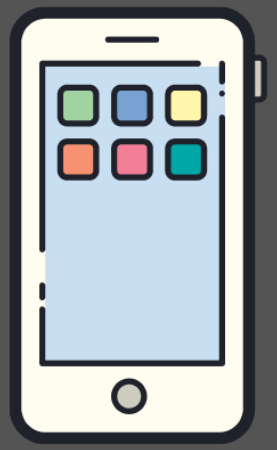


MOBILE DEVELOPMENT

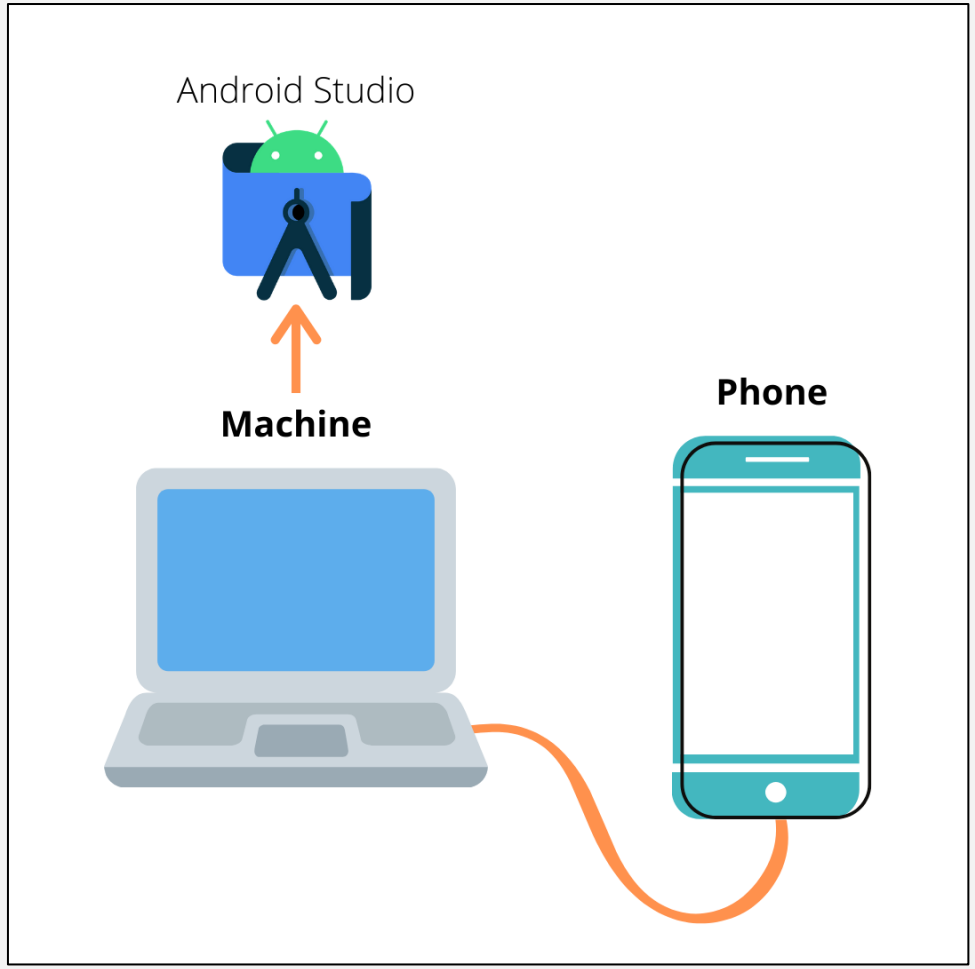
Intro to Android Studio

Outline

- Development setups
- Getting Familiar with Android Studio
- Running a Basic Application

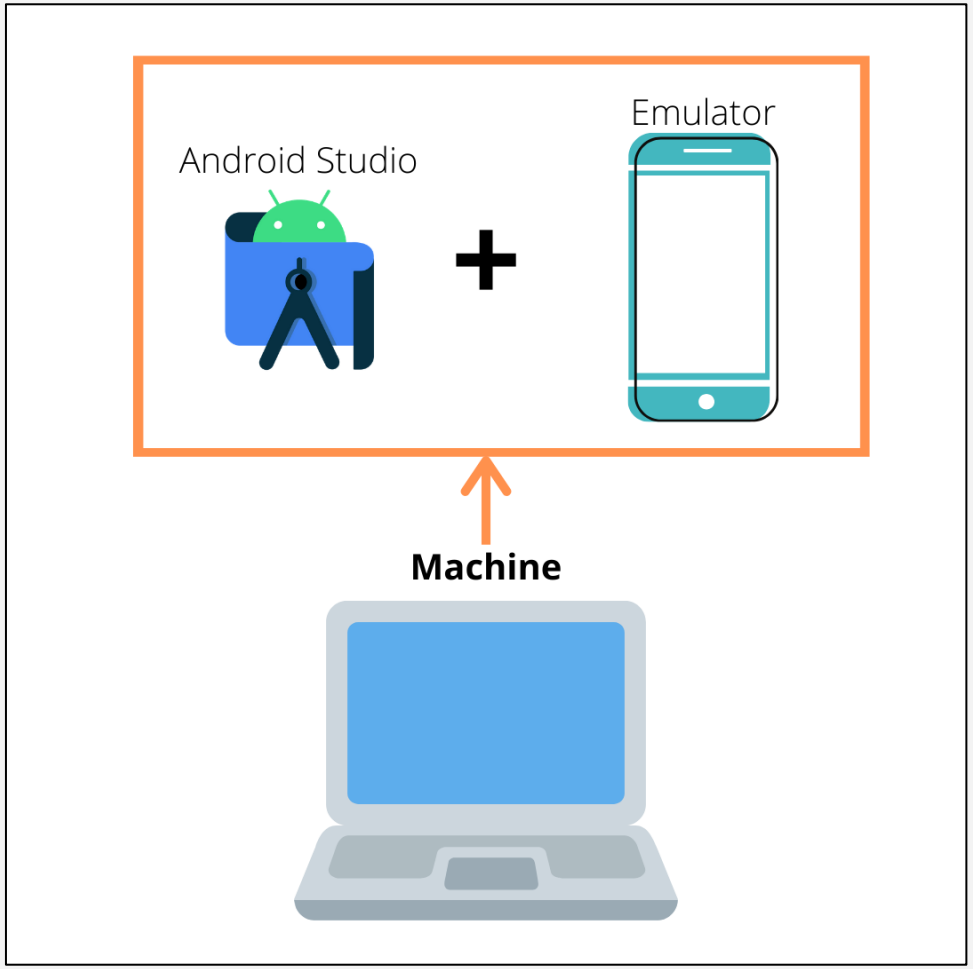
Some Setups for Development

- Machine + Physical Device
  - Shifts some computing to the phone
  - You'll need an… android phone
  - You'll be somewhat limited by the phone's OS version



Some Setups for Development

- Machine Only
  - Resource demanding
  - Can use Android Studio's built in emulator or an alternative emulator
  - You can create virtual devices, but you'll have to download resources
  - VDs don't have some services:
    - Bluetooth, cellular service



