Introduction to Android

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CMPT166
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Quiz 5: 10min, 20pts

■ Describe an example of a component   **[8]**
architecture (need not be computer-related).
Describe some of the components, as well as an
application that could be assembled from them.

■ Contrast TCP vs. UDP.   Describe example
applications when you might use each one.   **[6]**

■ Pseudocode the steps to setup in Java
a TCP server and a TCP client.   **[6]**

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Quiz 5: answers #1-2

- Describe an example of a component architecture (need not be computer-related). Describe some of the components, as well as an application that could be assembled from them.   [8]
  - Plug-ins for Firefox, Eclipse, Photoshop, etc.
  - JavaBeans, .NET, (Android)
- Contrast TCP vs. UDP.   Describe example applications when you might use each one.   [6]
  - TCP: session (phone): HTTP, crypted, etc.
  - UDP: packet (mail): may drop, re-order, or duplicate: live streaming media, stock ticker
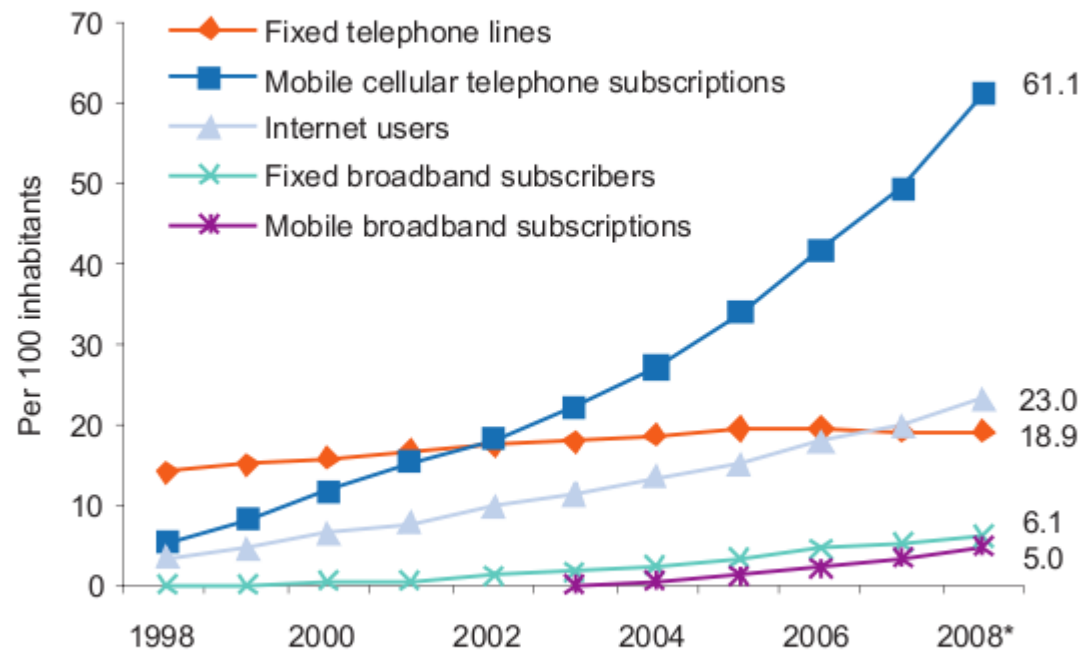
Quiz 5: answers #3

- Pseudocode the steps to setup in Java a TCP server and a TCP client.   [6]
- Server:
  - Create new ServerSocket (reserve port num)
  - Bind (start listening): .accept()
  - Setup streams: .get(In/Out)putStream()
- Client:
  - Create new Socket (call server)
  - Setup streams: .get(In/Out)putStream()

