Assignment 4: Sensing through the eyes of sensors

Feel free to design the app as per your choice (Activity/Fragment, Layout wise) except where something is explicitly mentioned.

1. Collect data for the following sensors: Proximity, Light sensor, Geomagnetic rotation vector sensor. Use a UI control like a toggle button for each sensor to start or stop the collection data. Store the values of these sensors by creating separate tables in the Room database. Store the values when the following condition happens. Sensors:
    - **a.** Proximity Sensor:
      Log the proximity sensors's data when the user places the phone near their ear or cover the phone by hands. Hint: perform some trial runs to get an estimate of the values of this sensor under diff conditions.

    - **b.** Light Sensor:
      Log the light sensor's data when the phone is covered or placed face down. Hint: perform some trial runs to get an estimate of the values of this sensor under diff conditions.
    - **c.** Geomagnetic rotation vector sensor: collect always

2. Use the geomagnetic rotation vector sensor to orient the phone with earth's frame of reference. Monitor the position of the device relative to the earth's frame of reference (specifically, the magnetic north pole). Provide appropriate feedback to the user through the UI as to how much rotation needs to be done in which direction to align with frame of reference. Keep on providing the feedback to the user till the point it orients with earth's frame of reference at that point show success! (Hint: https://developer.android.com/guide/topics/sensors/sensors_position)

Rubrics:

1. Proximity sensor: get access, detect conditions, store in database (1+ 2+2)
2. Light sensor: get access, detect conditions, store in database (1+ 2+2)
3. Geomagnetic sensor: get access, and store in database (1+1)
4. Re-orientation of the phone: determine the angles, provide feedback continuously (2+4)