Let’s get started with
Android Studio

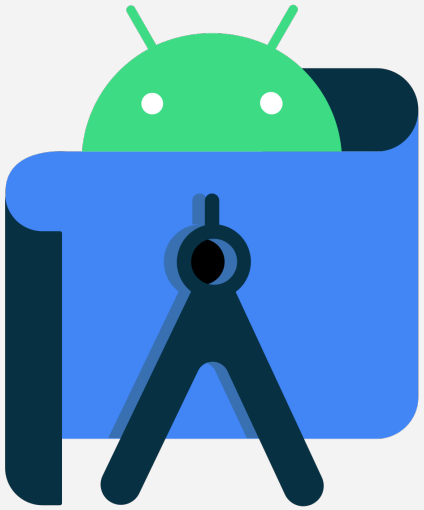


Image: https://commons.wikimedia.org/wiki/File:Android_Studio_icon.svg

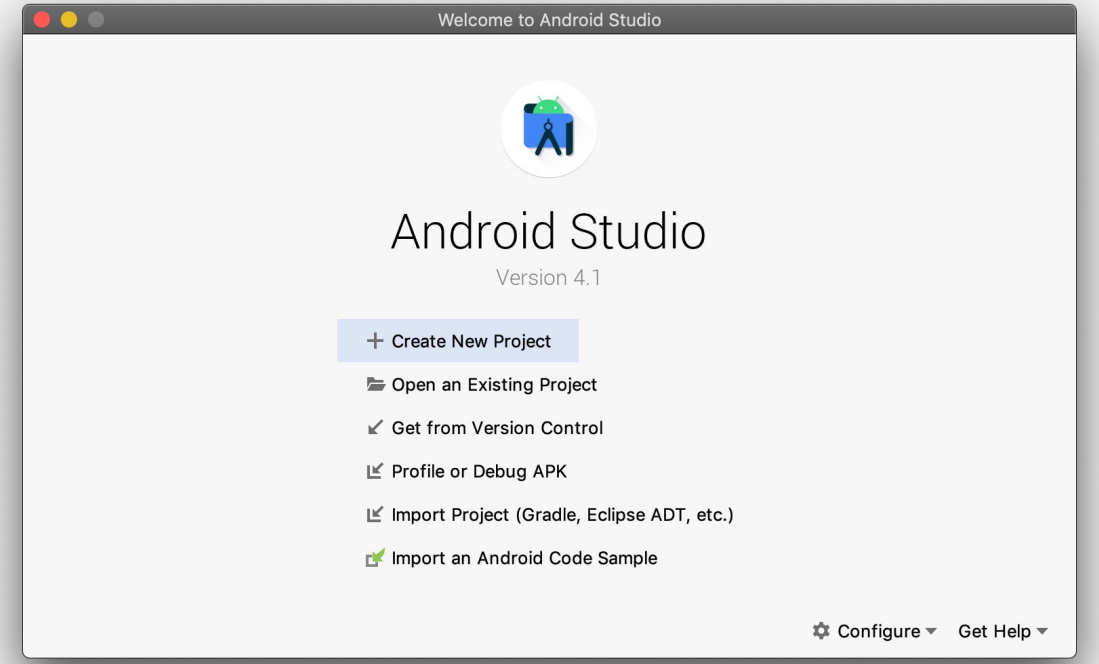
Android Studio

- While Android development can be done on most programming platforms, the official IDE is Android Studio
- For MOBDEVE, Android Studio will be the default IDE
  - Please consider making it your default as well
  - You won't have to worry about other packages you'll need to download, such as the Android SDK

Android Studio

- On first run, you should see something like this →
- Else, you'd see a list of previously opened projects

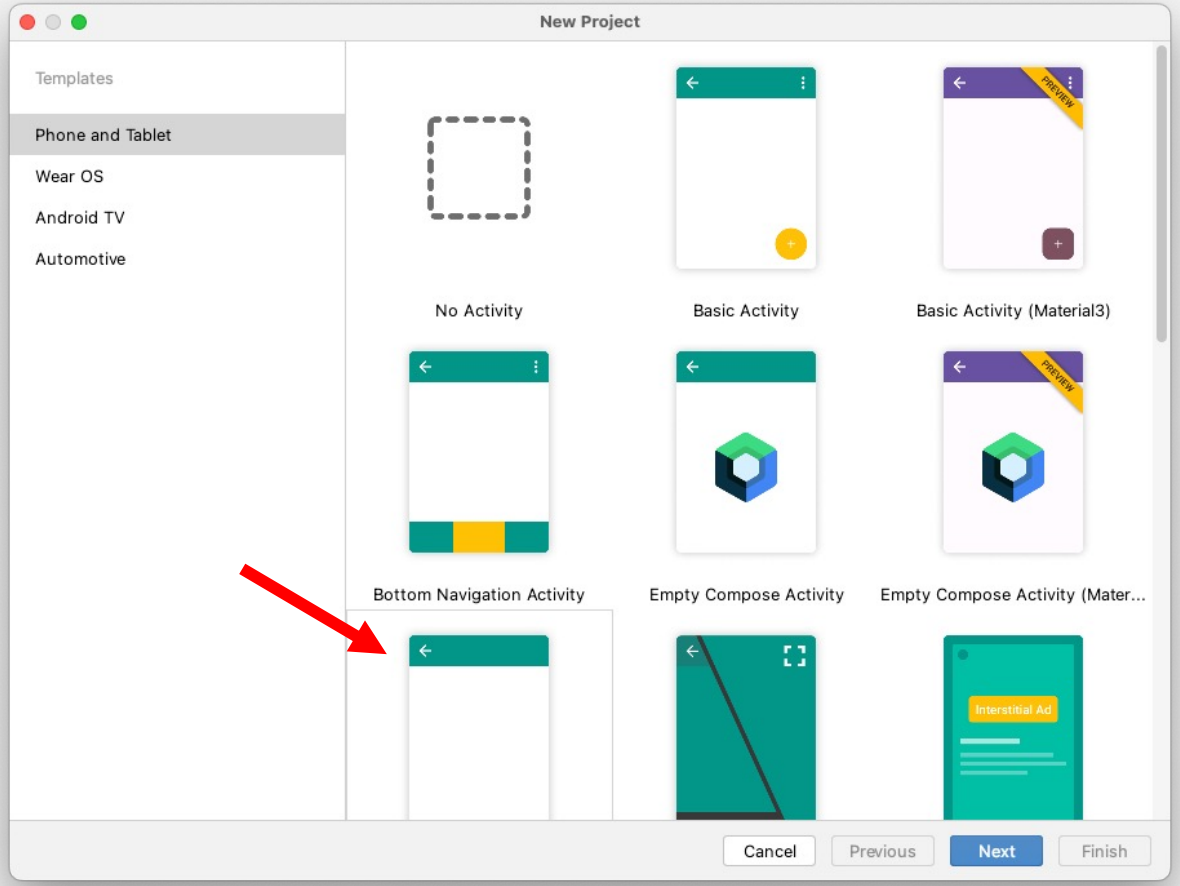
This is an older version of Android Studio…
I already have a number of projects created.



Let's start by creating a new project ☺

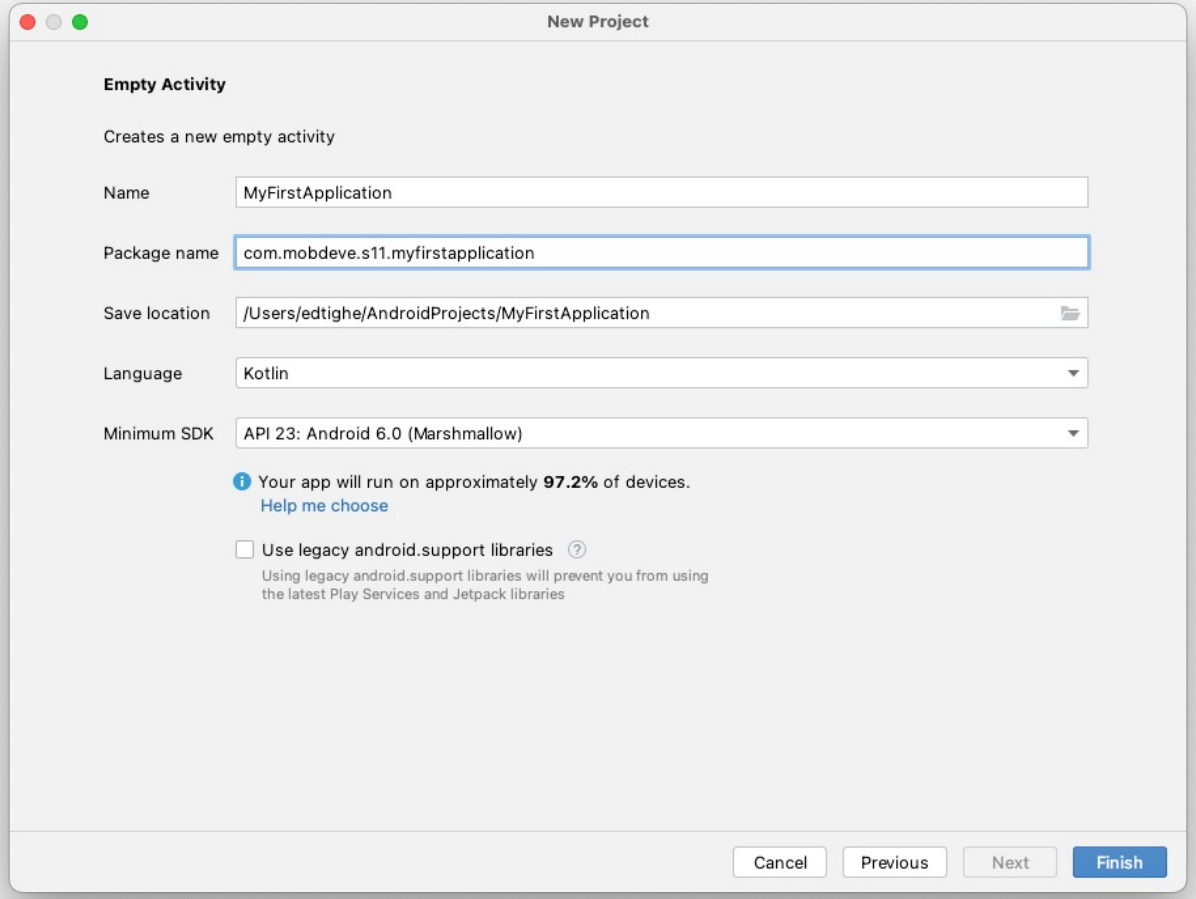
Android Studio

- Several templates are provided; however, we'll default to using the Empty Activity in most cases
  - Other templates have too much included
  - The Empty Activity starts us off with a blank canvas