Mobile phone penetration

- 61% market penetration worldwide
- Mobile broadband also on the rise
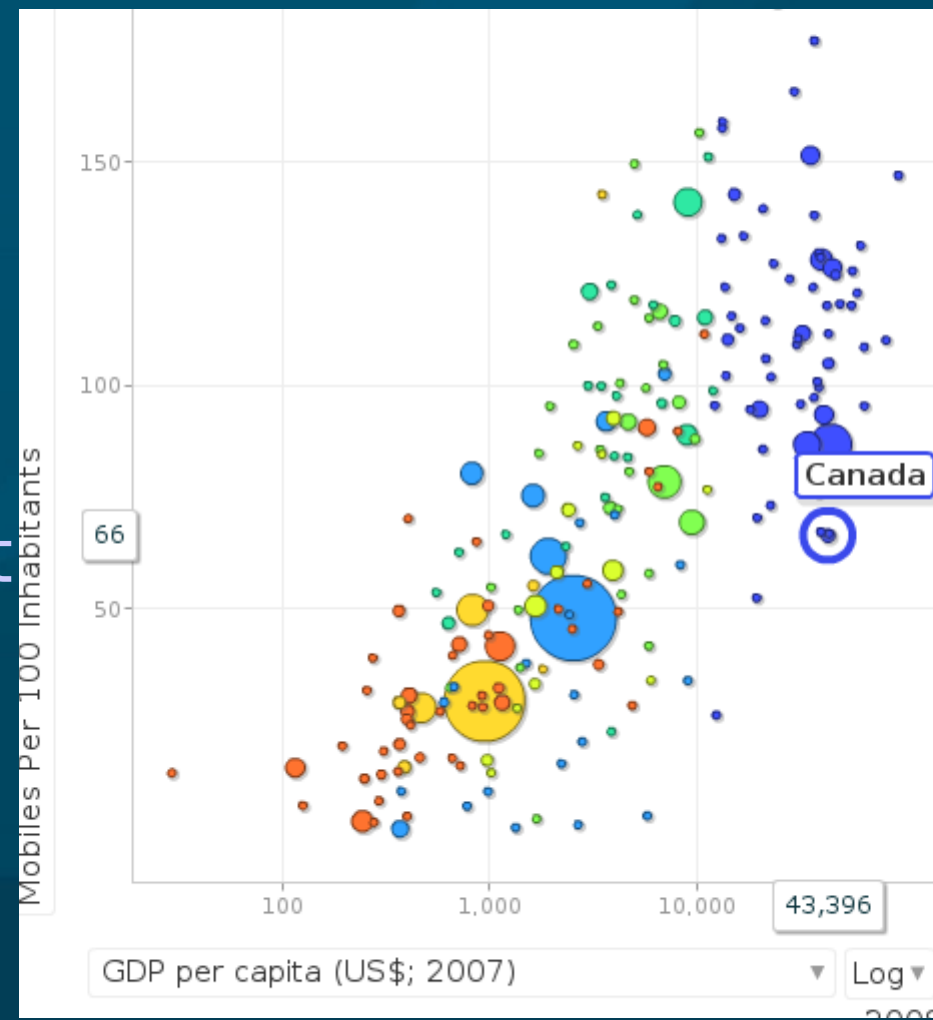

