Introduction to Android development
Manifesto Digital

We’re an award winning London based digital agency that loves ideas design and technology

We aim to make people’s lives better, easier, fairer, more interesting or fun with great strategy, engaging campaigns and rock solid technology.

Introduction to Android development
About us

Simon Bates

• COO and co-founder, Manifesto Digital.
• University of Manchester Institute of Science and Technology Beng Software Engineering.
• 17 years IT experience, working mainly in Web-based technologies and frameworks
• Wrote first Java application in 1997

Introduction to Android development
About us

David Thompson

- Lead Android developer, Manifesto Digital.
- University of Seville, Technical engineering in administrative information systems
- 4 years’ professional Java and mobile application development experience

Mobile iOS and Android development: Hello World!
Android: The Basics

• Based on Linux kernel
• First launched in 2007
• API is Java
• ByteCode converted to Dalvik VM Bytecode (replaced with ART in Android 5.0 “Lollipop”)
• Can write native code in C

Introduction to Android Development
Android: Pros

- Market Share (80%)
- Can develop on any platform
- Eclipse-based IDE can be used – now Android Studio
- More open e.g. call history available to all apps, sharing content, notifications between apps
Android: Pros

- Install apps from any source e.g. Web, storage card etc
- Easy to write hooks and overrides
- Apps can be self-signed
- One-time $25 to publish to Google Play
Android: Cons

- Fragmentation
- Updates can come late due to manufacturers with own customisations
- Often big changes between versions
- Often more manual than iOS
- Graphics can be slower – some improvements in Lollipop

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Technology choices

HTML5:
- SEO
- ease of update
- independence

Hybrid:
- multi-platform support
- lower build costs
- discoverability
- push messages
- enterprise control
- monetization

Native:
- personalisation
- offline use
- device sensor features
- background processing
- performance
- design & UX potential

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Mobile OS trends

Worldwide Smartphone OS Market Share
(Share in Unit Shipments)

Source: IDC, Aug 2015

Mobile iOS and Android development
Android fragmentation

11,688 distinct devices downloaded one app

OpenSignal.com

Mobile iOS and Android development
Android fragmentation

OpenSignal.com

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Installation

• Android Studio IDE
• Android SDK tools
• Android 6.0 (Marshmallow) Platform
• Android 6.0 emulator system image with Google APIs

Android Studio

- Based on IntelliJ Idea
- Replacing Eclipse + ADT as supported IDE
## Shortcuts

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Windows/Linux</th>
<th>Mac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find declaration</td>
<td>Ctrl + Click</td>
<td>Cmd + Click</td>
</tr>
<tr>
<td>Search everywhere</td>
<td>Shift, Shift</td>
<td>Shift, Shift</td>
</tr>
<tr>
<td>Code completion</td>
<td>Ctrl + Space</td>
<td>Ctrl + Space</td>
</tr>
<tr>
<td>Generate</td>
<td>Alt+insert</td>
<td>Cmd + N</td>
</tr>
<tr>
<td>Search</td>
<td>Ctrl + F</td>
<td>Cmd + F</td>
</tr>
</tbody>
</table>

Introduction to Android Development
New Project

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Project Structure

- Manifests
- Java
- Res
  - Drawable
  - Layout
  - Menu
  - Mipmap
  - Values
- Gradle

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Interface

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SDK Manager

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AVD Manager

- ARM
- x86 (Intel HAXM)
Virtual Device

- Better to use your own device
- ARM Virtual Device is slow
- Intel x86 much faster
- Genymotion
Components

Application/Interface Components

- Activity
- Broadcast Receiver
- Content Provider
- Service
- Fragment
- Intent
- Views and layout manager

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Lifecycle

- `onCreate`
- `onStart`
- `onResume`
- `onPause`
- `onRestart`
- `onStop`
- `onDestroy`
Lifecycle

• When the Activity first time loads the events are called as below:
  - onCreate();
  - onStart();
  - onResume();

• When you click on Phone button the Activity goes to the background and the below events are called:
  - onPause();
  - onStop();

• Exit the phone dialer and the below events will be called:
  - onRestart();
  - onStart();
  - onResume();

• When you click the back button OR try to finish() the activity the events are called as below:
  - onPause();
  - onStop();
  - onDestroy();
Introduction to Android development
Thanks!

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