

LAB 1 – Application Components and basic application

At the end of this lab, students should be able to:

- Do environment setup.
- Know about the four major components of Android application.
- Run basic Hello world Example Application.

Steps to install Java SDK and Android Studio

1) Download and install Java SDK

- <https://www.oracle.com/java/technologies/javase-jdk15-downloads.html>

2) Download and install Android Studio

- <https://developer.android.com/studio/index.html>

Follow the installation instruction accordingly until it is successfully installed.

Application Components

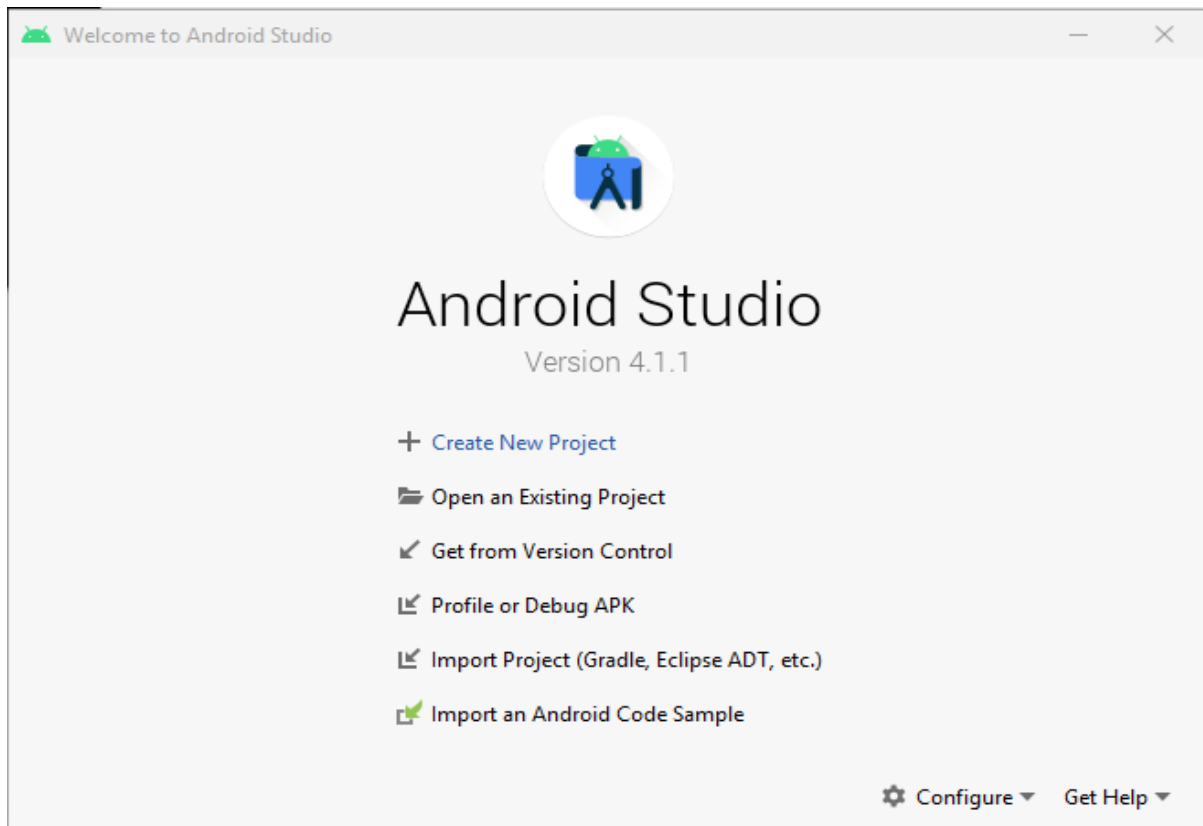
Application components are the essential building blocks of an Android application. These components are loosely coupled by the application manifest file *AndroidManifest.xml* that describes each component of the application and how they interact.

