



CS196

Android

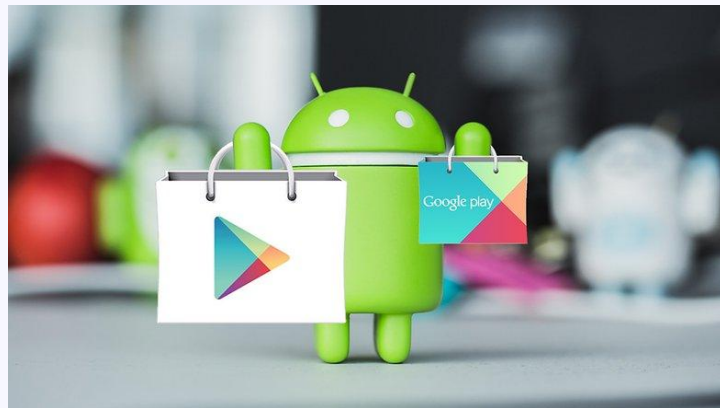
What is Android?

- Most popular mobile operating system (71% of Market)
 - Galaxy S7, Nexus 6P, Oneplus 3, etc.
 - Growing rapidly
- Created by Google back in 2008
- Android is now everywhere
 - Cars, TVs, Watches, etc.
- Latest version is 7.0 Nougat



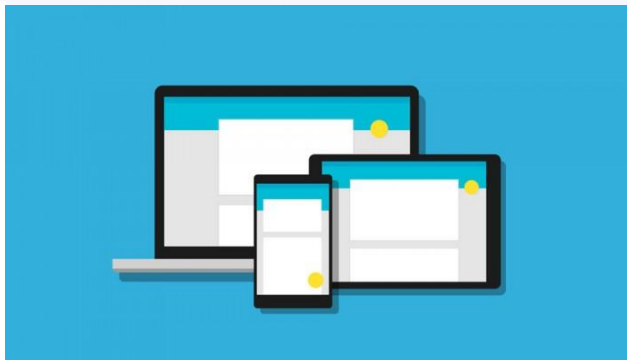
Android Apps

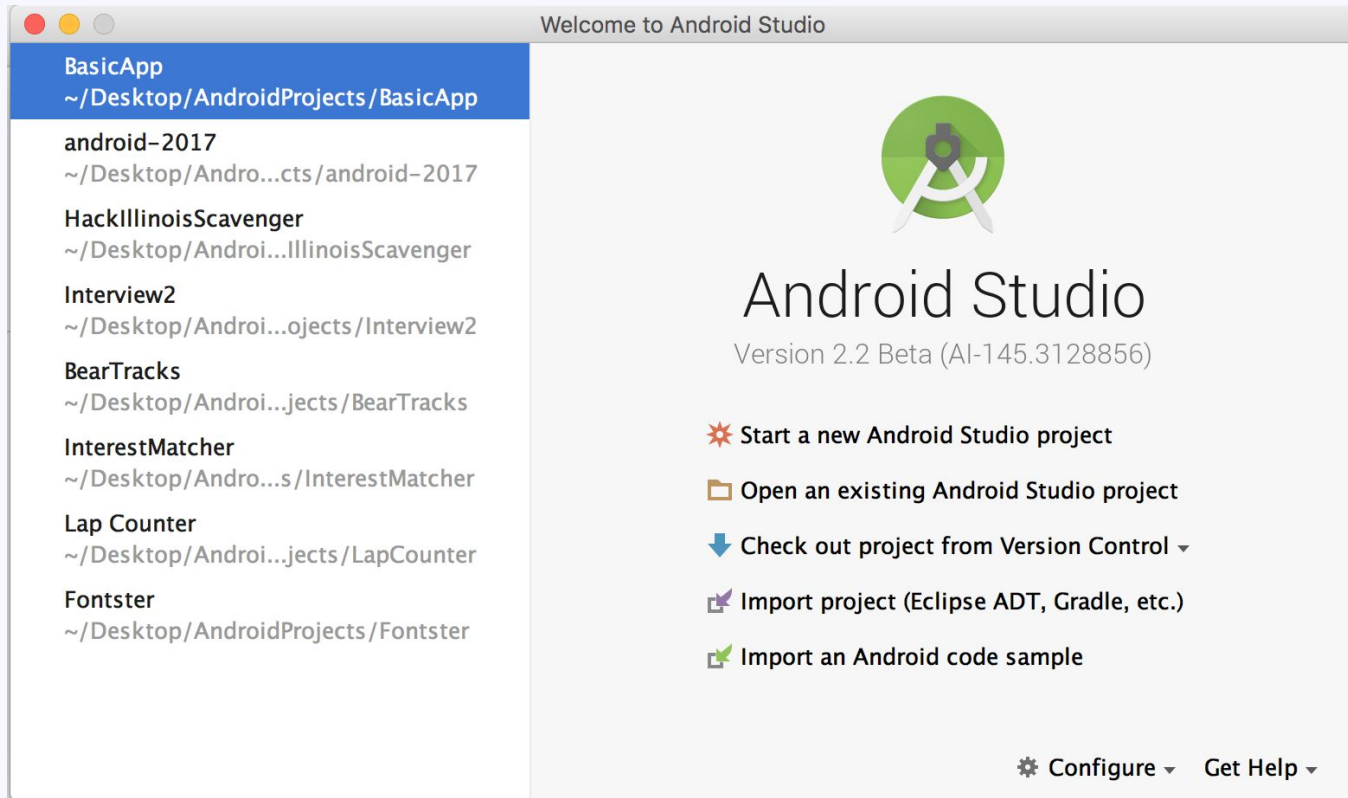
- Play Store
- 2.2 million apps on the Play Store
 - Facebook, Gmail, Snapchat, etc.
- Primarily written in Java
 - UI is written in XML
- Pre-Compiled since Android 5.0



