to 99, and 2.4km Run Timing in the range of 0 to 60 (minutes) | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 1.5 | | | |
| Use Case Name: | CALCULATE CURRENT fitness level | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | NULL | | |
| Description: | | The app calculates the user’s current fitness level based on the user-provided data | | |
| Preconditions: | | Input current fitness level use case triggers the use case | | |
| Postconditions: | | The app returns the calculations to the calling use case | | |
| Priority: | | High | | |
| Frequency of Use: | | Monthly | | |
| Flow of Events: | | 1. The system receives the number of Push-Ups per minute, Sit-Ups per minute and 2.4km Run timing from the user 2. The app uses the IPPT scoring metrics to tabulate the user’s current IPPT score. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 1.6 | | | |
| Use Case Name: | INPUT target fitness level | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | User | | |
| Description: | | The user will input their target Push-Ups per minute, Sit-Ups per minute and 2.4km Run timing into the app | | |
| Preconditions: | | INPUT PROFILE INFORMATION use case triggers this use case | | |
| Postconditions: | | - | | |
| Priority: | | High | | |
| Frequency of Use: | | Yearly | | |
| Flow of Events: | | 1. The user will input their target goals into the app | | |
| Alternative Flows: | | 1.6.AF.1 If the user is exempted from a component, the component input box will be grayed out so that the user will not be able to input data | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | The app must only allow Push-Ups per minute and Sit-Ups per minute to be in the range of 0 to 99, and 2.4km Run Timing in the range of 0 to 60 (minutes) | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 4.1 | | | |
| Use Case Name: | Analyse past training data | | | |
| Created By: | Aaron | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | User | | |
| Description: | | The app will display key statistics of the user’s past training data | | |
| Preconditions: | | The user must be able to access the app | | |
| Postconditions: | | - | | |
| Priority: | | High | | |
| Frequency of Use: | | Weekly | | |
| Flow of Events: | | 1. The app retrieves past training data 2. The app displays past training data for Push-Ups, Sit-Ups and 2.4km Run | | |
| Alternative Flows: | | 4.1.AF.1 If there is no training data available yet, the app will notify the user that “no data is available” | | |
| Exceptions: | | 4.1.EX.1 If the app is not connected to the Internet, the app will prompt the user that the app must be connected to the Internet | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 3.1 | | | |
| Use Case Name: | Track Exercise progRess | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User | | |
| Description: | | The app must enable the user to select an exercise they wish to do, and track a user while they are doing an exercise, and allow them to track their progress using their device. | | |
| Preconditions: | | 1. User must have input their current and target fitness levels | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | * + - 1. 1. The user must select the exercise they wish to track       2. 2. The app will then call the corresponding use case. | | |
| Alternative Flows: | | 1.1AC.1  If a user has selected that they are exempted from an exercise, that exercise will not show up. | | |
| Exceptions: | | - | | |
| Includes: | | 3.2 Track Push-ups  3.3 Track Sit-ups  3.4 Track 2.4km Run | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 3.2 | | | |
| Use Case Name: | Track push-ups | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User | | |
| Description: | | The app will use the camera to capture the user doing the push-ups, and give live form correction instructions using video recognition with 90% accuracy. | | |
| Preconditions: | | User must allow the app to access the camera | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | * + - 1. The user has selected push-ups as the exercise to be tracked       2. The camera will be activated       3. The user will be prompted to place the camera in a way that it can capture their body while they do the exercise       4. The user will do the push-ups       5. The app will track his movement using video recognition       6. The app will use the data received from video recognition to judge his form during the exercise with 90% accuracy       7. The app will count every push-up done by the user and store it in the database.       8. The user will finish the exercise.       9. The app will display the total number of push-ups done by the user.       10. The app will replay the video to the user to show how he completed his activity. | | |
| Alternative Flows: | | 3.2.AF.1  If the user’s body is not in position, prompt the user to change the orientation of the camera | | |
| Exceptions: | | 3.2.EX.1  If the user does not allow the app to use the camera, prompt the user that the functionality will not work. | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | User allowed the app to access the camera  User can do the exercise | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 3.3 | | | |
| Use Case Name: | Track sit-ups | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User | | |
| Description: | | The user must input the total number of sit-ups that they have completed. | | |
