



UNIVERSITY OF TARTU

INSTITUTE OF COMPUTER SCIENCE



Mobile Application Development

MTAT.03.262

Satish Srirama

satish.srirama@ut.ee

Mobile
Cloud Lab

Course Purpose

- Introduce mobile application development
- Introduce multiple mobile platforms
 - Android OS
- Introduction to location based services
- Working with sensors
- Research in mobile cloud domain
- <http://courses.cs.ut.ee/2015/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)
 - Tue. 10.15 - 12.00, J. Liivi 2 - 512
- **MTAT.03.280** Mobile and Cloud Computing Seminar (3 ECTS)
 - Wed. 8.15 - 10.00, J. Liivi 2 - 512
- **MTAT.08.027** Basics of Cloud Computing (3 ECTS)
 - Spring 2016

Outline

- Mobile application development with Android
- Location Based services
- Apple iOS
- Sensor development with Arduino
- Mobile Cloud research

Grading

- No written exam
- Active participation in the lectures (Max 5%)
 - 80% attendance is compulsory
 - Submission of exercises performed in class (80% is compulsory) -- Let us call them **course exercises**
- Homework – 20%
 - 4 Home works
- Home Assignments – 75%
 - 3 Home Assignments
- You should score 50% in each subsection

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 2015

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/2015/MAD/fall/Main/Lectures>

Lecture 1

MOBILE APPLICATION DEVELOPMENT

The Seven Mass Media

First Mass Media Channel - **Print** from the 1500s

Second Mass Media Channel - **Recordings** from 1900s

Third Mass Media Channel - **Cinema** from 1910s

Fourth Mass Media Channel - **Radio** from 1920s

Fifth Mass Media Channel - **TV** from 1950s

Sixth Mass Media Channel - **Internet** from 1990s

Seventh Mass Media Channel - **Mobile** from 2000s

[Tomi T Ahonen]

Rank	Country or region	Number of mobile phones	Population	Phones per 100 citizens	Data evaluation date
-	World	6,800,000,000+	7,012,000,000 ^[1]	87	2013 ^{[2][3]}
01	China	1,206,553,000 ^[4]	1,349,585,838 ^[5]	89.2	September 2013 ^[4]
02	India	867,800,000	1,220,800,359 ^[6]	70.72	30 April 2013 ^[7]
03	United States	327,577,529	310,866,000 ^[8]	103.9	June 2013 ^[9]
04	Brazil	268,440,423	192,379,287 ^[10]	135.4	August 2013 ^[11]
05	Russia	256,116,000	142,905,200 ^[10]	155.5	July 2013 ^[12]
06	Indonesia	236,800,000	237,556,363	99.68	September 2013 ^[10]
07	Pakistan	129,583,076	178,854,781 ^[13]	72.45	September 2013 ^[14]
08	Japan	121,246,700	127,628,095	95.1	June 2013 ^[15]
09	Nigeria	114,000,000	165,200,000	69	May 2013 ^[16]
10	Bangladesh	110,675,000	165,039,000	73.8	September 2013 ^[17]

Report: Mobile cloud to grow beyond \$11 billion in 2018

Written by CopperEgg // July 12, 2012 // No Comment // Cloud Performance



Maribel Lopez,
I track how mobile
[+ Follow](#) (87)

The proliferation of smartphones, tablets and other mobile devices is contributing to change in the private sector, as businesses continue to leverage these gadgets in an attempt to enhance efficiency and potentially gain a competitive advantage. According to a new report by Global Industry Analysts, the evolution of mobility is also changing the cloud computing landscape, pushing the mobile cloud market to generate more than \$11 billion in revenue by 2018.