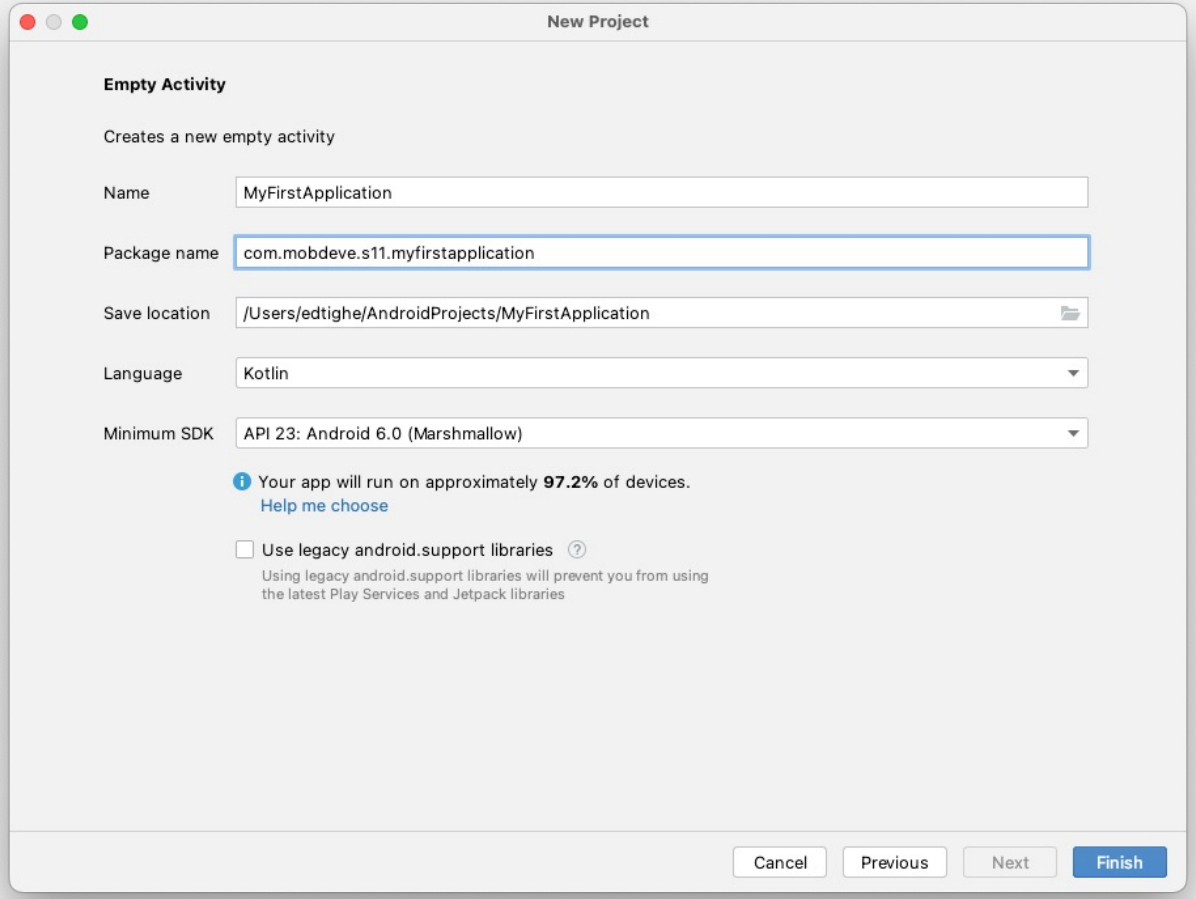
Also, we'll discuss this further latter one, but know that an "**Activity**" can be thought of as a screen

Android Studio



- Name
  - Rather standard…
  - Refers to the application's name

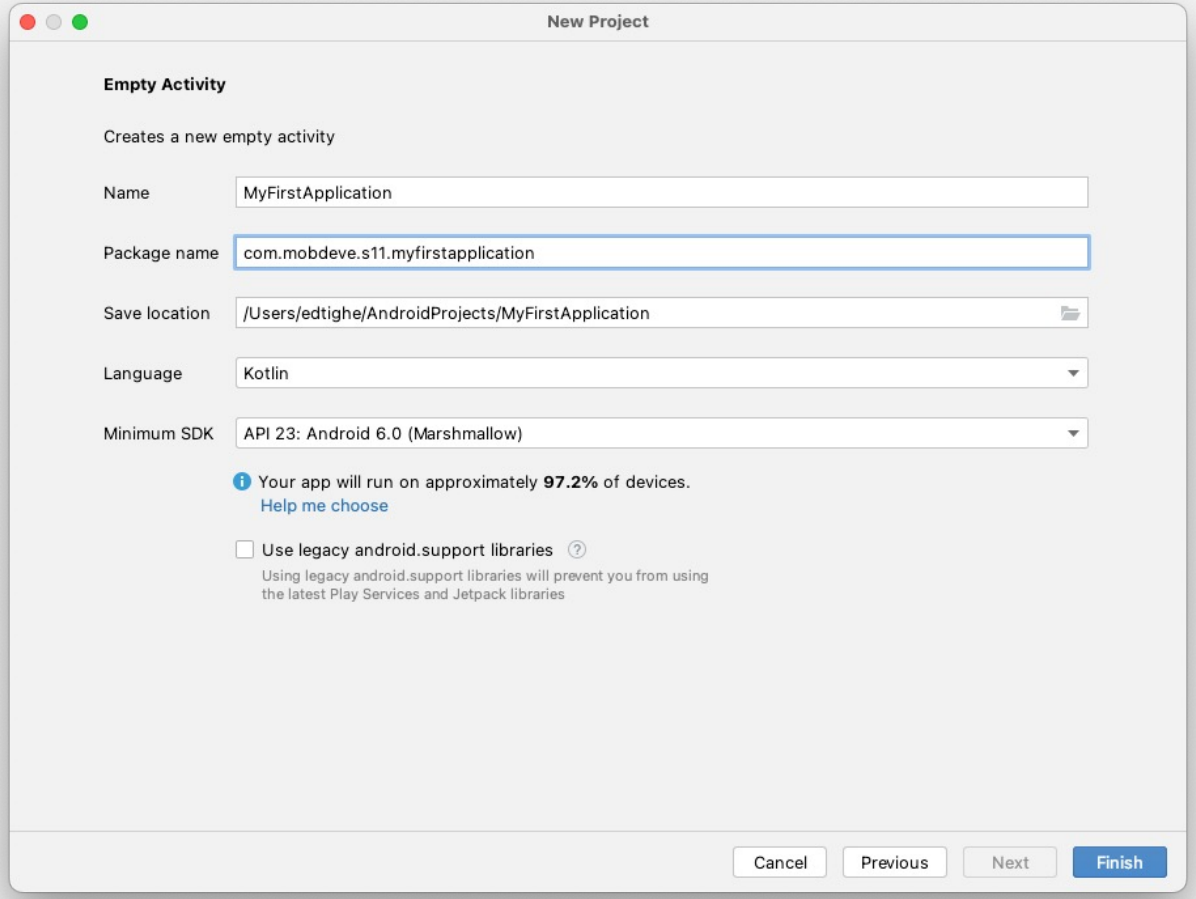
Android Studio



- Package Name
  - This is a unique ID for your app
  - Typical naming convention is the reverse of a domain name
    - com.mobdeve.app1 can be read as the app1 package of mobdeve.com

