CS 256 Project: Heart disease risk detection using Android Wear

Readme (Setup and execution instructions)

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1.1: Setting up Wear application

For running the Android Wear application, you must either have an Android Wear device or an Android Wear emulator.

If you have an Android Wear device:

Install **CS256_Wear.apk** (from the directory "Project_Runnables") to your Android Wear device.

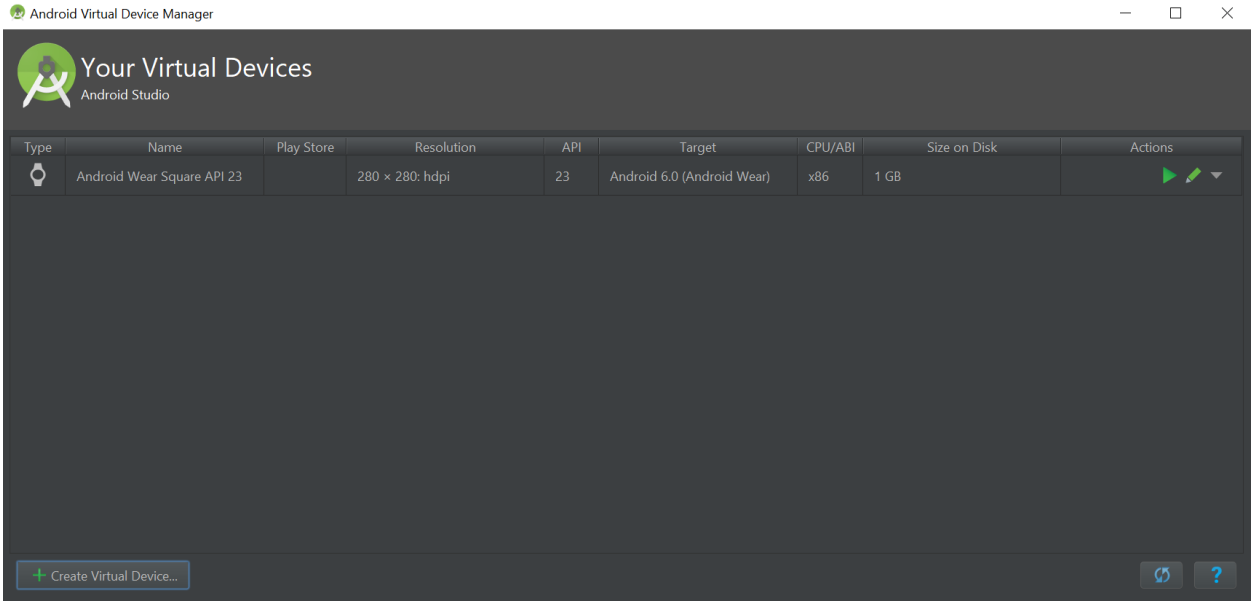
If you do not have an Android Wear device:

Follow these steps:

1. Visit https://developer.android.com/studio/index.html and download the latest version of Android Studio. Select all default settings during setup.

