CS 528 Mobile and Ubiquitous Computing
HW 0 Slides: Introduction to Android

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Tutorials 1-5
Overview
Setting up your Project

- **Tutorials 1 & 2 (Optional):** Installing Java, Android Studio on your own machine

- **Tutorial 3:** Setting up your project
  - How to set up a new Android Project, add new Activity (App screen)

- **Tutorial 4:** Running a Simple App
  - How to select, run app on a virtual device (AVD)

- **Tutorial 5:** Tour of Android Studio Interface
  - Intro to Android Studio menus, toolbars and Drag-and-drop widget palette
Tutorial 3
Setting up your Project

- Tutorial 3: Android App Development for Beginners - 3
  - Setting up your project by Bucky Roberts (thenewboston)
    - [https://www.youtube.com/watch?v=r4olez0sfvY](https://www.youtube.com/watch?v=r4olez0sfvY)

- Main steps to set up Android Project
  - Start a new Android Project
  - Configure new Android Project (select app name, domain name, etc)
  - Set platform and minimum SDK
  - Add an Activity
Start a new Android Project
Add an Activity (Blank Activity is Simplest)
Running a Simple App

  - https://www.youtube.com/watch?v=qKRWC3Q8wRw

- Main steps
  - Run Android Studio
  - Fix any remaining issues
  - Run AVD, select virtual device
  - Run App on selected virtual device
Open Android Studio
Run AVD Manager
How to Run the App?

Click here to run the app
Run App on Virtual Device (Phone)
Tutorial 5
Tour of Android Studio Interface

- Tutorial 5: Tour of Android Studio Interface  [6:01 mins]
  - https://www.youtube.com/watch?v=-pdTqBq2TFQ

- Quick overview of main sections of Android Studio
  - Windows menu bar
  - Android tool bar
  - Project window
  - Editor Window
  - Palette for Drag-and-Drop Design of Android buttons

- More detailed coverage of specific UI aspects later
Tool Bar: Shortcuts to Frequently used Android-specific Functions (E.g. One-click access to SDK manager)
Editor Window (Allows editing of current file we are working on)
Clicking on Editor Window Tabs switches between project files
Project Window (Shows project files, packages, etc)
Palette of Drag-and-Drop Elements for Designing Interface (Layout, widgets, etc)
Parameters of Drag-and-Drop Elements for Designing Interface (e.g. colors, dimensions of widgets, etc)
Tutorial 8
Basic Overview of an App

- Tutorial 8: Basic Overview of an App [11:36 mins]
  - [https://www.youtube.com/watch?v=9l1lfWAiHPg](https://www.youtube.com/watch?v=9l1lfWAiHPg)

- Main topics
  - Introduces main files of Android App
    - Activity_main.xml
    - MainActivity.java
    - AndroidManifest.xml
  - How to work with these files within Android Studio
  - Editing files using either drag-and-drop interface or XML
  - Flow of basic app
Editting Android

- Activity_my.xml is XML file specifying screen layout, widgets
- Can edit XML directly or drag and drop

App running on Emulator (can edit Text, drag and drop)

Activity_my.xml (can edit directly)
Activity_main.xml

- **Widgets**: elements that can be dragged onto activity (screen)
- **Design View**: Design app screen using Drag-and-drop widgets
Activity_main.xml: Text View

- **Text view:** Design screen by editing XML file directly
- **Note:** dragging and dropping widgets auto-generates corresponding XML
MainActivity.java

- Java code, defines actions, handles interaction/put taken (intelligence)
  - E.g. What app will do when button/screen clicked

```java
package com.thenewboston.mypackage;

import android.support.v7.app.ActionBarActivity;
import android.os.Bundle;
import android.view.MenuItem;

public class MainActivity extends ActionBarActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here.
        int id = item.getItemId();
        return id == R.id.action_settings;
    }
}
```
AndroidManifest.xml

- App’s starting point (a bit like main() in C)
Android UI Tour
Home Screen

- First screen, includes **favorites** tray (e.g. phone, mail, messaging, web, etc)
All Apps Screen

- Accessed by touching **all apps button** in favorites tray
- Can swipe through multiple app screens, customizable
Recent Apps Screen

- Accessed by touching **recent apps button**
- Shows recently used apps, touch app to switch to it
Status Bar and Notification Screen

- **Status:** time, battery, cell signal strength, bluetooth enabled, etc
- **Notification:** wifi, mail, bewell, voicemail, usb active, music, etc
References

- Android App Development for Beginners videos by Bucky Roberts (thenewboston)
- Ask A Dev, Android Wear: What Developers Need to Know, https://www.youtube.com/watch?v=zTS2NZpLyQg
- Busy Coder’s guide to Android version 4.4
- CS 65/165 slides, Dartmouth College, Spring 2014
- CS 371M slides, U of Texas Austin, Spring 2014