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# **Distributed Systems – Exercises**

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Distributed Systems – HS 2016 Leyna Sadamori



# **VS Exercises**

- Part 1 (Prof. Mattern)
  - Android programming (45 points)
  - Theoretical exercises (exam preparation)
- Part 2 (Prof. Wattenhofer)
  - Theoretical exercises (20 points)







# Grading

Maximum achievable points:

Written exam	180 points
Practical exercises <sup>1</sup>	45 points
Theoretical exercises <sup>2</sup>	20 points
Total	245 points

- <sup>1</sup> Points can be carried forward from last year
- <sup>2</sup> Prof. Wattenhofer



#### Team



Leyna Sadamori

#### Vincent Becker

Mihai Bâce

Subho Basu





#### A1: GUI, sensors and Bluetooth Low Energy

03 Oct 2016 – 13 Oct 2016 (10 days)

#### A2: HTTP, REST, Web Services

14 Oct 2016 – 24 Oct 2016 (10 days)

### A3: Group communication and logical time

24 Oct 2016 – 03 Nov 2016 (10 days)

### • A4: **Project** (with presentation)

• 04 Nov 2016 – 18 Dec 2016 (6 weeks)





# Organization

- Teams of three
  - Development with emulator and phone
- Smart phones
  - Use your own Android no rooting required
  - If necessary, can be provided by us (1 phone per group)
- Grading
  - Per group



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# Homework

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- Log in to submission system
  - https://www.vs.inf.ethz.ch/edu/vs/submissions/
- First "exercise" is to register a group
- Leader starts a group
- Add partners
- Specify which phone you will be using
  - Own Android
  - Lecture phone





# **Submission System**



- Deliverables are submitted via the submission system
  - Only team leader can submit files
  - Team members must sign the submission to accept submission
  - Repeat signature procedure for every new upload
- Registration "exercise"
  - Submit an <u>empty</u> file (0 bytes) register.txt
  - Sign this submission





### **Prepare your phone**

- Minimum OS version: Android 5.0
- Activate debugging
  - «Settings > About phone > Build number» Tab several times
  - «Settings > Developer options > Android debugging»
- MacOS: Change USB mode to PTP





# Install the Toolchain

- Java SE JDK
  - http://www.oracle.com/technetwork/java/javase/downloads/index.html
- Android SDK and Android Studio
  - http://developer.android.com/sdk/index.html
- In the SDK Manager, make sure to have
  - Android 7.0 (API Level 24) SDK Platform
  - SDK Tools Rev. 25 or later
  - SDK Platform-Tools Rev. 24.0.2
  - Android SDK Build Tools Rev. 24.0.2
  - Android 5.0 (API Level 21) x86 System Image



### **Test Your Toolchain**

- Create an AVD in the «Android Virtual Device Manager»
  - Device: Nexus 5
  - Target: Android 5.0 API Level 21
  - CPU: x86
  - Emulator Options: Host GPU
- Run Sample Application
  - Import an Android code sample
  - Pick the BasicNetworking sample project
- Run the project as Android application
  - On the AVD
  - On your phone



# **Android Tutorial**

- Monday, 26 September 2016
  - Introduction to Android programming
  - «Live-Hacking» together with you
  - At 9:15 in <u>CAB G 11</u>
- Be prepared!
  - Download material from VS Web page
  - Install Android Studio
  - Test phone connection and emulator
- Phone pick-up at 2.30 p.m. in CNB H 100.5