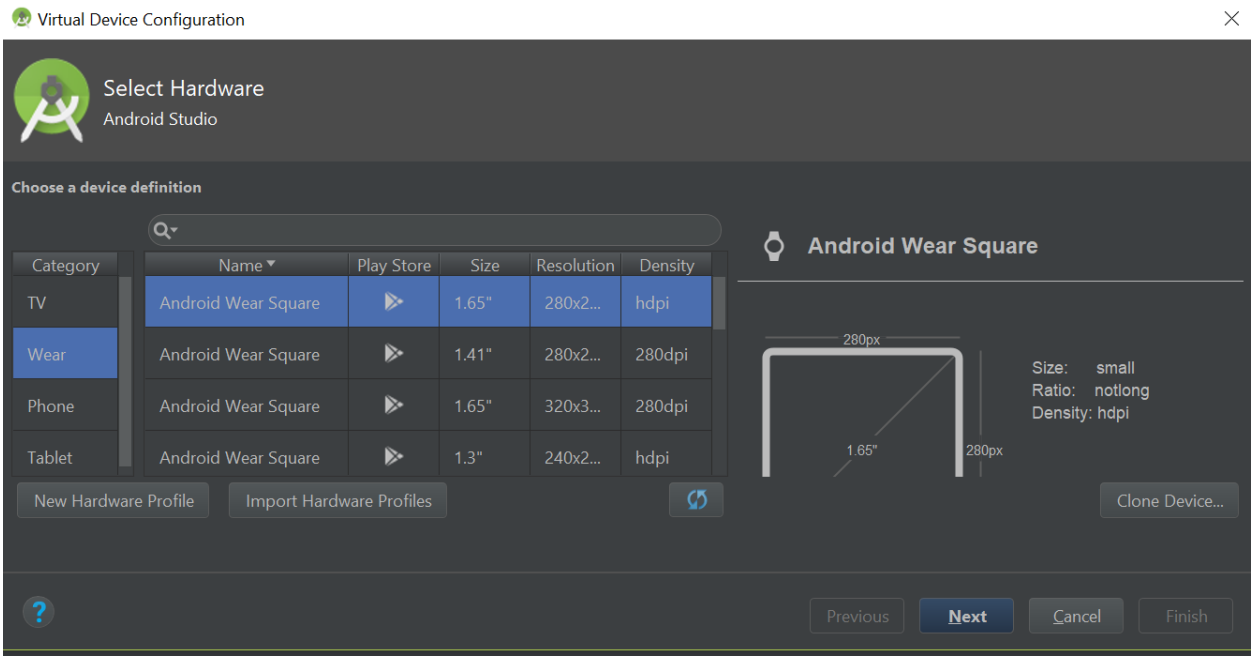
2. Open Android Studio

3. Open the Android Virtual Device (AVD) Manager by clicking **Tools > Android > AVD Manager**.



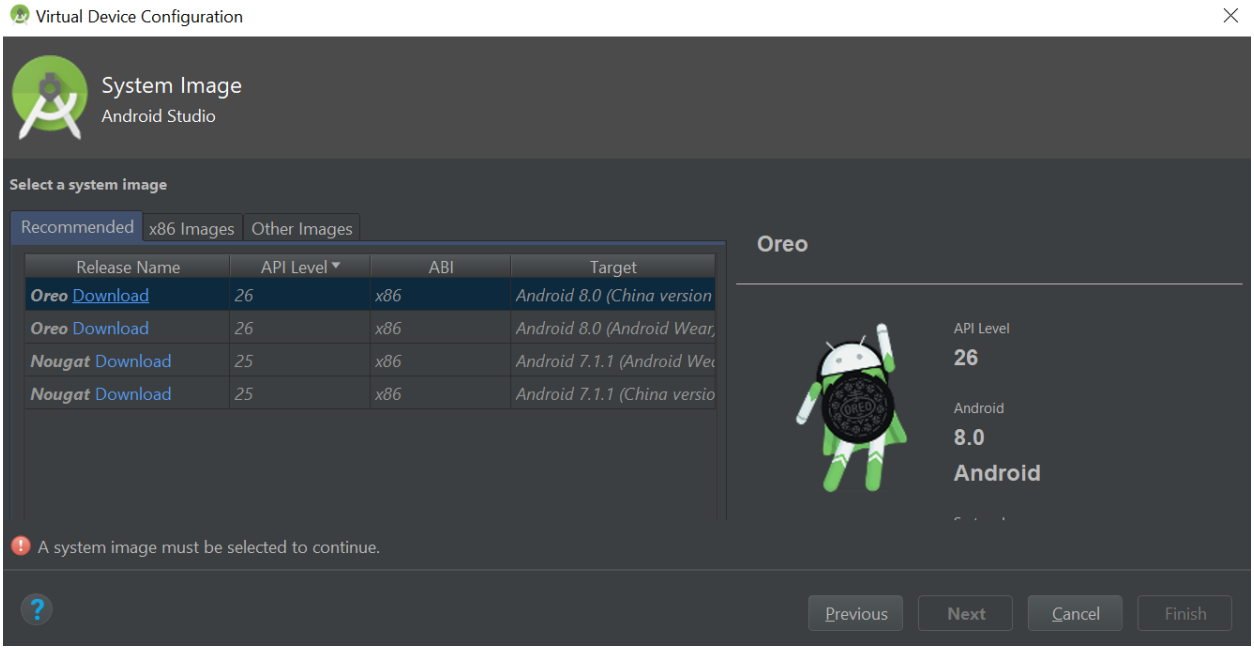
4. Click **Create Virtual Device**, at the bottom of the AVD Manager dialog.