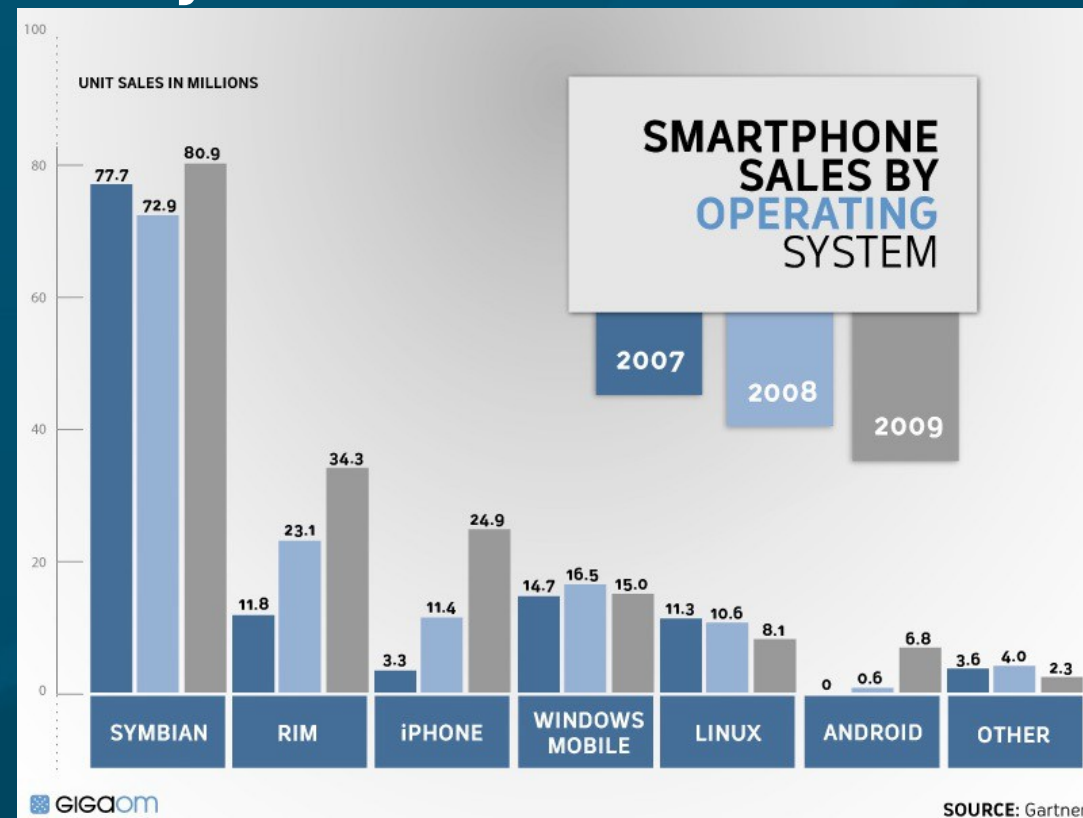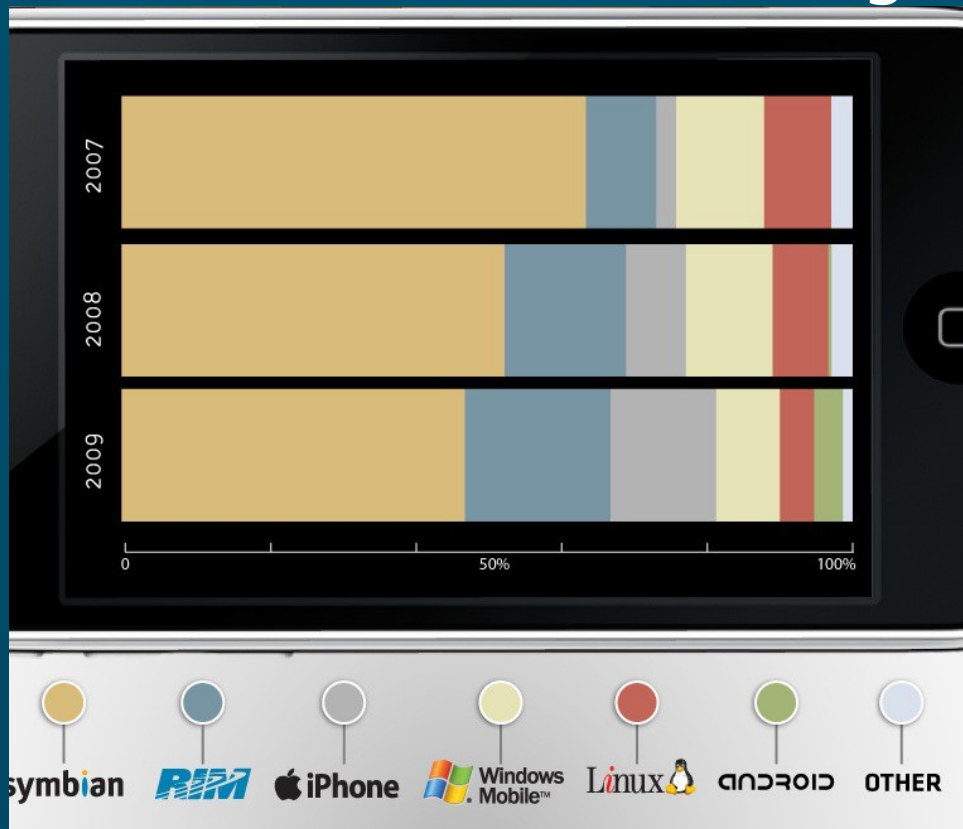Chart 2.1: Global ICT developments, 1998-2008

Source: ITU

Mobile phones by country

- Mobile phones per 100 inhabitants, by country
- X-axis is GDP; disk size is population
- Data from ITU, 1998-2008
- Visualization by Richard Heeks at Centre for Development Informatics, U. Man., UK
- Using Google Motion Chart
- Link