Hackerspace Objective

- Teach you how to make an Android app from scratch
 - Android Studio
 - Material Design
 - Good practices
 - Popular Android libraries
 - How to upload to Play Store
- Clean coding style
- Java
 - Various data structures in Java
 - Strings, ArrayList
 - HashMap, HashSet





BasicApp

Android Project Files Problems

activity_main.xml x MainActivity.java x

Project

- app
 - manifests
 - java
 - cs196.basicapp
 - MainActivity
 - cs196.basicapp (androidTest)
 - cs196.basicapp (test)
 - res
 - drawable
 - layout
 - activity_main.xml
 - mipmap
 - values
 - Gradle Scripts

Z: Structure

Captures

Build Variants

2: Favorites

```
package cs196.basicapp;

import ...

public class MainActivity extends AppCompatActivity {

    boolean flag = false;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final TextView testText = (TextView) findViewById(R.id.testTextView);

        Button testButton = (Button) findViewById(R.id.testButton);
        testButton.setOnClickListener((v) -> {
            String newText = flag ? "196 is Awesome" : "Hello World!";
            testText.setText(newText);
            flag = !flag;
        });
    }
}
```

TODO Android Monitor Terminal

Event Log Gradle Console

31:1 LF UTF-8 Context: <no context>

activity_main.xml x MainActivity.java x

LinearLayout | Button

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="cs196.basicapp.MainActivity">

    <TextView
        android:id="@+id/testTextView"
        android:layout_gravity="center_horizontal"
        android:layout_marginTop="20dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textSize="30sp"/>

    <Button
        android:id="@+id/testButton"
        android:text="Press ME!"
        android:layout_marginTop="10dp"
        android:layout_gravity="center_horizontal"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />

</LinearLayout>
```

Design Text

activity_main.xml x MainActivity.java x

Palette

- Widgets
 - TextView
 - Button
 - ToggleButton
 - CheckBox
 - RadioButton
 - CheckedTextView
 - Spinner
 - ProgressBar (Large)
 - ProgressBar
 - ProgressBar (Small)
 - ProgressBar (Horizontal)
 - SeekBar
 - SeekBar (Discrete)
 - QuickContactBadge
 - RatingBar
 - Switch
 - Space
- Text Fields (EditText)
 - Plain Text
 - Password
 - Password (Numeric)
 - E-mail
 - Phone
 - Postal Address
 - Multiline Text
 - Time
 - Date
 - Number
 - Number (Signed)
 - Number (Decimal)

Component Tree

- activity_main (LinearLayout)
 - testTextView (TextView)
 - testButton (Button)

Design Text