The **Select Hardware** page appears.



Select **Wear** under **Category** and choose any configuration from the right.

5. In the **Virtual Device Configuration** window, click on the **Download** button for the first recommended system image.



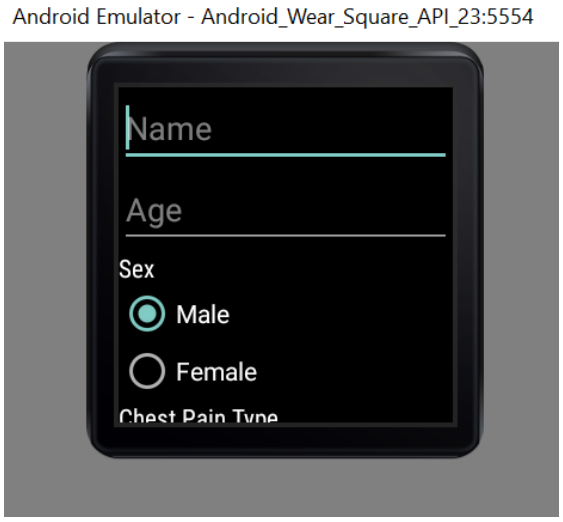
6. Proceed with all the defaults and give your AVD any name of your choice.

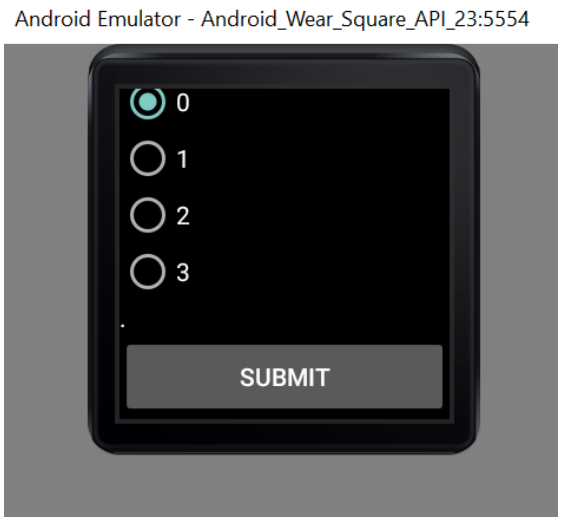
7. After creating the AVD, import the **Android_app** project to Android Studio by clicking **File > Open.** Browse to the path where you have Android_app project and select it. You can find the Android_app project in the following path → **Source_Code/Android_Project**

8. Now run the program by following these steps in Android Studio. **Run > Run > wear > Your AVD** which you created in steps 1 to 6. Your Virtual Device (AVD) will now boot up and launch the application.

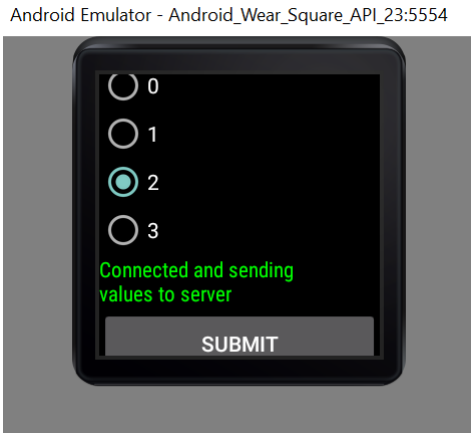
1.2: Using the Wear application

1. This is how the homescreen of Android Wear application looks. The user must fill all the information required by the application and press the **SUBMIT** button at bottom.





2. After pressing the **SUBMIT** button, you will see "**Connected and sending values to server**" written in green indicating that you have successfully connected to the Firebase server and your values are continuously being sent to it.



2: Android Smartphone Application

2.1: Setting up Smartphone application

For running the Android Smartphone application, you must either have an Android Smartphone device or an Android Smartphone emulator.