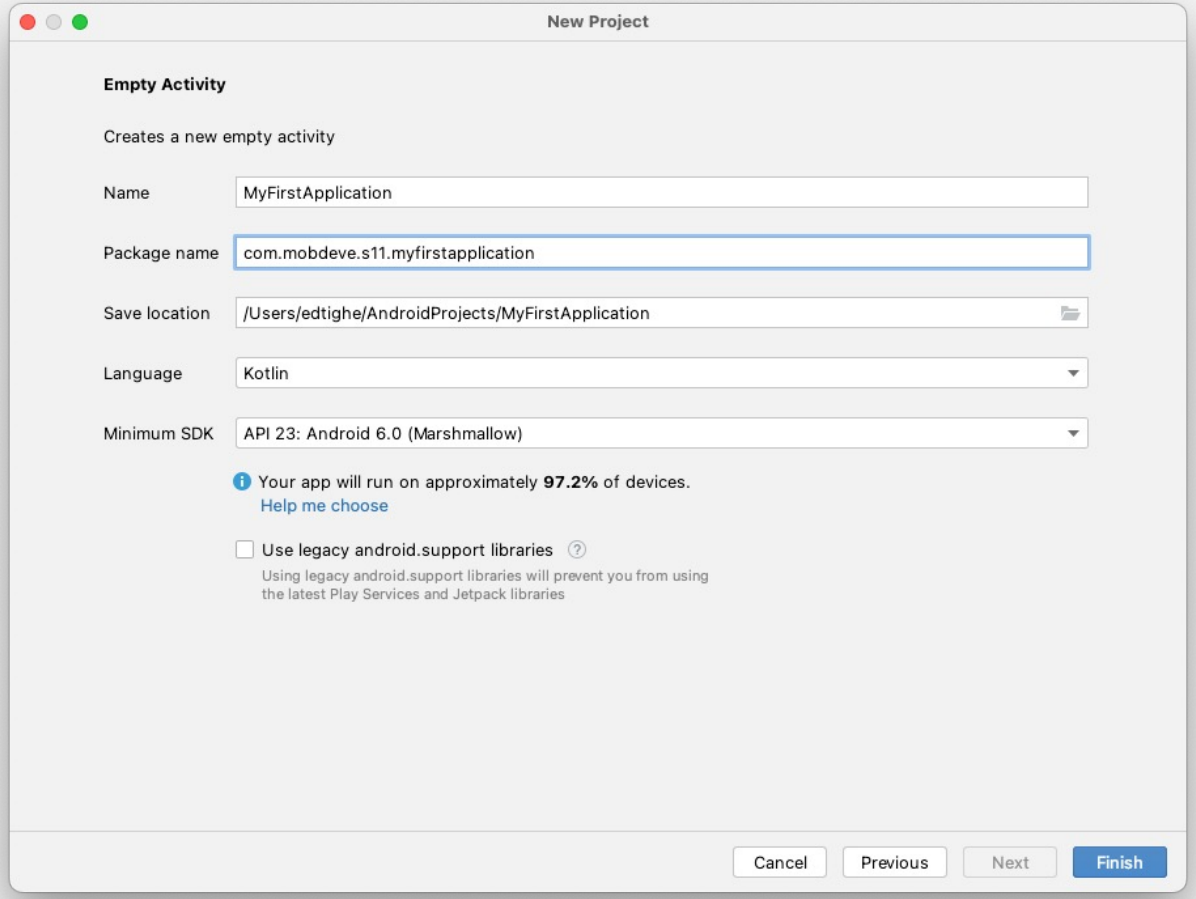
Additionally, you can add another layer that makes the ID unique, like your name com.mobdeve.tighee.app1

Android Studio



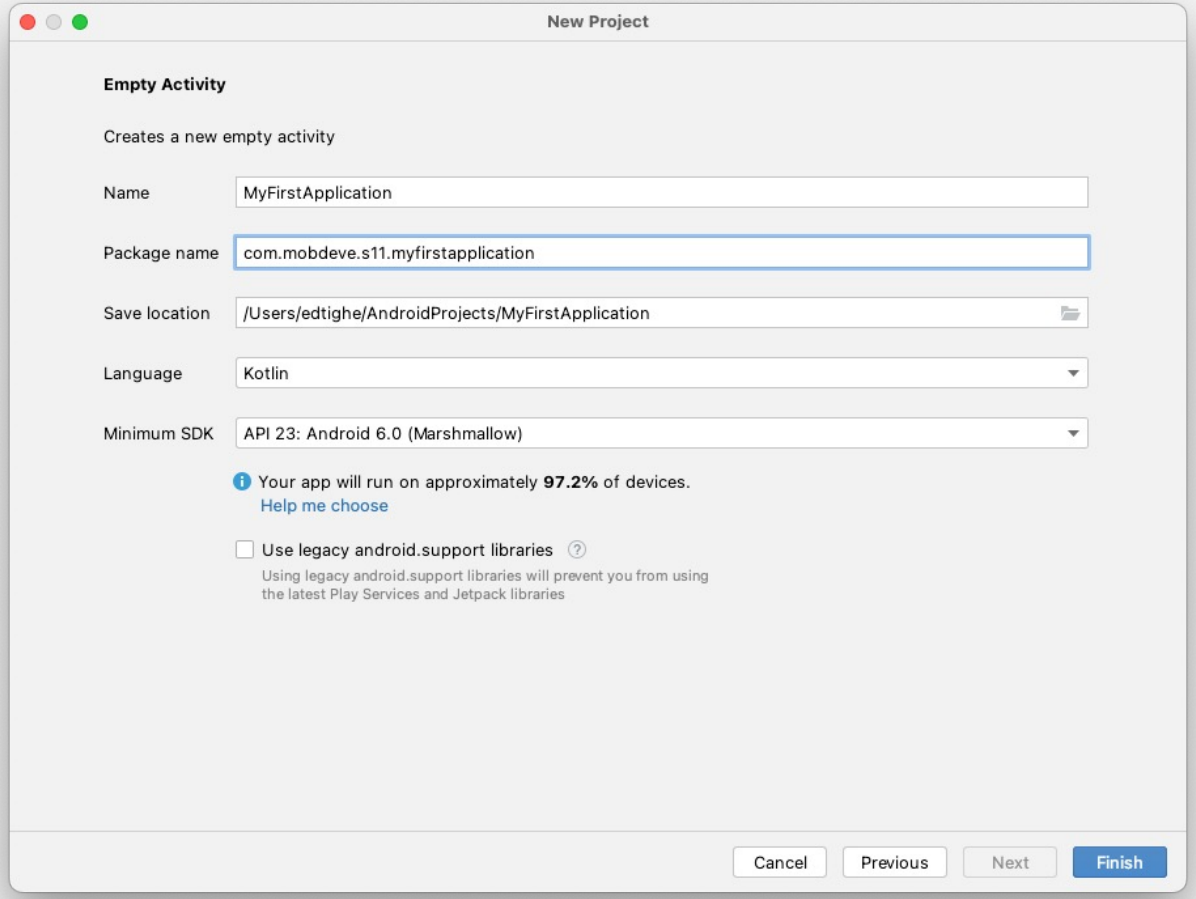
- Save Location
  - For MOBDEVE, consider saving all your projects in a specific folder to keep things centralized

Android Studio



- Language
  - You can select from either Java or Kotlin
  - Either option still allows you to run the other language
    - For Java projects, you'll just have to allow Kotlin to be used
  - You can also ask Android Studio to convert code for you

Android Studio



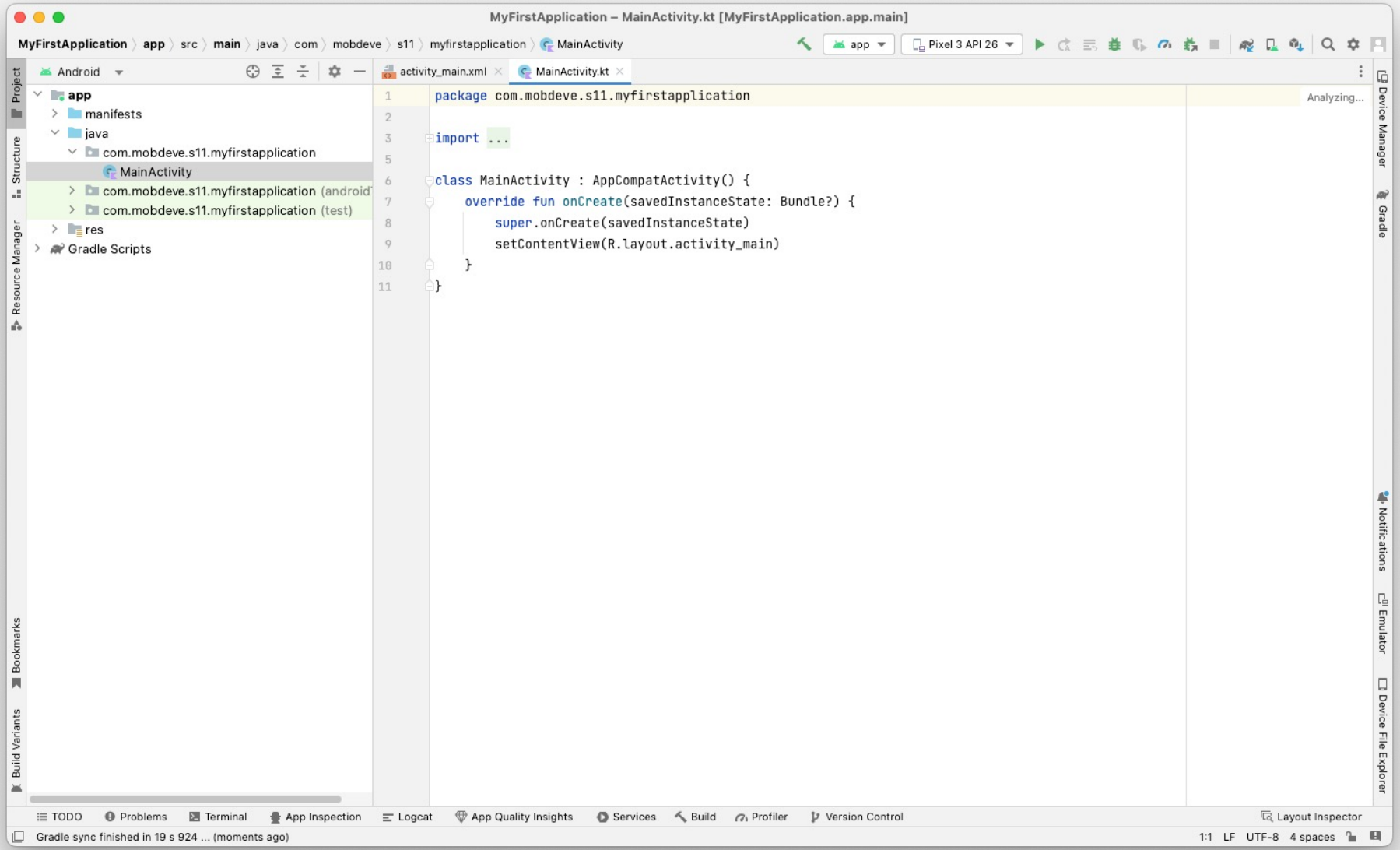
- Minimum SDK
  - This refers to the oldest version of Android your application will be able to run on
  - This is different from the Target SDK, which your app will be tested and designed for

