Software Implementation and Testing Document

For

Group 11

Version 1.0

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1. Programming Languages

Extensible Markup Language (XML) will be used to design the User Interface of the application. Java will be used for the functionality of the application. These languages were chosen because Android applications are written in Java.

2. Platforms, APIs, Databases, and other technologies used

Wger - Workout Manager: This API will be used as the source for the exercises used to generate workouts. In the API, exercises are organized according to target muscle groups. In the application, Users will choose the muscle groups they want to work out, and then a workout will be generated by choosing random exercises that match the chosen target muscle groups.

Recipe Puppy: This API will be used for the “Find a recipe” feature. Users will input ingredients into a search function and recipes will be suggested accordingly.

Nutritionx: This API gives access to a database of individual food items and their calorie count. This will be used for the “Input Meal” and food suggestion features.

Firebase Realtime Database: This is a cloud-hosted database. It will be used to store personal data such as weight changes, caloric consumption, saved workouts, meals eaten, and time spent working out.

3. Execution-based Functional Testing

Most of our functional requirements are not near enough to completion yet to have testing done on them, however, testing the features outside of the application is being done.

NutritionX’s database contains information on all types of food and the nutritional value that comes with them. TheMealDB allows a search for a recipe based upon a main ingredient. These APIs were tested and verified to return the stated information in JSON format via the web browser.

4. Execution-based Non-Functional Testing

Viewing other Android apps confirms that it is possible to implement features for people with vision issues. For database implementation, Google’s Firebase will provide the KitchGym with ample amounts of storage and processing to effectively store custom workouts and recipes that each user creates/saves. As for the device the app is on, Android Studio's emulators confirm the application's ability to run as long as they are running Android 4.0.3 or higher.

The two buttons on the home page, that take the user to the gym and kitchen user interfaces, work as expected.

These are the Non-Functional requirements that can be tested and confirmed so far.

5. Non-Execution-based Testing

Android Studio simplifies the process of designing the UI for an application by automatically generating the XML code; With this feature, reviewing the XML code is a simple process of making sure the correct type of components were placed in the correct locations. Peer code reviews were conducted when one member pulled another's code from the GitHub repository, and everything was made sure to be working. Short walkthroughs through the various pages of the application were conducted, starting from the main home page, to the "doWorkout" activity. Upon doing this inspection, it was clear what aspects were missing and need to be developed in the next iteration.

The exercises available in the Wger API are available online. This database was checked to ensure that each exercise included the attributes needed to identify the correct one for the workout generation in the application, such as the exercise name and target muscle group.