

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!**

The screenshot shows a web browser window titled "VS Submissions" with the URL <https://www.vs.inf.ethz.ch/edu/vs/submissions/>. The page content includes:

Verteilte Systeme / DS HS2010

You are logged in as "wilhelmk".

Exercise:	Assignment No 1 - AntiTheft Alarm
Individual or Group:	Individual
Due:	15.10.10-09:00:00
Spec:	spec_ds_hs2010_1.pdf

Upload your submission files to the server. Please note the supported *filename(s)* and *format(s)*. You may change your submission until the deadline of this assignment. However, be aware that only your most recent submission is kept and can be marked.

It is your responsibility to check that the files below have been uploaded correctly! Please use the links to check your submission!

Filename	Last Change	Size	Maximum Size	Supported Formats	Upload	Status
report	September 29 2010 18:58:47	745.59 KB	2 MB	txt, doc, docx, pdf	<input type="button" value="Datei auswählen"/> Keine Dat...sgewählt	Submission available
code	September 29 2010 18:58:47	2 Bytes	10 MB	zip	<input type="button" value="Datei auswählen"/> Keine Dat...sgewählt	Submission available

By clicking on *Submit Changes*, you declare the above documents to be **your own work, only**. Any contributions made by other people must be acknowledged and sources must be properly referenced!

DS HS2010 Submission Script