For our course, please use API 23

Android Studio

- After finishing the initial configuration, Android Studio should start to piece things together
  - This might take awhile for some, mainly because of the Gradle build (especially if its being built for the first time)
- Additionally, you might be prompted to download resources

Android Studio



Android Studio

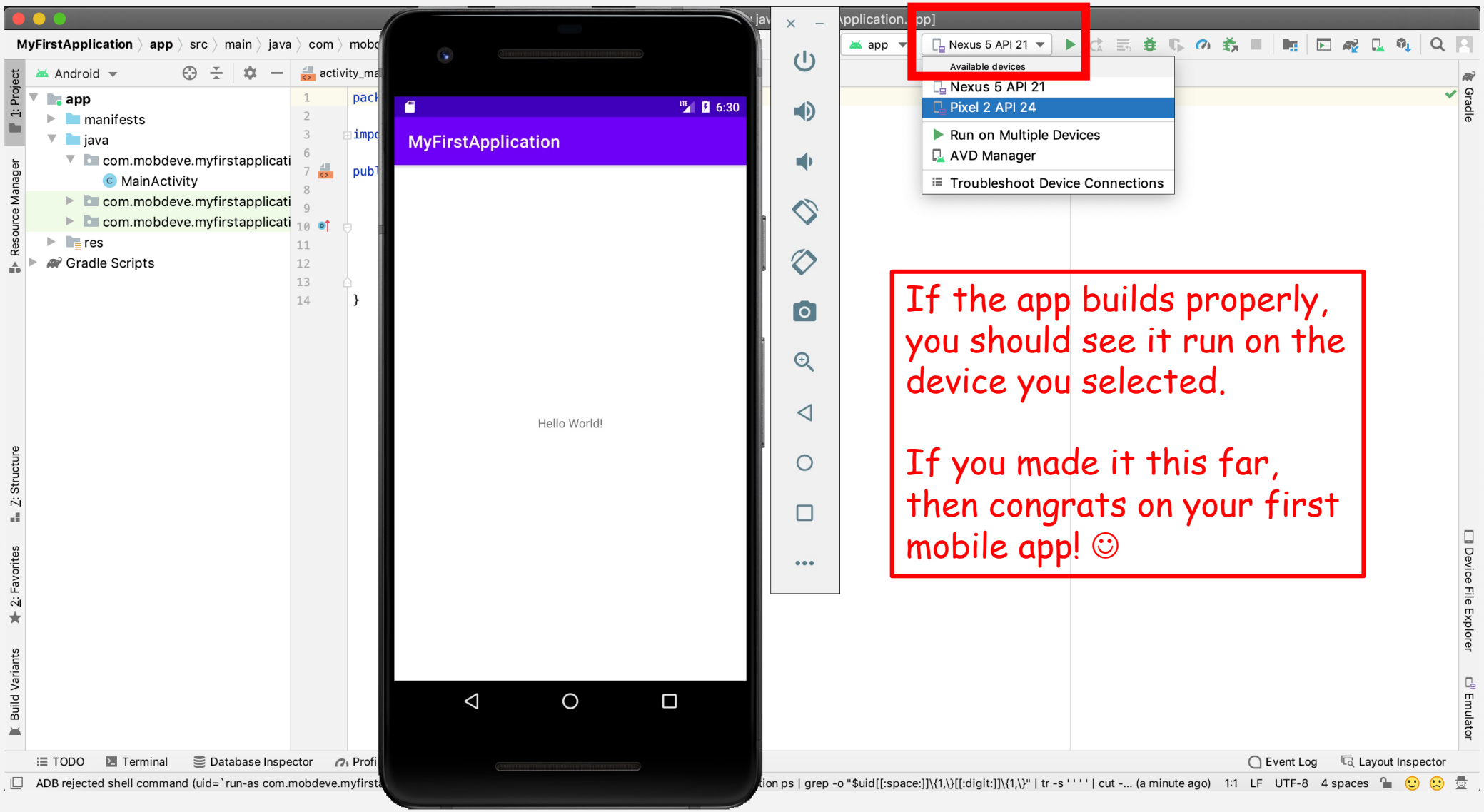
- Before running the base app, we need to make sure we have either our physical device ready or create a virtual device
- If you have a physical device, make sure to enable the developer's mode
  - Follow the steps indicated here: https://developer.android.com/studio/debug/dev-options

Android Studio

- If you don't, make sure to set up a virtual device
  - Locate the Android Virtual Device (AVD) Manager and choose *create a virtual device*
  - Select a phone device (e.g. Pixel 2 or Nexus 5X)
  - Select a system image (e.g. API 23, 26)
    - If you don't have the appropriate system image downloaded already, this can be a long wait depending on your internet…
  - Finish the setup