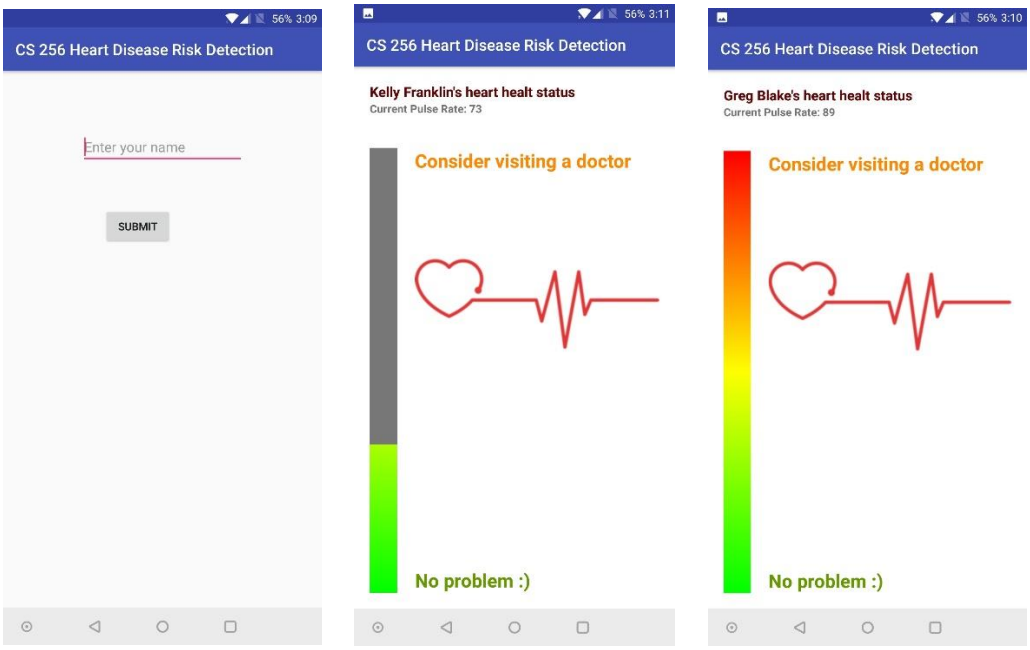
If you have an Android Smartphone device:
Install **CS256_Smartphone.apk** (from the directory "Project_Runnables") to your Android smartphone.

If you do not have an Android Smartphone device:
Follow all steps (except steps 4 and 8) mentioned in section 1.1. Do the following modifications for steps 4 and 8 respectively.

Step 4: Choose **Phone** instead of **Wear** under the category.
Step 8: Go to **Run > Run > mobile > Your AVD**

2.2: Using the Smartphone application

1. This is how the homescreen of the smartphone app looks like. Login as the same name you entered in the Wear app discussed in section 1.1:



3: Python Application (Agent)

3.1: Setting up Python agent

1. Download Python 3.x (testing done on v3.6.3) from https://www.python.org/downloads/. Python 3.x is needed as Firebase library does not have all features for Python 2.x.

2. Run the following commands:

i) sudo apt install python-pip *(if you do not have 'pip' package management system installed)*
ii) pip install python-firebase
iii) pip install --user numpy scipy matplotlib ipython jupyter pandas sympy nose
iv) pip install -U scikit-learn

3.2: Running the Python agent

1. Navigate to the directory containing **prediction_server.py** and **knn.py** *(both must be in the same directory).*

2. Run the following command → python prediction_server.py

The agent will start running (acting as a server) and will connect to Firebase every 5 seconds. Below is a screenshot indicating how the agent execution looks like.

```
C:\Python36-32\python.exe C:/Users/abhis/PycharmProjects/CS256_Project_2/prediction_server.py
--------------------------------
Local copy of dataset created Records: 1546
Checking active users
Updating Harry Potter: Prediction 0.0 - Update successful
--------------------------------
Local copy of dataset created Records: 1546
Checking active users
No active users found
--------------------------------
Local copy of dataset created Records: 1546
Checking active users
No active users found
```

To terminate, press *CTRL+C (on Windows)* or *COMMAND+C (on Mac)*.