Mobile Application Development

MTAT.03.262

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Course Purpose

• Introduce mobile application development
• Introduce mobile platforms
  – Android OS
• Introduction to location based services
• Working with sensors
• Research in mobile cloud domain

• http://courses.cs.ut.ee/2018/MAD/
Questions

• Have you ever programmed for mobile devices?

• How comfortable are you with programming?
  – Java?
    • External APIs?
  – Web programming?

• Have you heard of cloud computing?
Related Courses

• **MTAT.03.266** Mobile Application Development Project (3 ECTS)
  – Thu. 14.15 - 16.00, Ülikooli 17 - 219

• **MTAT.03.280** Mobile and Cloud Computing Seminar (3 ECTS)
  – Wed. 16.15 - 18.00, Ülikooli 17 - 218

• **MTAT.08.027** Basics of Cloud Computing (3 ECTS)
  – Spring 2019
Outline

• Mobile application development with Android
• Working with sensors and IoT
• Location based services
• Mobile Web Server
• Testing Android applications
• Multiplatform mobile application development
• Mobile cloud computing
Grading

• No written exam

• Active participation in the lectures
  – 75% attendance is compulsory – You can miss 2 of the 8 planned sessions
  – Submission of exercises performed in class (80% is compulsory) -- Let us call them course exercises
    • i.e. you can miss 2 sessions but you can miss only 1 course exercise submission

• Homework – 25%
  – 5 Home works

• Home Assignments – 75%
  – 3 Home Assignments

• You should score 50% in each subsection

• Lectures will introduce you concepts and references will be provided
  – It is expected that the student does read through additional material online
Grading policy

• Up to 1 week delay
  – Your submission will be graded for 80%

• Up to 2 week delay
  – Your submission will be graded for 50%

• After 2 weeks they will not be graded
Grading - continued

• Incentive for taking projects
  – “Mobile application development project” - **MTAT.03.266**
    • 3 more ECTS
    • 1 Man Month task / Person
    • 3-4 persons per group
    • To be delivered by middle of December 2018
Course schedule

• **Lectures:** Friday 14.15 - 16.00, J. Liivi 2-122

• **Practice sessions:** Friday 16.15 - 18.00, J. Liivi 2-122

• **Schedule of the lectures**
  
  [https://courses.cs.ut.ee/2018/MAD/fall/Main/Lectures](https://courses.cs.ut.ee/2018/MAD/fall/Main/Lectures)
Lecture 1

MOBILE APPLICATION DEVELOPMENT
Mobile IoT market set to expand 27% by 2026

By Rene Millman - July 5, 2018

NEWSBYTE The worldwide market for cellular Internet of Things (IoT) technologies will be worth $7.6 billion by 2026, according to a new forecast from analyst firm Persistence Market Research.
Popular consumer mobile applications

• Location-based services (LBSs)
  – Deliver services to users based on his location

• Mobile social networking
  – Most popular social networking platforms have apps for mobiles

• Mobile commerce
  – An extension of e-commerce

• Mobile payment
  – Near field communication (NFC) payment
Popular consumer mobile applications - continued

• Context-aware services
  – Context means person's interests, history, environment, connections, preferences etc.
  – Proactively serve up the most appropriate content, product or service

• Mobile instant messaging (MIM)
  – Skype for mobiles

• Mobile e-mail

• Mobile video
## Variety of languages and platforms to choose from

<table>
<thead>
<tr>
<th>Programming language</th>
<th>Debuggers available</th>
<th>Emulator available</th>
<th>Integrated development environment available</th>
<th>Cross-platform deployment</th>
<th>Installer packaging options</th>
<th>Development tool cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe AIR</td>
<td>Yes</td>
<td>Yes</td>
<td>Flash Builder, Flash Professional</td>
<td>iOS (iPhone, iPad, iPod touch), Android, BlackBerry</td>
<td>The native distribution format of each platform</td>
<td>Flash Builder, Flash Professional - Commercial licenses available Adobe AIR SDK (command line tool)</td>
</tr>
<tr>
<td>Airplay SDK (Now Marmalade)</td>
<td>Yes</td>
<td>Yes</td>
<td>Visual Studio, XCode</td>
<td>All native: Android, BlackBerry, BREW, iOS (iPhone), Maemo, Palm/webOS, Samsung bada, Symbian, Windows Mobile 6.x and desktop, OSX</td>
<td>The native distribution format of each platform</td>
<td>Commercial licenses available</td>
</tr>
<tr>
<td>alcheMo</td>
<td>Yes</td>
<td>Yes</td>
<td>Emulator is available in corresponding IDE</td>
<td>Visual Studio, Eclipse, XCode</td>
<td>Android, BREW, iOS (iPhone), Windows Mobile</td>
<td>The native distribution format of each platform</td>
</tr>
<tr>
<td>Android</td>
<td>Yes</td>
<td>Yes</td>
<td>Eclipse, Project Kanai Android plugin for NetBeans</td>
<td>Android only, because of Dalvik VM, March 2009</td>
<td>apk</td>
<td>Free</td>
</tr>
<tr>
<td>Appcelerator</td>
<td>Yes</td>
<td>No</td>
<td>Satoshi Srinama, internal SDK</td>
<td>Android, iPhone, BlackBerry, Blackberry, planned</td>
<td>The native distribution format of each platform</td>
<td>Apache 2.0 License, commercial licenses</td>
</tr>
</tbody>
</table>
Popular platforms – Market share

http://en.wikipedia.org/wiki/Mobile_operating_system
The devices we use
MOBILE APPLICATION DEVELOPMENT WITH ANDROID