Project Report “Fitness Trail Assistant”

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Table of Contents:

Introduction:

As mentioned the goal of the project is also to make the student understand and be able to solve at least some basic concepts of android programming. We have use for our implementation of project Android Studio and with knowledge of Java coding.

Android Studio is the official IDE for Android application development, based on IntelliJ IDEA. On top of the capabilities you expect from IntelliJ, Android Studio offers such as: Flexible Gradle-based build system, Build variants and multiple apk file generation, Code templates to help you build common app features, Rich layout editor with support for drag and drop theme editing, and much more.

Project Description:

The main objective of the “Fitness Trail Assistant” project is to develop an Android application, by reusing as much as possible the concepts, methods and tools presented in the Principles of Software Development course.

The goal of this trail assistant is to help trailer to track their activities, but also to give training instructions.

The trail assistant proposes two modes.

1. Predefined Route: the trailer runs following a route which is already defined in the app. In other words, the app knows what is the itinerary and indicates this itinerary to the trailer.

2. Free Trail: The trailer decides by him(her)self the itinerary.

In both modes, the user can activate the option “training instructions”. With this option, the trailer get training instructions according a program. A typical example of program could be: (1) During the first 500m, please walk in a fast mode. (2)Then, during 2000m, run normally. (3) Walk and breath deeply during 2min (4) run normally during 2000m, (5) Sprint during 400m. (6) Walk during 2min, (7) make stretching exercise.

Work Description:

Home Page: In our home page, it has three parts.

1. Predefined Route in Google Map

2. Start Itinerary

3. Free Trail

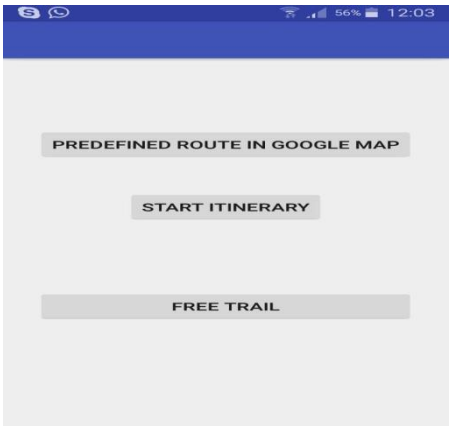

Figure-1: Homepage

1. Predefined Route in Google Map:

When we click on the Predefined Route in Google Map button, we can see our two predefined route. One route is from **Luxembourg to Ettelbruck** and another is from **Luxembooourg to Echternach** (Figure-2: Predefined Route).

Figure-2: Predefined Route

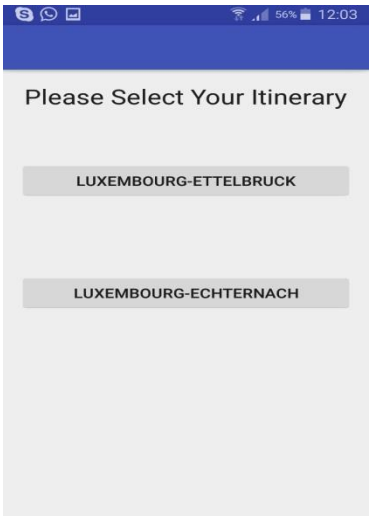

Figure-3: Start Itinerary (i)

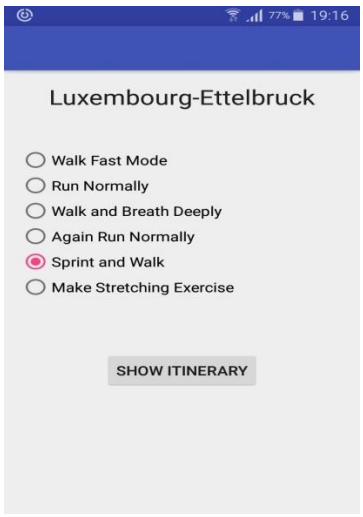

Figure-4: Start Itinerary (ii)

2. Start Itinerary:

When we choose our start itinerary portion, here the trailer can see his tow predefined routes (Figure-3: Start Itinerary (i)). If the trailer selects anyone predefined route, then he can see six sections for this route. Six parts are (i) Walk Fast Mode, (ii) Run Normally, (iii) Walk and Breath Deeply, (iv) Again Run Normally (v) Sprint and Walk and (vi) Make Stretching Exercise(Figure-4: Start Itinerary (ii)).