| Preconditions: | | - | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user has selected sit-ups as the exercise to be tracked 2. The user will do the sit-ups. 3. The user will input the total number of sit-ups they have done. 4. The app will validate the input to ensure that the number is a valid one. 5. The app will store the number of sit-ups in the database. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | 3.3.EX.1  If the user does not allow the app to use the camera, prompt the user that the functionality will not work. | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | User allowed the app to access the camera  User can do the exercise | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 3.3 | | | |
| Use Case Name: | Track sit-ups | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User | | |
| Description: | | The app will use the camera to capture the user doing the sit-ups, and give live form correction instructions using video recognition. | | |
| Preconditions: | | * + - 1. The user must allow the app to access the camera | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user has selected sit-ups as the exercise to be tracked 2. The camera will be activated 3. The user will be prompted to place the camera in a way that it can capture their body while they do the exercise 4. The user will do the sit-ups 5. The app will track his movement using video recognition 6. The app will use the data received from video recognition to judge his form during the exercise 7. The user will finish the exercise 8. The app will count the total number of sit-ups done by the user, and output the total 9. The app will feedback to the user where he should improve his form. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | 3.3.EX.1  If the user does not allow the app to use the camera, prompt the user that the functionality will not work. | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | User allowed the app to access the camera  User can do the exercise | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 3.4 | | | |
| Use Case Name: | Track 2.4km Run | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User, third party fitness app | | |
| Description: | | The app will receive data from third party fitness apps on the user’s running progress | | |
| Preconditions: | | * + - 1. The user must allow the app to access user data from third party fitness apps the user must use third party fitness apps to track the 2.4km run | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user has selected 2.4km Run exercise 2. The user will be redirected to the third party fitness app 3. The user will record his run timing using third party fitness app 4. The app will pull data from third party fitness app that the user uses. 5. The app will record his run timing into the cloud database | | |
| Alternative Flows: | | - | | |
| Exceptions: | | 3.4.EX.1  If the user does not use third party fitness app, prompt the user to install the program | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | User uses Third Party Fitness Apps | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 5.1 | | | |
| Use Case Name: | Connect with nearby users | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User, Other Users | | |
| Description: | | The user will be able to connect to other users. | | |
| Preconditions: | | 1. The user must have shared residential address with the app | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user will be recommended at least 3 and maximum of 10 users found through the 5.3 Use Case. 2. The user will trigger the 5.2 Use Case. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | 5.2 Message Suitable Users  5.3 Calculate Other Suitable Users | | |
| Special Requirements: | | - | | |
| Assumptions: | | Users will share their residential address | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 5.2 | | | |
| Use Case Name: | message suitable users | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User, Other Users | | |
| Description: | | The user will be able to message other users to connect with them | | |
| Preconditions: | | 1. There are other users found with nearby residential locations to the user | | |
| Postconditions: | | - | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user may send a message to other suitable users using the in-app message function to arrange an exercise meet-up. | | |
| Alternative Flows: | | 5.2.AF.1  If the user does not want to talk to a specific user that has messaged them, they would be able to block that user from contacting them. | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | The user has other users to message | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 5.3 | | | |
| Use Case Name: | Identify SUITABLE Users | | | |
| Created By: | Marc | | Last Updated By: | Marc |
| Date Created: | 24/08/22 | | Date Last Updated: | 05/09/22 |
| Actor: | | User | | |
| Description: | | The app will identify other users who have nearby residential addresses and are within a 10-point range of the user’s ippt score. | | |
| Preconditions: | | 1. The user has entered their residential address | | |
| Postconditions: | | 1. The app will output a list of recommended users. | | |
| Priority: | | HIGH | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The app will receive the user’s residential address 2. The app will identify at least 3 and maximum of 10 users who have nearby residential addresses to the user and are at similar fitness levels | | |
