

Final Project

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. Try to think about a project in which you are really interested in.

Best project award

You will use an App that we will provide to evaluate the rest of the projects during the presentations that will be held the last two weeks of the Spring quarter. The winner team or individual will receive a course best project award. Due to remote logistics, the prize has not been decided yet. Further information will be provided during the quarter.

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)
<ul style="list-style-type: none">• Project proposal: Thursday May 14th at 11:59am• Project source code and Presentation: Thursday June 4th at 11:59am. If use Arduino: submit Android App and Arduino project.• Final report: Friday June 12th 11:59am.

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 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.

Project proposal

Submit a short project proposal of 1-page max. Submit a .pdf document. The report should contain the following

- Brief summary of main functionality of your project
- Some initial user interface design (handwritten design is fine!).
- What sensor(s) will your project use.
- What hardware components will you use for your project, besides the android smartphone, if any.

Note: your submitted final project does not need to follow strictly what you submit in this proposal, but it should not be either a completely different project. With this project proposal I want you to have a draft project idea to enable you to start working on the project.

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. There is no maximum length, but I recommend using just one page. This report should be brief and concise. It should not take you too long to prepare.

Submit a .pdf document

Class Presentation

Prepare a presentation to show to all members of this course. Each presentation should last 10 minutes (+ live demo). You can include a video in the presentation if you like. Pdf or PowerPoint format preferred, but other is fine.

To present, you will share your screen in **Zoom** with the presentation, and audio.

For privacy, the student's presentations will NOT be recorded. If anyone has any inconvenience with sharing the screen with the presentation, presenting, and/or showing a live demo please email me (Laura).

Final Demo

At the end of the presentation in Zoom, you will show a short live demo of your project. The live demo is mandatory. A video recording is not valid.

Grading (0-45 points)

- Project proposal **(5 points)**
- Project technical execution: on a scale of **25 points**, based on the following
 - App builds and runs without errors.
 - Use of different sensors and correct processing the sensor data.
 - Use of Arduino will be valued positively but is not required to get full credit.
 - User-friendly Graphical User Interface, intuitive for the user, and well structured.
 - Overall functionality 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.