Android Development Workshop

Hosted by Austin White and the Computer Science Club

Getting Started

What you'll need

- Android Studio

Optional

- Android Device plugged into your Computer

Getting Started

Starting a new project

- Application name
- Domain
  - Can just use the app's name with a period in it (ex + "Stone.Breaker")
- You can include support for Kotlin and C++
- Set a Target API, default is 14, which means it can run on most Android devices
  - You set the target API higher if you only want your app to run on newer devices
- Start off with an empty activity

What we'll go over

- Android Manifest
- Java Classes
- Assets
- Gradle Scripts
  - Build gradle (app and project)
  - Settings gradle
- APIs
- Generate Signed APK
- Publishing to Google Play

What is an XML file?

- XML is a file extension for an Extensible Markup Language (XML) file format used to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere using standard ASCII text. XML is similar to HTML
- Android Studio uses Drag and Drop, so you don’t need to learn much

Android Manifest

- XML File
- Heart of your app
- Here you'll manage permissions, app icon, app label, as well as hardware and software features
- The Android build tools use this to determine the location of code entities when building your project.

Java Classes

- Android Java is Object Oriented
- You'll need to make sure you reference objects from your class' XML file
  - To connect to an object use "findViewbByID(R.id.*yourObject*);"
  - To connect to your XML file use "setContentView(R.layout.*yourLayoutHere*);"
- Everything you'll need to start will be auto-generated, you'll just need to create an XML file first
- You can use multiple Java classes for one XML file

Java Classes (Cont.)

- To go between Java classes use this:

```
Button simpleButton = findViewById(R.id.yourButton); //Declare Button

simpleButton.setOnClickListenernew View.OnClickListener() {

  @Override

  public void onClick(View view) {

  Intent intent = new Intent(first.this, second.class);

  startActivity(intent);

  finish();

}
```

Assets

- This is in your **res** file
- By default you will have Drawable, Layout, Mipmap, and Values
- Drawable usually contains auto generated XML files
- Layout is where you store XML Layouts
- Mipmap is where image assets are stored, this is where you'll find your app's icon and other imported images
    - To bring in a new image asset, right click "app" and go New > Image Asset, from here you can choose a file path for whatever image you want to import, this is where you import your app icon

Gradle Scripts

- There are two
  - Project
  - app
- Project is a build file where you can add configuration options common to all sub-projects/modules.
    - You most likely won't need to do much with this
- App is where you
  - Declare SDK tools, target SDK, API keys, dependencies, plug-ins, and so on.
  - If there is an issue, Android Studio will highlight it for you, and tell you how to fix it

APIs

- I usually find them on GitHub, since they'll usually have complete working code
- You may need an API Key
  - You can find those in your Google cloud account (Make one if you wanna implement Google APIs)
  - To implement an API Key: buildConfigField "String", "API_KEY", '"(API Key Goes here)"
  - That'll go in your app build gradle, underneath "defaultConfig"

Pushing to the Google Play Store

- Generate Signed APK file
  - Android Studio will guide you through that
  - Make sure to have both Signature versions, or it won't upload
  - Wait for the build to finish
- Go to the Google Play Console
- It'll cost $25 for a Android Dev License
  - One time payment, publish as many apps as you want

“Hello World” in Android

If you have Android Studio open on your laptop, follow along:

- We’ll be writing a quick Android app that will output “Hello World” after pressing a button

GitHub

https://github.com/endlessrequiem

- Open Source Android Apps Available
- Feel free to build off my apps
  - Or take features to implement into your own apps
- Please don't re-publish on Google Play
- Also the "Hello World" Android App source code is available if you were unable to copy it down today
- This presentation will also be available
- Resume Workshop on Wednesday 1-2pm in DBH 288 (CS Lab)