| Alternative Flows: | | 5.3.AF.1  If there are no other users with similar fitness levels nearby, the app will suggest at least 3 users with the next closest fitness levels | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | The user has input their residential address | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 2.1 | | | |
| Use Case Name: | CREATE PERSONALISED TRAINING PLAN | | | |
| Created By: | SUMMIT | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | User | | |
| Description: | | The app presents the user with a personalized workout plan based on their current fitness levels, targeted fitness levels and time frame. The personalized workout plan contains the number of push-ups and sit-ups and run timings to meet. In addition, it displays various supplementary exercises and locations to carry them out to supplement. | | |
| Preconditions: | | 1. The app is able to suggest 2. The app can generate a list of potential and suitable exercises. 3. The app can generate a workout plan for the user to follow. 4. The app can find apt nearby locations for the user to carry out the exercises. | | |
| Postconditions: | | 1. The user has a number of reps they need to match. 2. The user has a detailed workout plan with the locations they can go to carry out the exercises. | | |
| Priority: | | High | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The user opens the app 2. The app retrieves the list of exercises, location, and plan from the database. 3. The app displays the information to the user. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | RECOMMEND RELATED EXERCISES | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 2.2 | | | |
| Use Case Name: | recommend RELATED EXERCISES | | | |
| Created By: | SUMMIT | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | Initiating Actor: NULL Participating Actor: User | | |
| Description: | | The app must recommend apt exercises to improve user’s fitness abilities. | | |
| Preconditions: | | 1. The app must have a database with a list of related exercises. 2. The user has a target fitness level to attain by a certain time frame. | | |
| Postconditions: | | 1. The app recommends the user exercises they can undertake. | | |
| Priority: | | High | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The app looks at the current fitness level of the user, the targeted user fitness level and the time frame for training. 2. Based on the parameters, the app queries the database and generates a list of exercises suitable for the user. 3. The app will store this list of exercises, its respective information and equipment needed. | | |
| Alternative Flows: | | 2.2 AF.1: The app is unable to determine the current fitness level of the user   1. The app recommends generic exercises for the user to undertake. | | |
| Exceptions: | | - | | |
| Includes: | | - | | |
| Special Requirements: | | - | | |
| Assumptions: | | 1. The user would be able to perform the exercises. 2. The algorithm can list possible exercises for the user to undertake. | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 2.3 | | | |
| Use Case Name: | recommend DAILY TRAINING | | | |
| Created By: | SUMMIT | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | Initiating Actor: NULL  Participating Actor: User | | |
| Description: | | The app generates a workout plan for the user based on the list of recommended exercises. | | |
| Preconditions: | | 1. The app has a list of exercises for the user to undertake. | | |
| Postconditions: | | 1. The app is able to generate a weekly workout plan for the user to execute. | | |
| Priority: | | High | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The app looks at the current fitness level of the user and recommends run timing and number of reps for sit-ups and push-ups using an algorithm. 2. The app retrieves the list of possible exercises for the user to undertake. 3. The algorithm considers the intensity of the workout, targeted muscle group and plans a workout routine. 4. The app will store this workout plan. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | Recommend Related Exercises | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |

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| Use Case ID: | 2.4 | | | |
| Use Case Name: | recommend NEARBY EXERCISE VENUES | | | |
| Created By: | SUMMIT | | Last Updated By: |  |
| Date Created: | 05/09/22 | | Date Last Updated: |  |
| Actor: | | Initiating Actor: NULL  Participating Actor: User | | |
| Description: | | The app analyses the workout plan and suggests nearby places for the user to carry out the recommended exercises. | | |
| Preconditions: | | 1. The app has a list of places with its available equipment. | | |
| Postconditions: | | 1. The app recommends the user with a place to carry out the exercises near their homes. | | |
| Priority: | | High | | |
| Frequency of Use: | | Daily | | |
| Flow of Events: | | 1. The app analyses the exercises and the equipment needed to carry it out. 2. The app queries the database for a nearby location that is able to accommodate to the exercises and the equipment needed. | | |
| Alternative Flows: | | - | | |
| Exceptions: | | - | | |
| Includes: | | RECOMMEND DAILY TRAINING | | |
| Special Requirements: | | - | | |
| Assumptions: | | - | | |
| Notes and Issues: | | - | | |