Android Studio

Find the device you which to run your app on and press the **play button**

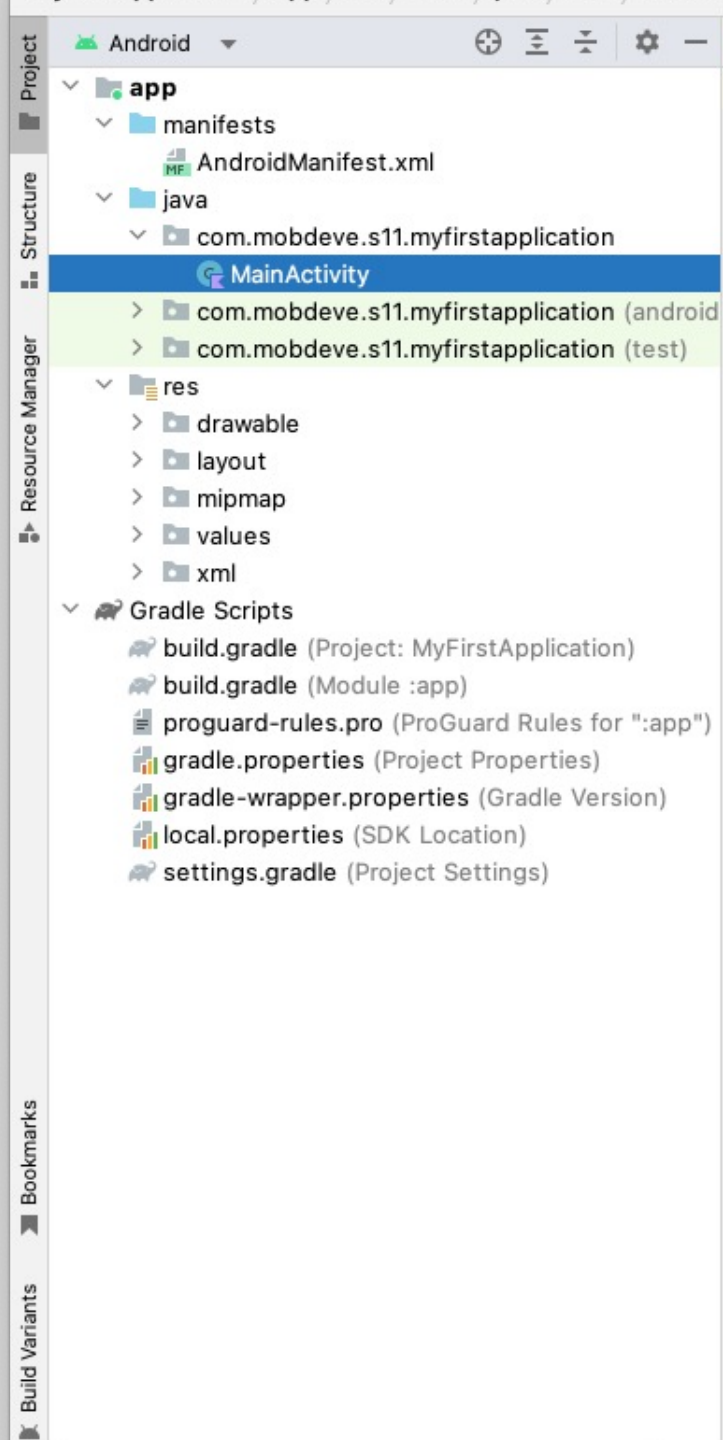


If the app builds properly, you should see it run on the device you selected.

If you made it this far, then congrats on your first mobile app! ☺

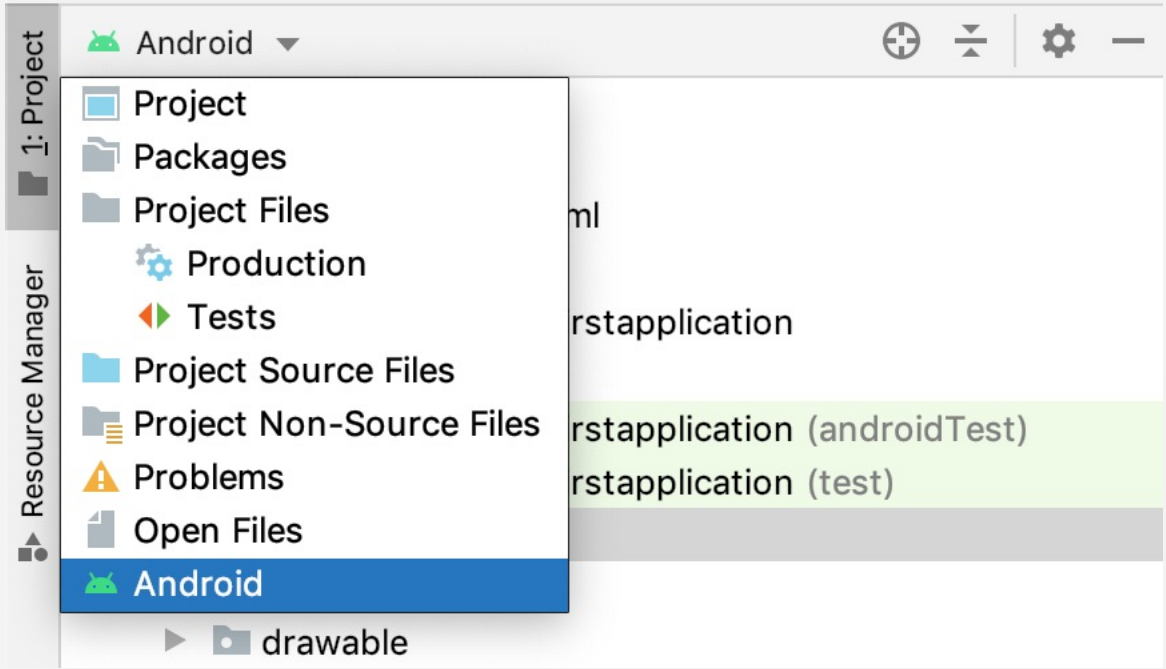
Getting Familiar with the IDE

- On the left, you'll see the project files



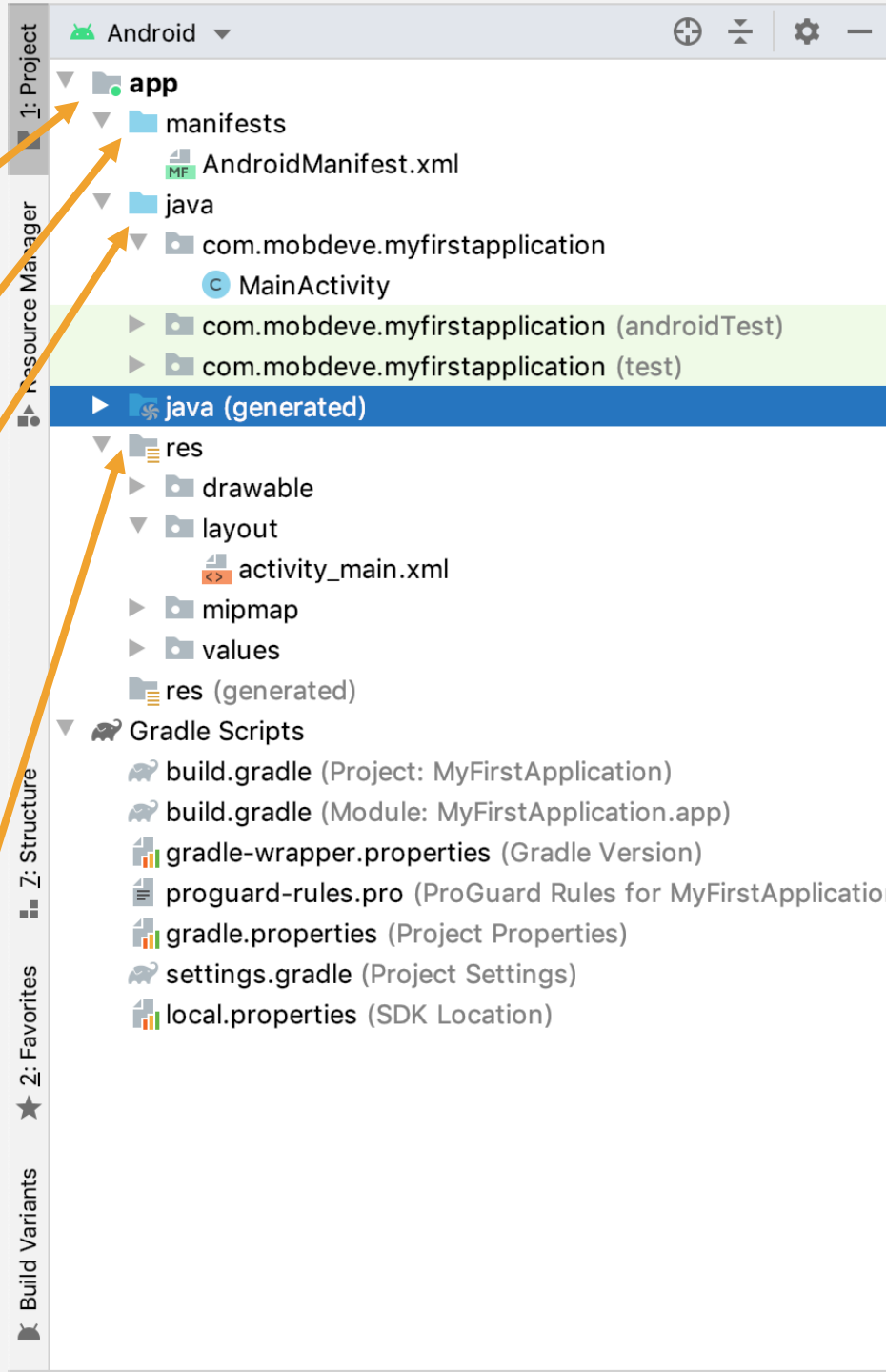
Getting Familiar with the IDE

- One of the things to note is that you're (usually) on Android view by default
  - Organizes / abstracts files
- Another view you might use is the Project view
  - Shows the entire project's file structure



