Distributed Systems – Assignment 1

W Kleiminger
kleiminger@inf.ethz.ch
The Exercise

- Objectives
  - Get familiar with Android programming
    - Emulator, debugging, deployment
  - Learn to use UI elements and to design an Activity
  - Learn how to connect Activities and Services using Intents
  - Learn how to use the Sensor API
  - Tackling problems with developing a real app

- Dates:
  - Exercise begins: Now (October 4, 2010)
  - Exercise is due: 9:00am, October 15, 2010
The Tasks

- Assignment is divided up into 3 tasks
  - **First Task:** Sensors and Actuators
    - Produce an application to access all available Sensors
    - Use selected actuators
  - **Second Task:** AntiTheft Alarm
    - Produce an application to “secure” the device against theft
  - **Third Task:** Enhancements of Task 2
    - Come up with creative solutions to deal with the shortcomings of the simple alarm
Task 1: Sensors and Actuators

- **Objectives:**
  - Learn how to create Android project
  - Familiarise yourself with UI Elements
  - Understand the concept of Activities and Intents
  - Learn to use the sensor API

- **Todo:**
  - Write an app that displays all sensors in a ListView
    - Show sensor readings in second activity
  - Trigger actuator events in a third activity
    - accessible from the first
Task 2: AntiTheft Alarm

- **Objectives:**
  - Transfer the knowledge of Task 1 into a real app
    - Understand problems stemming from a framework under development
  - Think about how to make use of the sensors
  - Learn how to use background services

- **Todo:**
  - Write an app to “secure” the device against theft
    - Sound an alarm when the device is moved (without authorisation)
Task 3: Enhancements

Problems with Task 2 include:
- Headphones can suppress alarm
- HTC Desire with 2.2 (currently) unable to process sensor events when in Standby
  - Unable to lock and thus protect the alarm

Possible solutions:
- GPS
- Silent alarm
- BroadcastReceiver

Todo: Come up with a creative solution to one of the problems
The Report

- You are required to produce a report
  - *Max 1 page!*
  - About your experience with **tasks 2 and 3**
  - **Motivate** and **explain** your enhancement (Task 3)

- **Other Ideas:** Problems, design choices, code snippets, UML class diagrams, documentation, comparison to Symbian/iOS (if previous experience in those), ...
Marks

- First Task and Report: 4.0
- First Task, Second Task and Report: 5.0
- All three Tasks and Report: 6.0

Partially solved exercises are marked individually.

Report is necessary for a PASS mark!
Tips

- Make sure a new activity is always referenced in the Manifest.xml file
- Make sure debugging is enabled in the manifest file if you want to debug on the device
- Don’t bother with the SensorEmulator
- Pay attention to the app lifecycle (i.e. onCreate(), onResume(), …)
- Make sure you give your app permission to access actuators like camera and vibration
- *Last but not least:* Use a fresh install of Galileo
Submission

https://www.vs.inf.ethz.ch/edu/vs/submissions/

- You should submit the code and report at the above URL
- NETHZ Login
- Note:
  - Max file sizes
  - File types
  - Multiple submissions possible
- Due Date!