

Re-Exam App Programming

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1 Task

The scope of this task is to develop an application in **Android Studio** using the **Java** programming language. Features of the application should be:

- Establishing a **connection** to a microcontroller based device using MQTT, Bluetooth or similar.
- **Sending** and **receiving** commands to the device from the application and sensor values from the device respectively.
- An **interactive user interface** (UI) to control the device and **show** the sensor values.

2 Materials

To focus on the application programming part the microcontroller based device will be provided along with an Arduino software draft. The device itself consist of an accelerometer, which is connected via I2C. The draft has to be adapted to work with the application, please consider:

- The provided software is using MQTT.
- Network settings have to be changed according to the network that wants to be used.

Generally, the draft can be adapted however wanted and it is not mandatory to use it. If wanted the code for the microcontroller can be written entirely by oneself. The code on the controller is not graded, however it has to be made sure that it works to show the functionality of the mobile application.

3 Submission and Grading

The following files have to be submitted:

- A .zip file exported from Android Studio containing all the code to build and deploy the application.
 - Alternatively the application can also be set-up as a repository which is shared by the deadline
- A video of the finished application in use with the provided hardware.
- A short description of the main components of the application as .pdf or repository readme (max. 1 Page)

Grading follows the following pattern:

- Are the requirements fulfilled and work the **grade 2 (good)** is reached.
- **Additional points** can be reached if a higher effort can be shown through e.g. a nice looking intuitive UI or additional features etc..
- Points are **subtracted** if something is not working properly.
- If there are any machine independent compile errors which do not allow to build and deploy the application and/or required features have not been implemented, the project will be **graded as 5 (not satisfactory)**.