There are following **FOUR** main components that can be used within an Android application:

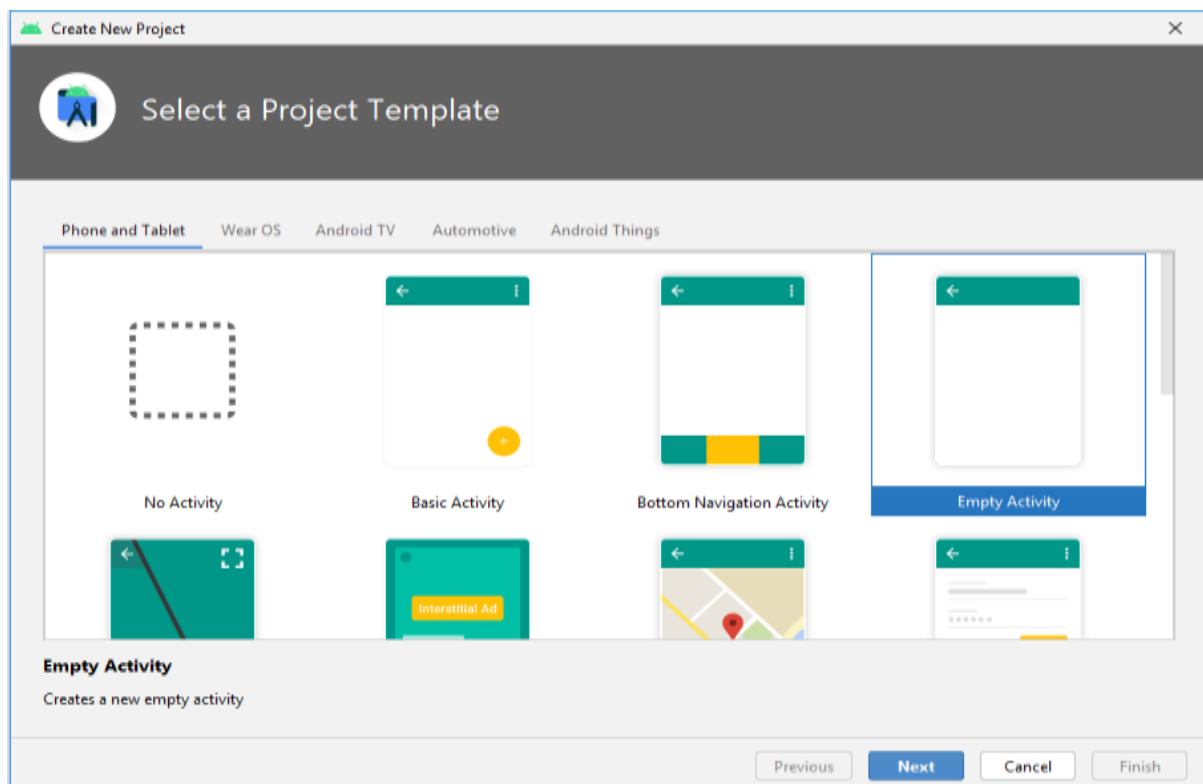
Components	Description	Example
Activities	They dictate the UI and handle the user interaction to the smartphone screen.	If you want to set an alarm, the user interface that you see is the activity.
Services	They handle background processing associated with an application.	The service that always monitor when the time interval has been reached.
Broadcast Receivers	They handle communication between Android OS and applications.	Notification.
Content Providers	They handle data and database management issues.	Data that is saved. Let say you set 6:00 am weekly.

Create Simple Android Application

- i. Go to File -> New Project



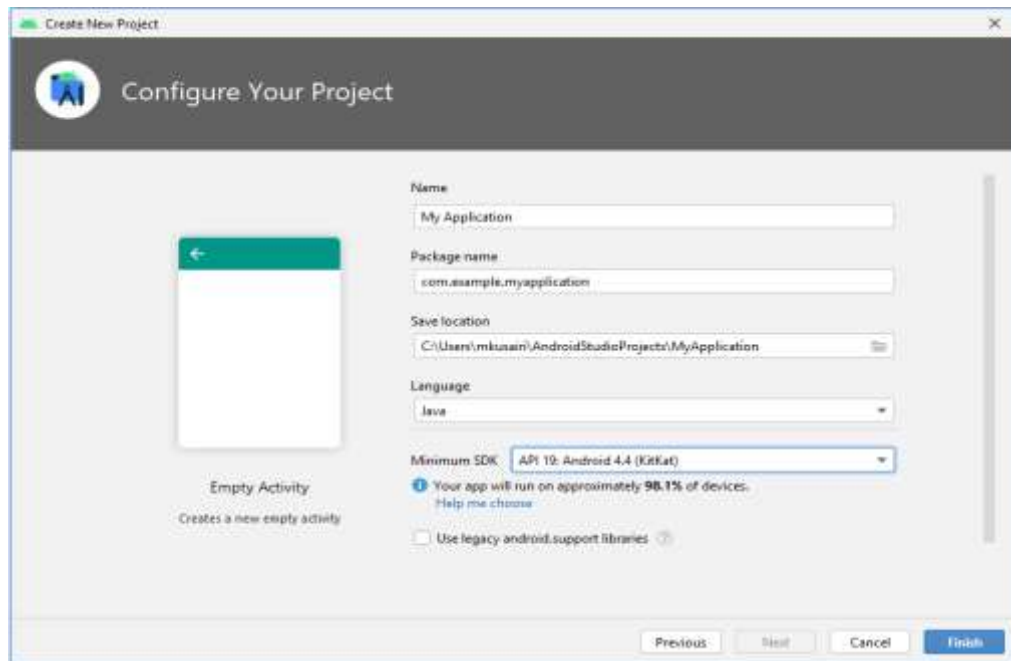
- ii. Choose empty activity template, then click Next