Getting Familiar with the IDE

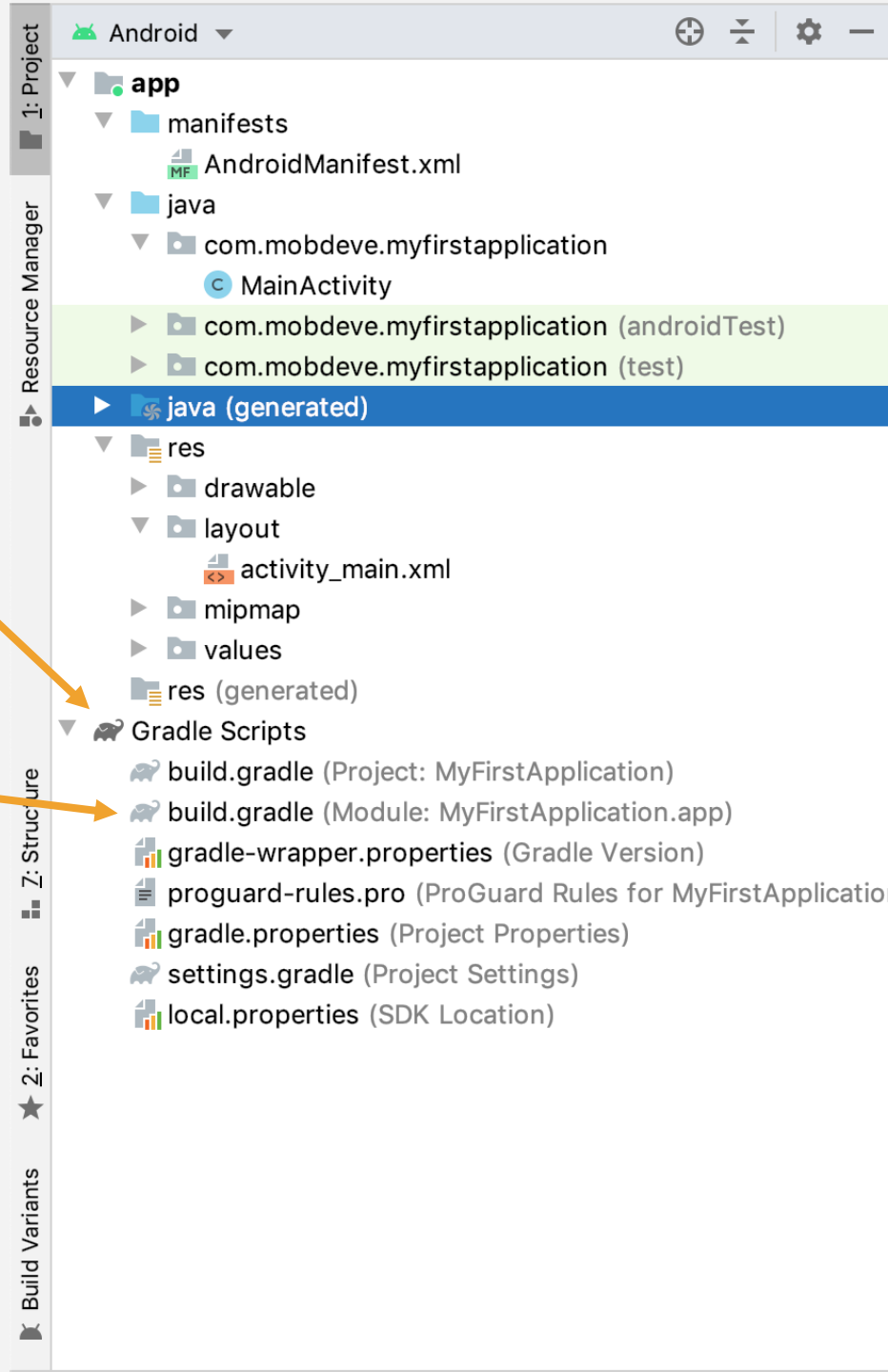
- app contains our application source code
  - manifests contains the Android Manifest, which is like a “config” file for the app
  - java contains the Java source code
  - res contains XML resource files that contain info about the layout



Getting Familiar with the IDE

- Gradle Scripts contains scripts that help compile the source code for installation on a device
  - The build.gradle that is normally modified is specific to the app
- Building the gradle does require internet connection when updating dependencies

There is a work around where you can build the gradle once and work in **offline mode**



Getting Familiar with the IDE

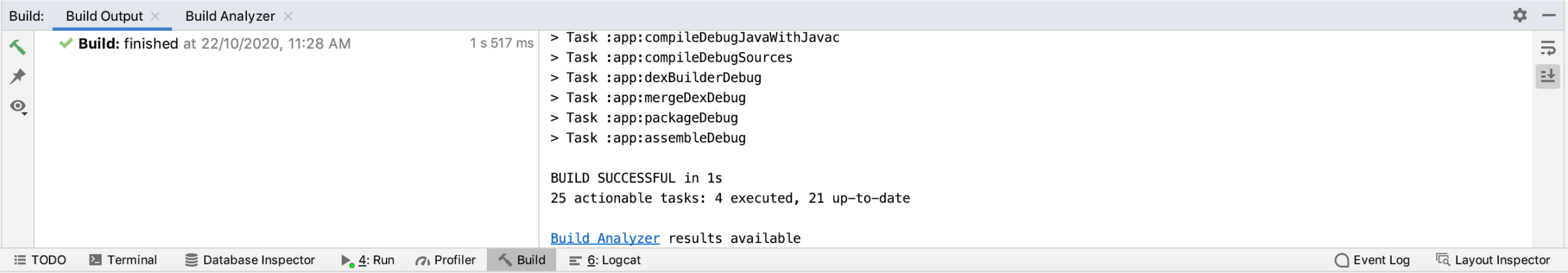
- Editor area
  - This doesn't need much explanation
  - However, there are interesting ways to use the editor when designing the UI
    - Will tackle in the future

activity_main.xml | MainActivity.java

```
1   package com.mobdeve.myfirstapplication;
2
3   import ...
6
7   public class MainActivity extends AppCompatActivity {
8
9       @Override
10      protected void onCreate(Bundle savedInstanceState) {
11          super.onCreate(savedInstanceState);
12          setContentView(R.layout.activity_main);
13      }
14  }
```

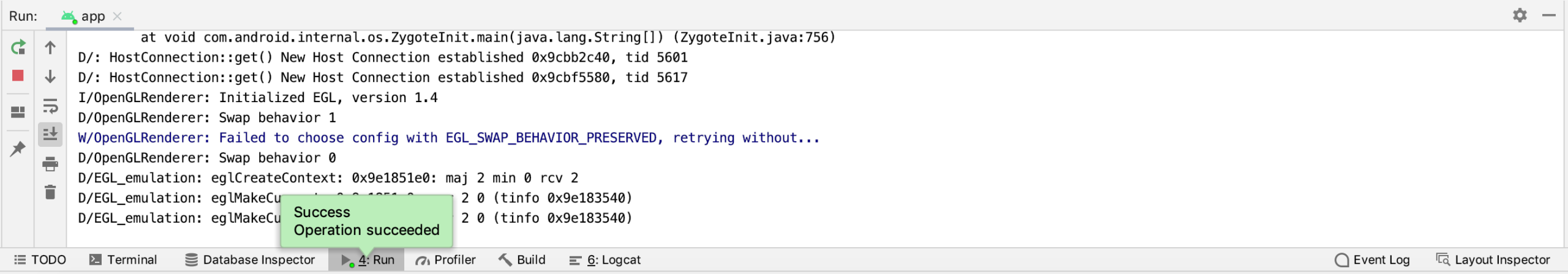
Getting Familiar with the IDE

- At the bottom of Android Studio, you'll find different tools for monitoring an application
  - If your app builds properly, it should show in Build
  - Else, you'll see compile time errors



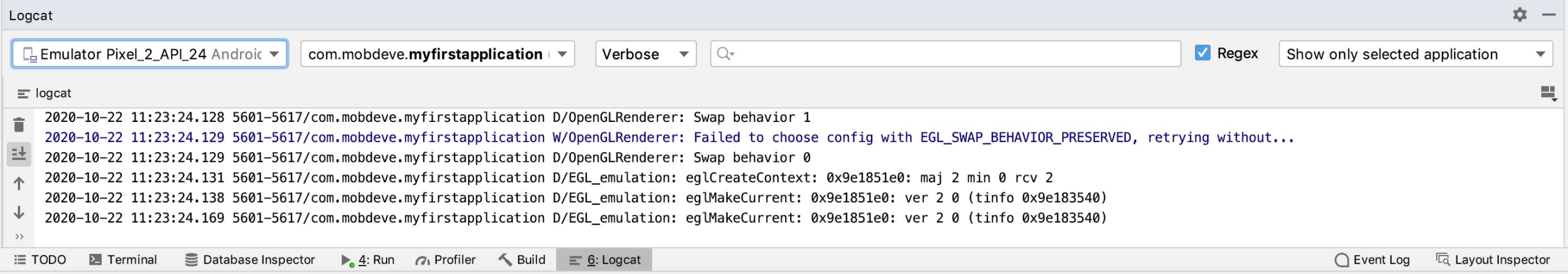
Getting Familiar with the IDE

- At the bottom of Android Studio, you'll find different tools for monitoring an application
  - Runtime errors, on the other hand, are shown in the Run tab