TECH | 4/18/2012 @ 7:43AM | 18,825 views

Verizon's Stratton: The Future Of IT Is Mobile And Cloud

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

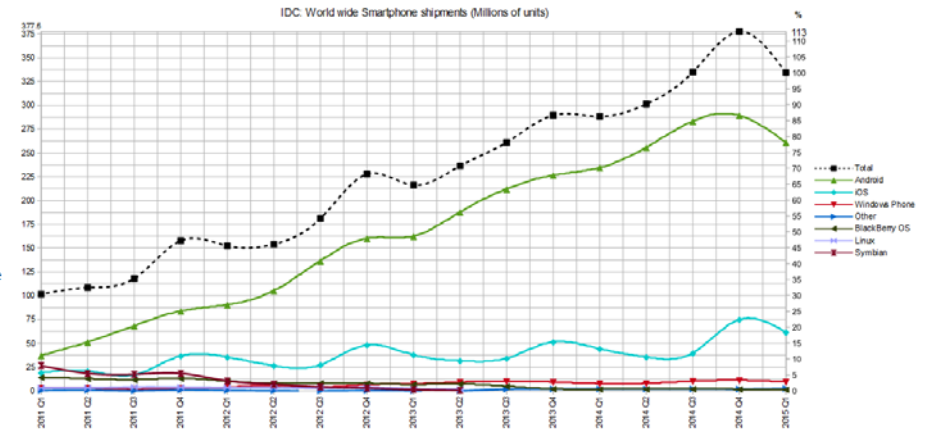
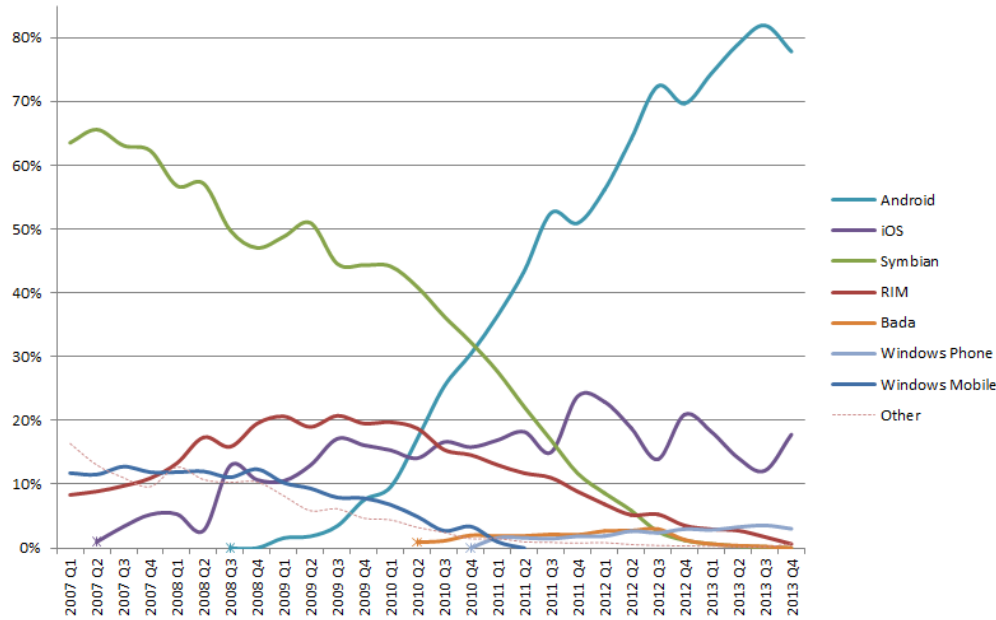
	Programming language	Debuggers available	Emulator available	Integrated development environment available	Cross-platform deployment	Installer packaging options	Development tool cost
Adobe AIR	Action Script, HTML, CSS, JavaScript	Yes	Yes	Flash Builder, Flash Professional	iOS (iPhone, iPad, iPod touch), Android, BlackBerry	The native distribution format of each platform	Flash Builder, Flash Professional - Commercial licenses available Adobe AIR SDK (command line tool) - Free
Airplay SDK (Now Marmalade)	C, C++	Yes	Yes	Visual Studio, XCode	All native: Android, BlackBerry, BREW, iOS (iPhone), Maemo, Palm/webOS, Samsung bada, Symbian, Windows Mobile 6.x and desktop, OSX	The native distribution format of each platform	Commercial licenses available
alcheMo	Java	Debugger integrated in Visual Studio, Eclipse or XCode	Emulator is available in corresponding IDE	Visual Studio, Eclipse, XCode	Android, BREW, iOS (iPhone), Windows Mobile	The native distribution format of each platform	Commercial licenses available
Android	Java but portions of code can be in C, C++	Debugger integrated in Eclipse, standalone debugging monitor available	Yes	Eclipse, Project Kenai Android plugin for NetBeans	Android only, because of Dalvik VM, March 2009	apk	Free
Appcelerator	JavaScript	Debugger integrated in Visual Studio, Titanium Studio,	Emulator is available using	Satish Srirama Internal SDK	Android, iPhone, BlackBerry planned	The native distribution format of each platform	Apache 2.0 license, commercial licenses

http://en.wikipedia.org/wiki/Mobile_application_development

http://en.wikipedia.org/wiki/Mobile_operating_system

Popular platforms – Market share

World-Wide Smartphone Sales (%)



http://en.wikipedia.org/wiki/Mobile_operating_system

The devices we use

Mobile
Cloud Lab

<http://mc.cs.ut.ee>

 **tiigriülikool**
Programm IKT toetuseks kõrghariduses



MOBILE APPLICATION DEVELOPMENT WITH ANDROID