Assignment 1: Creating a Shake Detector

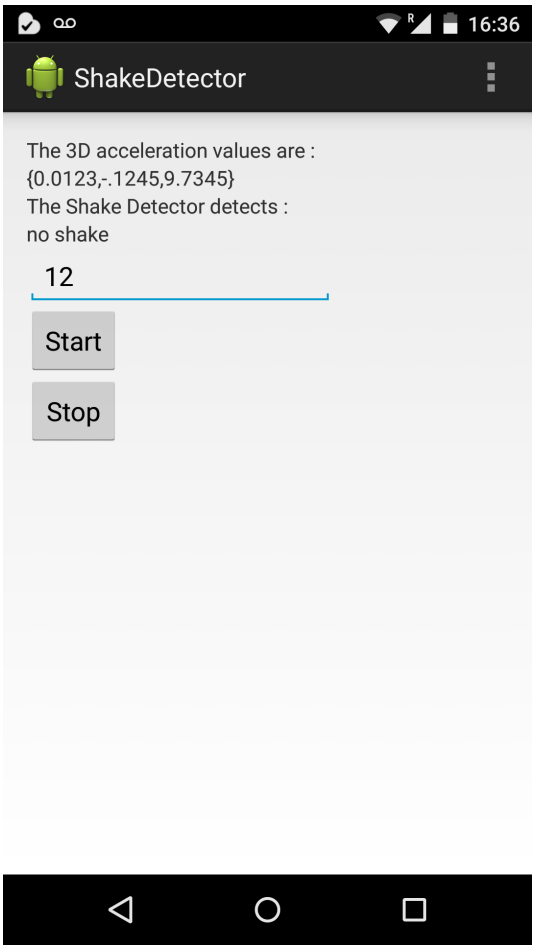
Points: 100

Aim:

To develop an Android application, which can detect shaking of the phone, based on a user-specified threshold.

User Interface Design:

For this assignment you need to make a User Interface (shown below) that has 4 TextViews, 1 EditText and 2 buttons.



TextView 1 will print a string "The 3D acceleration values are"
TextView 2 will print the 3 acceleration values along the 3 axes from the phone's accelerometer in real time.
TextView 3 will print a string "The Shake Detector detects"
TextView 4 will show an output string of "shake" or "no shake" based on the output of the shake detector. We will discuss about shake detector algorithm below.

The EditText will take a double value as input from the user. This value will be used as the threshold in the shake detection algorithm. This value will be read when the start button is pressed. Also the 3-dimensional acceleration values and the algorithm output will be displayed in TextView 2 and 4 respectively after the start button is pressed. The Stop button will stop the whole process.

Shake Detection Algorithm:

```
If(sqrt(ax^2+ ay^2+ az^2)<Threshold){
        Display "no shake" in TextView 4
}else{
        Display "shake" in TextView 4
}
```

where, ax, ay and az are the 3 acceleration values and sqrt is square root. Threshold is the value inputted in EditText. It usually ranges from 8 to 25.

Bonus Points (+25 points):

Most new smartphones now days have a barometer that can measure atmospheric air pressure from a certain location. This is a very important sensor, which can help us to build context aware mobile system that can track our physical activity and location. For example, higher altitude has lower atmospheric pressure. By using this simple logic we can build mobile application that can detect the floor/level number in a multistoried building.

In this part of the assignment you have to add an additional Button and TextView. As soon as someone presses that button you have to print the air pressure value from barometer in the TextView.

Deliverables:

1. Write a short paragraph in a Readme.txt mentioning if you could complete building the android application (mention if you have also done the Bonus point part). What was the most challenging part in this assignment and how did you solve it? If you could not finish the app, please explain where you got stuck. We will look at your code and give you credit for that.
2. Attach the complete project in blackboard.