# Android mobile application for sensing and/or control

In this final project you are going to put into practice all that you learned in this course by developing a native android app that takes advantage of the myriad of sensing and control capabilities that modern smartphones offer. You will develop an Android App in Kotlin that integrates sensing functionalities. You do not need to come up with a groundbreaking project idea (hopefully you can prove me wrong!), but it should be functional, well-designed, and interesting for you to develop.

**You are required to develop one Android Application in Kotlin.**
**Option A**: Use an Android Smartphone only.
**Option B**: Use an Android Smartphone and an Arduino board.

**Deadlines (use Canvas for all the submissions)**
- Project source code: Wednesday June 5th at 11:59pm
- Submission of presentation:  Wednesday June 5th at 11:59pm (use PowerPoint or PDF format).
- Final report: Saturday June 8th 11:59pm.

**Instructions**
- Use Kotlin to program your Android app. 10% of the source code can be programmed in Java (you can have Kotlin classes and Java classes within the same app, but do not mix java and Kotlin code within the same class).
- You can work individually, or in teams of 2 or 3 people.
- Your app should use at least one sensor from the smartphone, and/or from the Arduino board (camera, motion sensors, temperature sensor, pulse sensor, pressure sensor, ambient light sensor, microphone, NFC, etc.), process and analyze the data, and provide some useful/relevant output as a result.
- If you are not sure whether your project idea will fit this assignment, you can email the instructor (arjonal@uw.edu) with your proposal, and you will be provided with a feedback within a short time.
- If you decide to use Arduino: you can use the Circuit Playground board that we distributed in class, or other board of your own choice. You can use any additional external shield or component. In summary, you can use any hardware that you consider relevant.

**Evaluation**
- Short written report (see instructions below).
- Class presentation: 10min per person/team, to show in class on June 6th. Depending on the number of groups/teams, we might need an additional day to finish the presentations on June 13th.
- Final Demo after the presentation in class on June 6th (and possible an additional day).

**Final Report**
Submit a short report, where you present your project. If you work in teams, submit only one report per team. Include the structure of your app, what sensor(s) do you use and how you manage the data, and the main functionalities of your app. Include any additional information that you consider relevant. 1 page is good, but there is no maximum length.

**Class Presentation**
Prepare a presentation to show in class to the instructor, TA, and the rest of your classmates. Each presentation should last 10 minutes (not including the demo). You can include a video in the presentation if you like.

**Final Demo**
At the end of the presentation, you will show a demo of your app to the instructor.

**Grading (0-50 points)**

- Project technical execution: on a scale of **35 points**, based on the following
    - App builds and runs without errors.
    - Use of different sensors and processing the sensor data.
    - Use or Arduino.
    - User-friendly Graphical User Interface, intuitive for the user, and well structured.
    - The app works as expected
    - Overall functionalities of the app

- Final presentation: on a scale of 10 points, based on the following
    - Presentation covered the required scope within the allowed time period.
    - Final demo execution.
    - Clarity in the presentation (relevant content).

- Final report: on a scale of 5 points, based on the following:
    - Overall readability.
    - Clarity in the exposition of the app functionality.