iii. Choose Package Name of your application

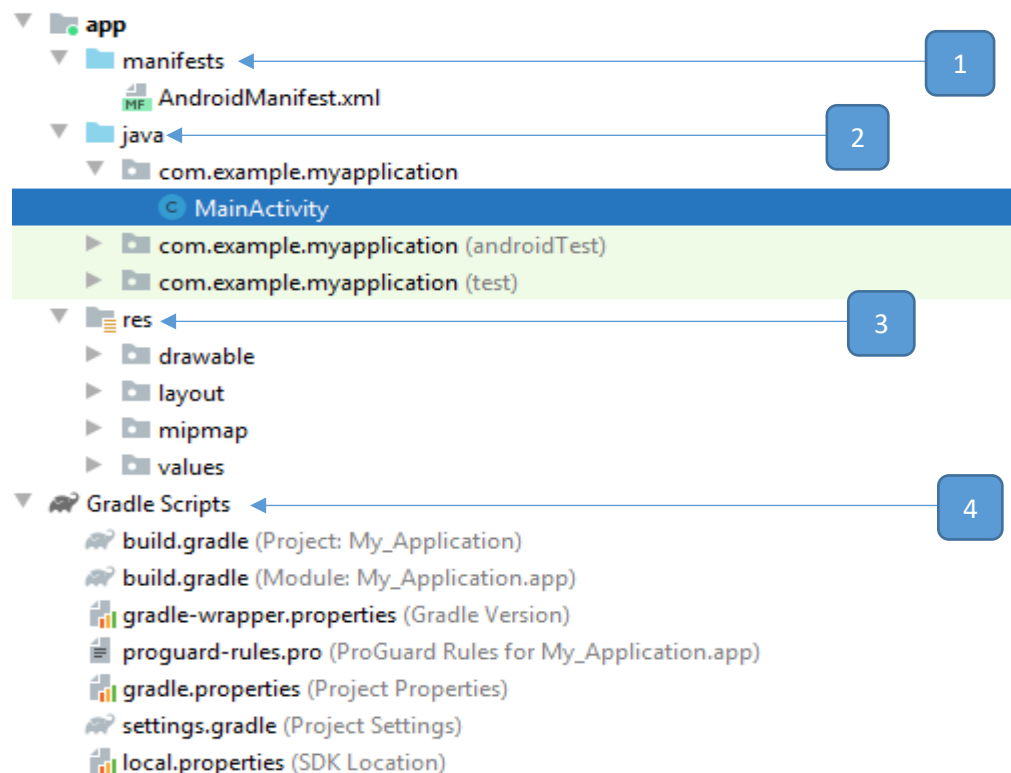
Choose APIs for app

Click Finish



Basic Project Structure

Before you run your app, you should be aware of a few directories and files in the Android project:

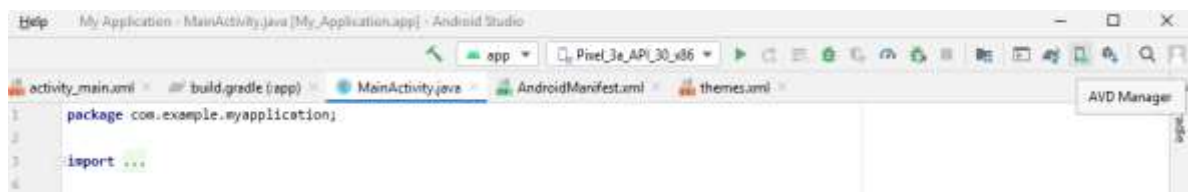


Number	Folder, File & Description
1	manifest This is the manifest file which describes the fundamental characteristics of the app and defines each of its components.
2	java This contains the .java source files for your project. By default, it includes as MainActivity.java source file having an activity class that runs when your app is launched using the app icon.
3	res This is a directory that contains a collection of resources such as files for your app's user interface, strings and colors definitions.
4	gradle scripts An advance build toolkit, to automate and manage the build process, while allowing you to define flexible custom build configurations.