CMPT166: Android
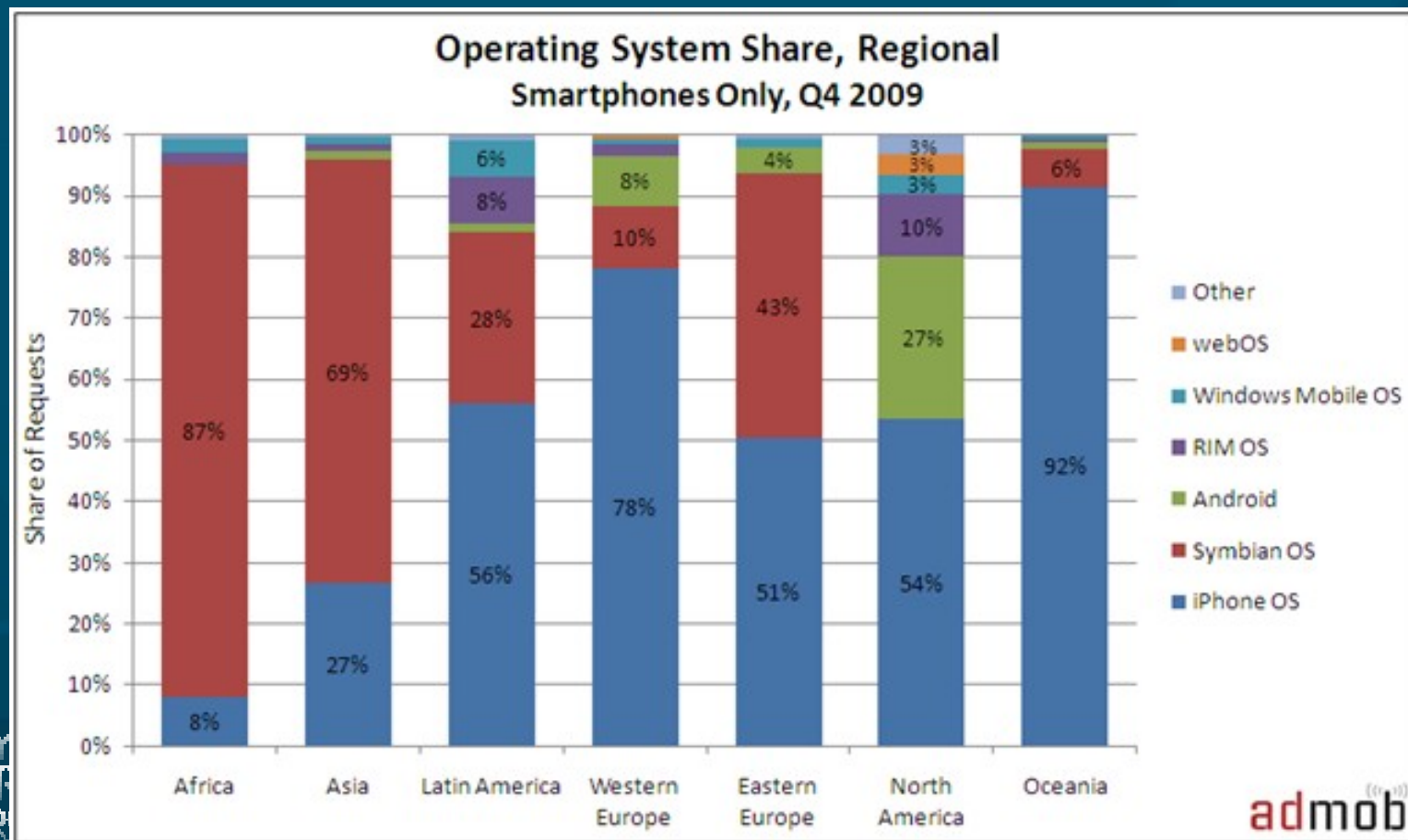
Smartphone OS market share