Getting Familiar with the IDE

- At the bottom of Android Studio, you'll find different tools for monitoring an application
  - And for most debugging, stick with Logcat
  - Here, you'll see the logs of most (if not all) applications running



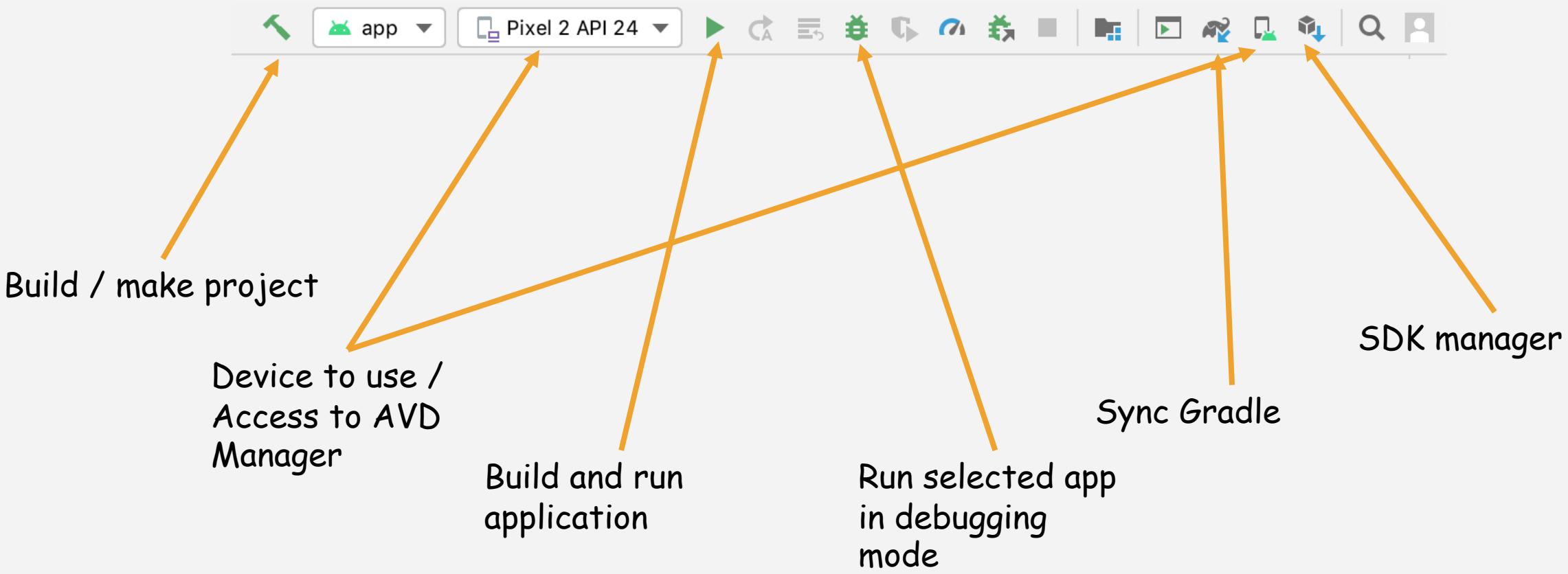
Getting Familiar with the IDE

```
package com.mobdeve.myfirstapplication;

import ...

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "MAIN_ACTIVITY";

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

        Log.d(TAG, msg: "onCreate: end of function");
    }
}
```

```
2020-10-22 11:43:37.916 6176-6176/com.mobdeve.myfirstapplication D/MAIN_ACTIVITY: onCreate: end of function
```

- Log.v(): VERBOSE output. This is the most detailed, for everyday messages. This is often the go-to, default level for logging.
- Log.d(): DEBUG output. This is intended for lower-level, less detailed messages (but still code-level, that is referring to specific programming messages).
- Log.i(): INFO output. This is intended for "high-level" information, such at the user level (rather than specifics about code).
- Log.w(): WARN output. For warnings
- Log.e(): ERROR output. For errors
- Also if you look at the API...Log.wtf()!

Getting Familiar with the IDE



If there's still time…

- Add the following to the onCreate function
  - The code to the side is shown in Java
  - There is minimal different with how its written in Kotlin
- What happens? ☺

activity_main.xml | MainActivity.java

```java
package com.mobdeve.myfirstapplication;

import ...

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "MAIN_ACTIVITY";

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

        Toast t = Toast.makeText(
                getApplicationContext(),
                text: "Naalala mo pa ba yung PhilHealth issue?",
                Toast.LENGTH_LONG
        );
        t.show();

        Log.d(TAG, msg: "onCreate: end of function");
    }
}
```

Any questions? ☺

Next Session…

- We'll run through a hands-on exercise
  - Two exercises if we have time
  - Focus is on creating basic views and linking them to our code

Thanks everyone!

See you next meeting!

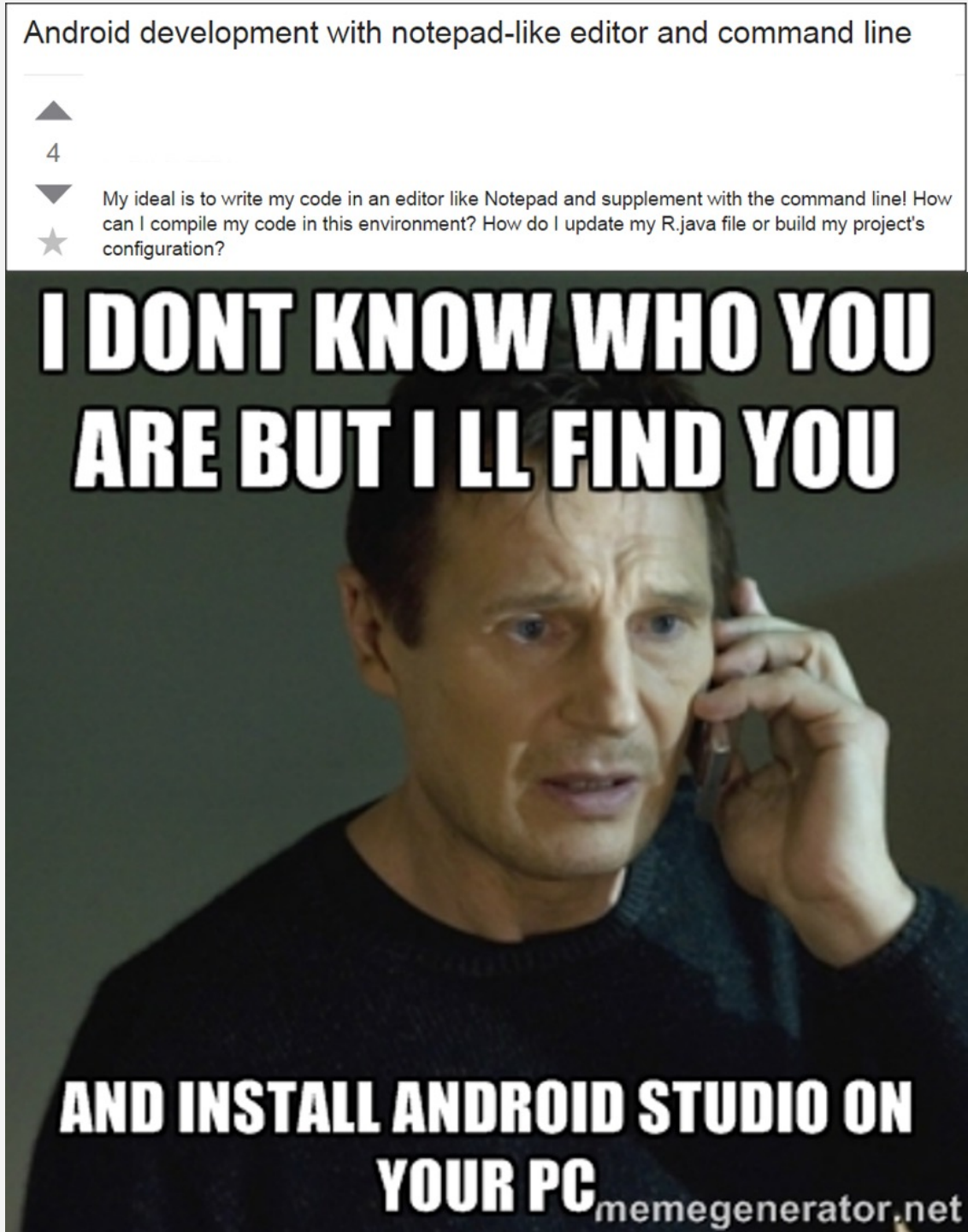


Image sauce: https://twitter.com/slidenerdtech/status/587897331154079744