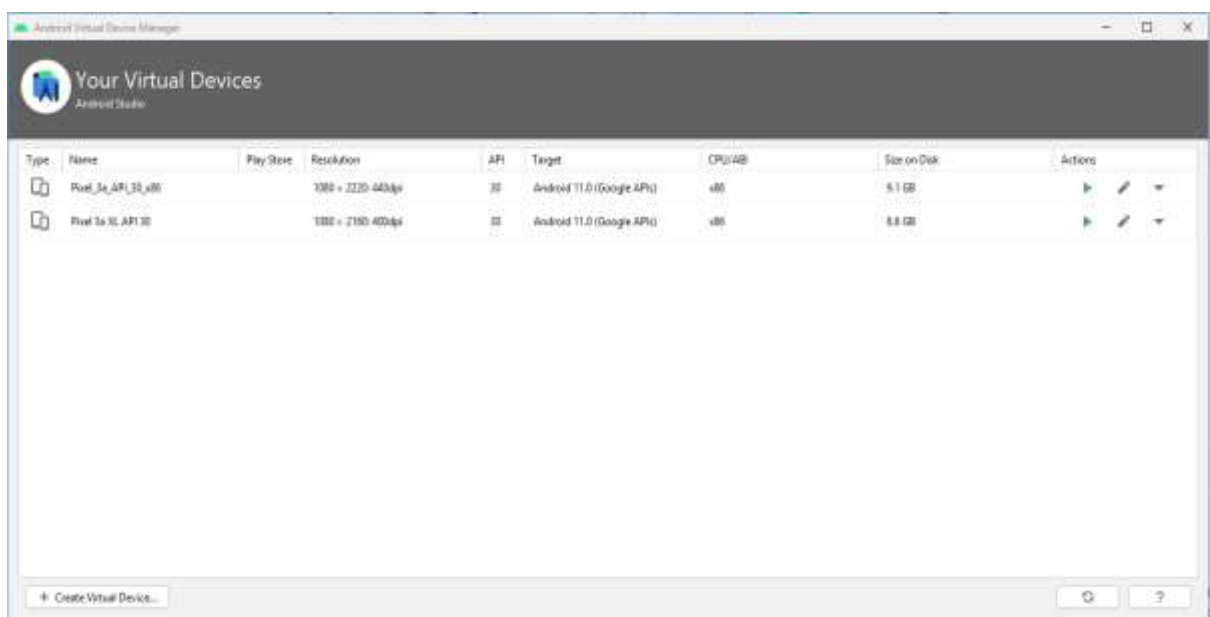
Run the project

In order to run the project, you need to have the Android Virtual Device (AVD).

So click the AVD Manager, you can choose the existing virtual device, or you can create a new virtual device.



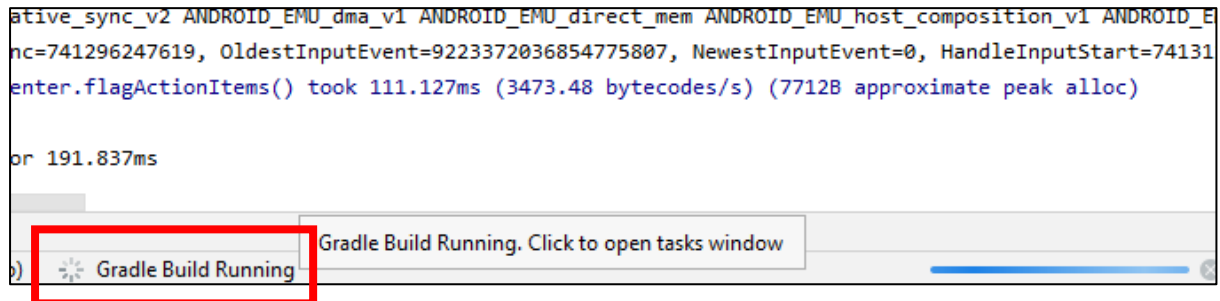
Then click the green launch icon to launch the emulator for the virtual device.



Once the Virtual Device ready, click the Run  icon from the toolbar to run your application.

Gradle going to build the entire project, and will make APK file that going to be installed in the android emulator.

Gradle Build is running, you can see the task at the bottom at android studio window.



Congratulations!!! you have developed your first Android Application.



Exercise:

- Change the Hello World to My First Application!
- Add a button, rename the button to 'START'.
- Run the new application.