- Symbian (Nokia) is still biggest by far, but Android is rising quickly

Source: Gartner via GigaOM and ColumnFive
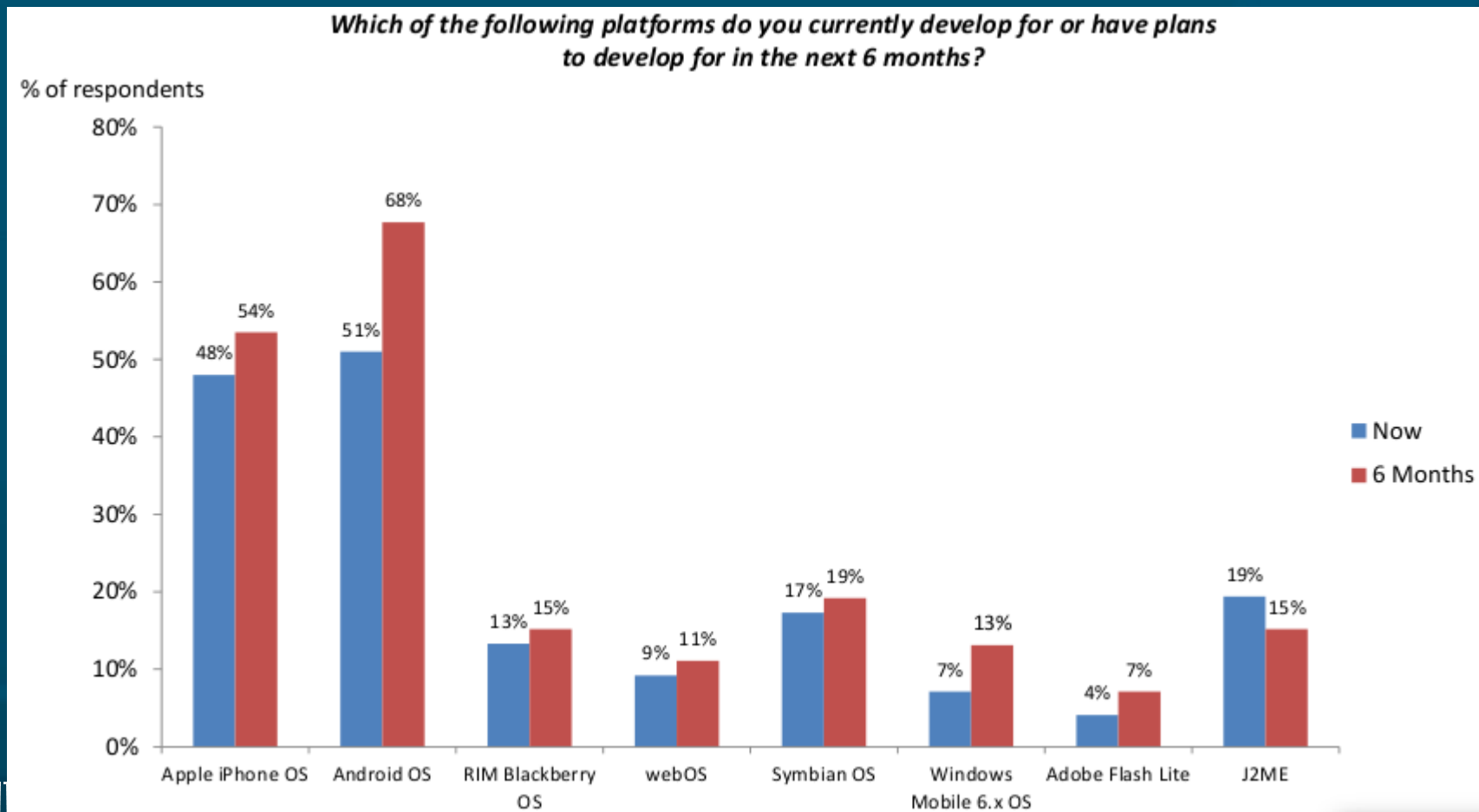
Regional effects: mobile OS

- **Android** and **iPhone** have significantly larger market share in **N.America**
- But data is from requests to **mobile advertising**

Operating System Share, Regional
Smartphones Only, Q4 2009

Developers of mobile apps

- Increase in cross-platform development
- Source: AdMob (mobile advertising)

Which of the following platforms do you currently develop for or have plans to develop for in the next 6 months?

