Chapter 3 - Introduction to Android

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Chapter Objective

- Getting started with Android OS.

Introduction

- Android is the most popular (over 80% worldwide, 82% in Vietnam) operating system on smart devices.
- About 300,000 Android smartphones are sold every 3 months (6 times more than iPhone).
- Android has a set of user-space applications and frameworks, which use Java programming language as the main development tools.
- Android OS appears in many types of devices, such as phones, tablets, watches, TVs, cars, glasses, etc.

Hardware

- Platform: Intel x86/x64, ARM 32/64 bits.
- Memory: 128 MB to 4 GB (for the RAM), and supports another flash-based storage.
- CPU: 1-core to 8-core, with CPI up to 2.7 GHz
- Screen: is a touchscreen, varies from small size (2 inches) to very large size (100 inches).
- Sensors: there are a lot of sensors on Android device, such as GPS, compass, thermo, etc.
- Others: GSM, WiFi, Bluetooth, Camera, etc.

Why we learn Android

- Because Android is popular, cheap, easy to use, and awesome.
- We can find a lot of jobs with Android Development.
- Android separates UI designs with functionalities, and apply asynchronous programming.
- and many more.

Why we don't learn iOS

- Because iOS programming requires development environment configuration (e.g. MacBook, Hackintosh Virtual Machine)
- An iOS device (iPhone, iPad), which is expensive, is required.
- In typical case, if we don't have iPhone or iPad, and also cannot install Hackintosh, the app will run very slowly.

Prerequisite Knowledge

- Object-Oriented Programming
  - Package: a set of related classes and interfaces that share the same purposes.
  - Inheritance: subclass extends super class.
  - Method overriding: the implementation in the subclass overrides (replaces) the implementation in the superclass.
  - Interface: to enforce certain properties on an object (class).
- Java Programming
  - Casting: turn one Object type to another Object type.
  - Exception handling: deal with errors.
- Networking
  - Client - server model.
  - HTTP: HyperText Transfer Protocol.
  - API: Application Programming Interface.
- Data representation
  - XML: eXtensible Markup Language.
  - JSON: JavaScript Object Notation.

What is needed?

- A laptop with at least 4GB RAM and dual core memory.
- An Android phone with USB cable (optional).
- IDE: Android Studio.
- Version Control System: git.