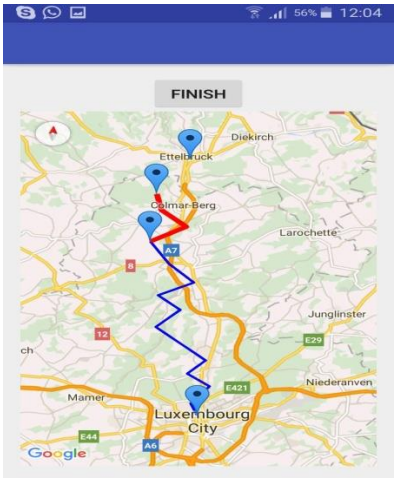

Figure-5: Start Itinerary (iii)

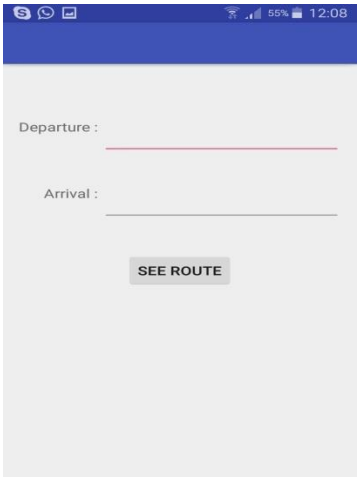

Figure-6: Free Trail (i)

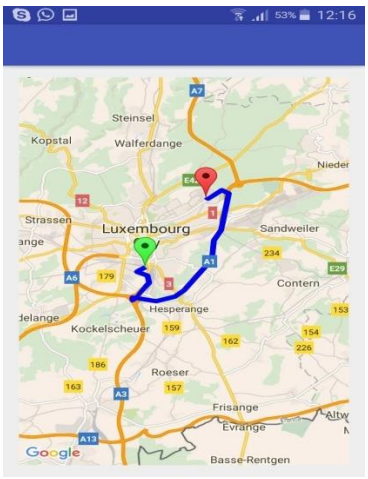

Figure-7: Free Trail (ii)

Suppose you want to select Walk and Breath Deeply (Figure-4: Start Itinerary (ii)), and then click on Show Itinerary button. After that you can see where you are for this part in this predefined route,and also see your Start position and end position for this section(Figure-5: Start Itinerary (iii)). Here have

another option i.e. Finish with each section. That means, if the trailer he want to finish his trail, and then click on the upper finish button. After clicked on the button, trailer itinerary data will be save into the database (Figure-5: Start Itinerary (iii)).

3. Free Trail:

In this section, the trailer can freely move from anywhere. Just put his departure address where he wants to start and then put the arrival address for finish the trial (Figure-6: Free Trail (i)). After that click on See Route button, the trailer will see his route on the map (Figure-7: Free Trail (ii)).

General Description for Activity Class and other Class:

MainActivity: We get another three new activity like as (A) MapAcivity for predefined route in the map, (B)TrainingInstructions for start itinerary and (C)FreeTrail for free trail.

A. MapActivity: Defined our two predefined routes from Luxembourg to Ettelbruck and Luxemboourg to Echternach in Google Map. Used polyline for show our two routes.

B. TrainingInstructions: We get here two predefined routes from (a) Luxembourg to Ettelbruck and (b) Luxemboourg to Echternach.

(a.i) EttelbruckActivity: We divided our route Luxembourg to Ettelbruck with six sections. We used radio button for select anyone section from the six sections with show itinerary button.

(a.ii) MapEttelbruck: After selected one section we see our start and end position in Google Map from our Luxembourg to Ettelbruck route with wide red polyline .Here we added our database portion to insert data into database.

(b.i) EchternachActivity: Similarly we divided our route Luxemboourg to Echternach with six sections. We used radio button for select anyone section from the six sections with show itinerary button.

(b.ii) MapEchternach: After selected one part we see our start and end position in Google Map in your Luxembourg to Echternach route with wide red polyline. Here we added our database portion to insert data into database.

C. FreeTrail: We have two edit text fields (i.e., departure address and arrival address).

(i).LocationOverlay: When the trailer put his departure address and arrival address for search to see his route with polyline in Google Map for fitness trail.

(ii).MapFreeTrail: This is the output part for free trail. Just see the output for free trail.

DatabaseHelper: This is our database class file. We included database create, database table and data inserted code related everything here.

The Android Manifest:

The android manifest had to be modified in order to put Google API key for access Google map.

We added the following key:

```
<meta-data
   android:name="com.google.android.maps.v2.API_KEY"
   android:value="AIzaSyCkyzcD2RfnpCTrfYv0XVSZsD....................." />
```

Conclusion:

In this project we used lots of new things along with important android related principles, as well as Java principles, such as bundles and intents to be passed to other activities, how to install Google maps API, and implement it further, how to create itinerary in Google map with ploryline and how to add coordinates for particular area; and most importantly how to organize a project so as to not get lost in the code and have it structured in understandable manner.

During the project, we included the Google map and show the specific areas routes (i.e. two predefined routes). One of the biggest challenges was to generate a free trail route from departure place to the arrival place. Other minor problems included accessing the sensors and other relevant features

Thanks to **Jacques Klein, Tegawendé F. Bissyandé, and Médéric Hurier** for their help. We want to say special thanks to **Jacques Klein**. During the class sessions, he has given us clear instructions how to develop our project.