% of respondents

Legend: ■ Now ■ 6 Months

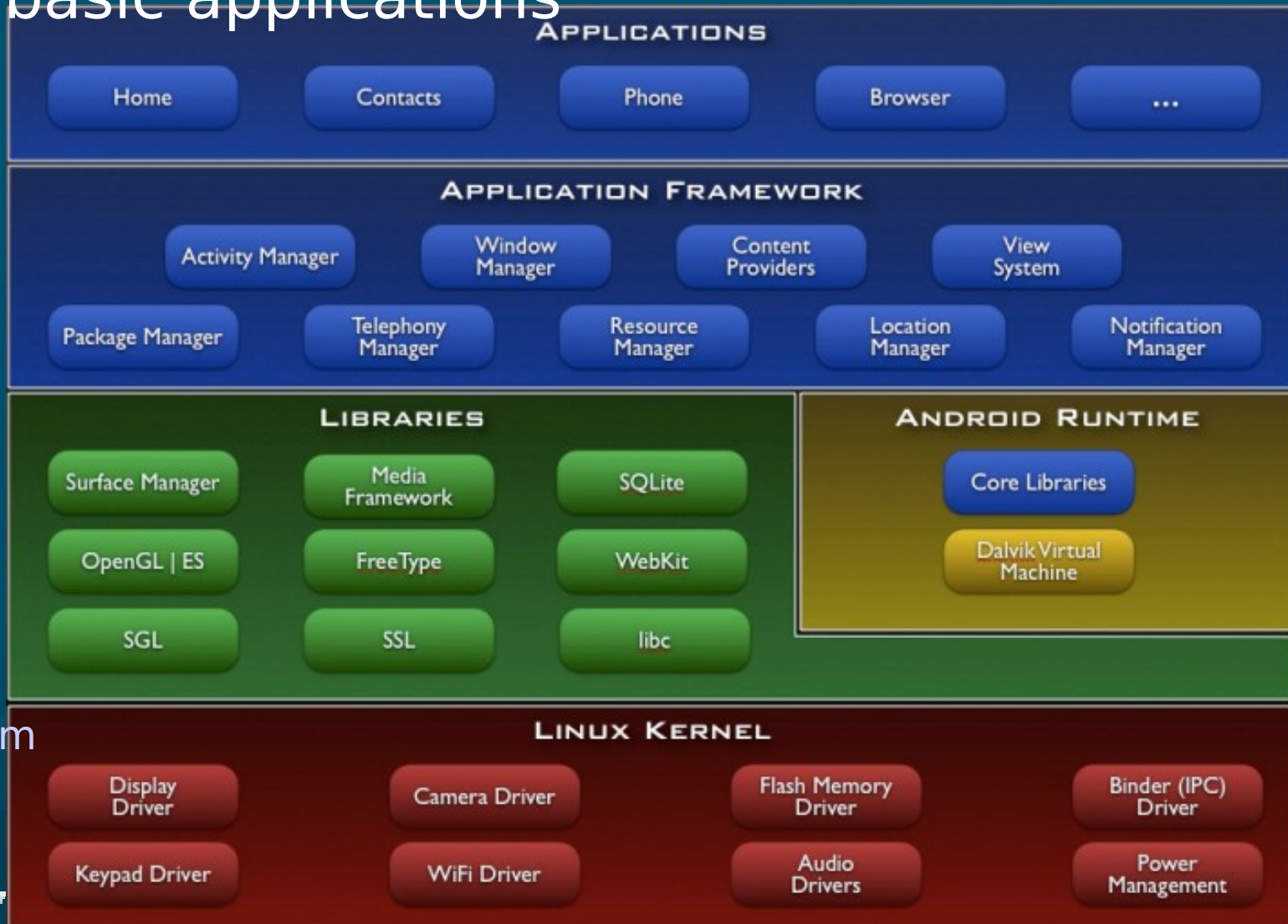| Platform	Now	6 Months
Apple iPhone OS	48%	54%
Android OS	51%	68%
RIM Blackberry OS	13%	15%
webOS	9%	11%
Symbian OS	17%	19%
Windows Mobile 6.x OS	7%	13%
Adobe Flash Lite	4%	7%
J2ME	19%	15%

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Android OS

- Open-source mobile OS (mostly Apache licence)
- Developed by Google + Open Handset Alliance
- Linux kernel
- Most apps written in Java, using Android SDK
- Apps run on Dalvik: custom Java VM
- Android Open Source Project: fully open-source
- "Google Experience":
  adds closed-source apps (Maps, Gmail, etc.)
- Hardware drivers are also often closed-source

Android architecture

- Android is: OS, core libraries, "middleware", plus basic applications

Source: d.android.com

What can you do with Android?

- Component architecture: reuse parts of apps
- Integrate web browser into your app (WebKit)
- Audio, video, images (MPEG4, MP3, PNG, etc.)
- 2D and 3D graphics (OpenGL-ES 1.0/1.1)
- SQLite on-board database
- Telephony (calls, SMS, etc.)
- EDGE/3G, WiFi data, Bluetooth
- Camera, GPS, compass, accelerometer, etc.
- Develop in Eclipse, debug on phone

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Getting started with Android

- Eclipse IDE for Java
- Android SDK starter package
- ADT plugin for Eclipse
- From plugin, add Android 1.6 platform
  - Could also develop for 1.5, 2.0, 2.1, etc.
  - Setup an emulator instance(virtual phone)
- Try the "Hello World!" tutorial
  - Run/debug on the emulator
  - Run/debug on actual phone via USB