**Lab Sheet 01**

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA . On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps.

1. Start a new Android Studio project.

   Click on 'Start a new Android Studio project'. You will be moved on to a screen that asks additional details of the project.
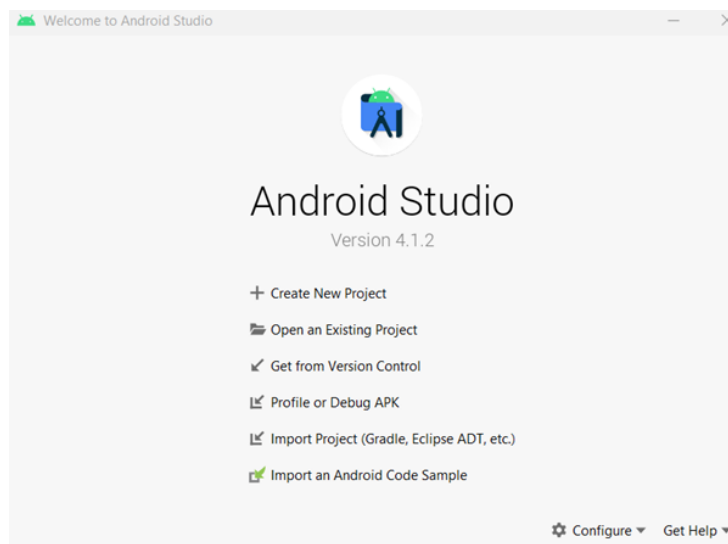

2. Selecting a preloaded Activity screen.

   In this section of the project configuration, select an Activity to be preloaded.

   Activity can be defined as a page on the Android app. Like how websites have different pages, Android apps have Activities. Each activity has two files, the XML (.xml) file to design how it looks and the Java (.java) file to write code in that activity. By selecting an empty activity, all other activities can be included. This is why all our projects will start with an empty activity.

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Select the Empty Activity and proceed.
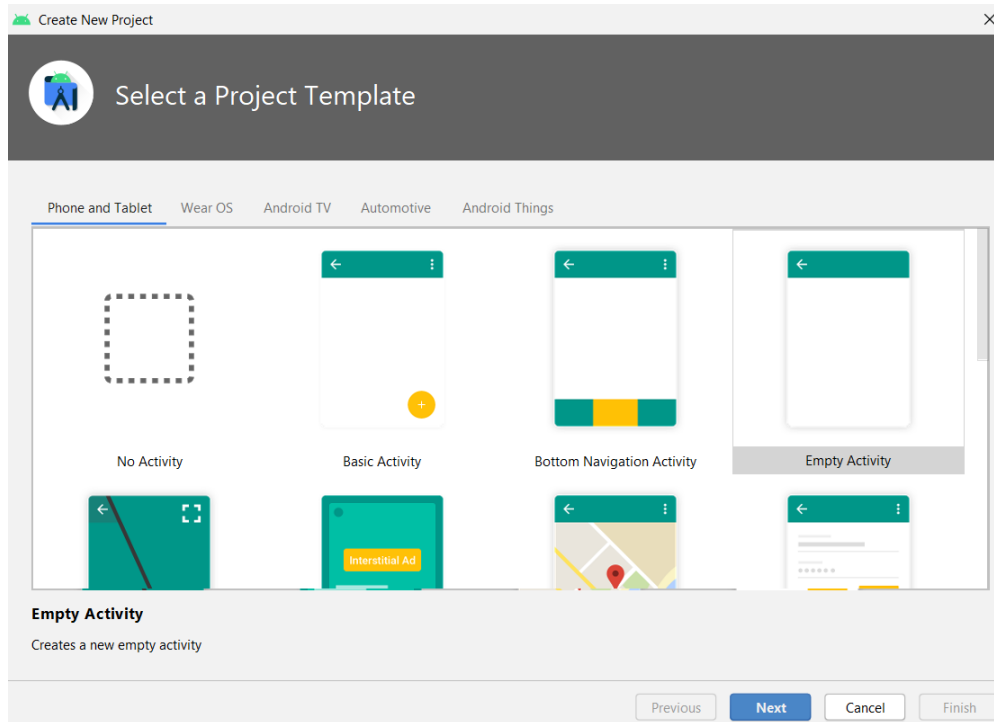
3. Give the application name under the 'Application name:' and select the target Android Devices screen.

   After given name to your Android application, here we are adjusting the settings of the devices our Android app will run on. For each major update of the Android OS, the API level is incremented. Having a lower API level will target a higher number of devices.
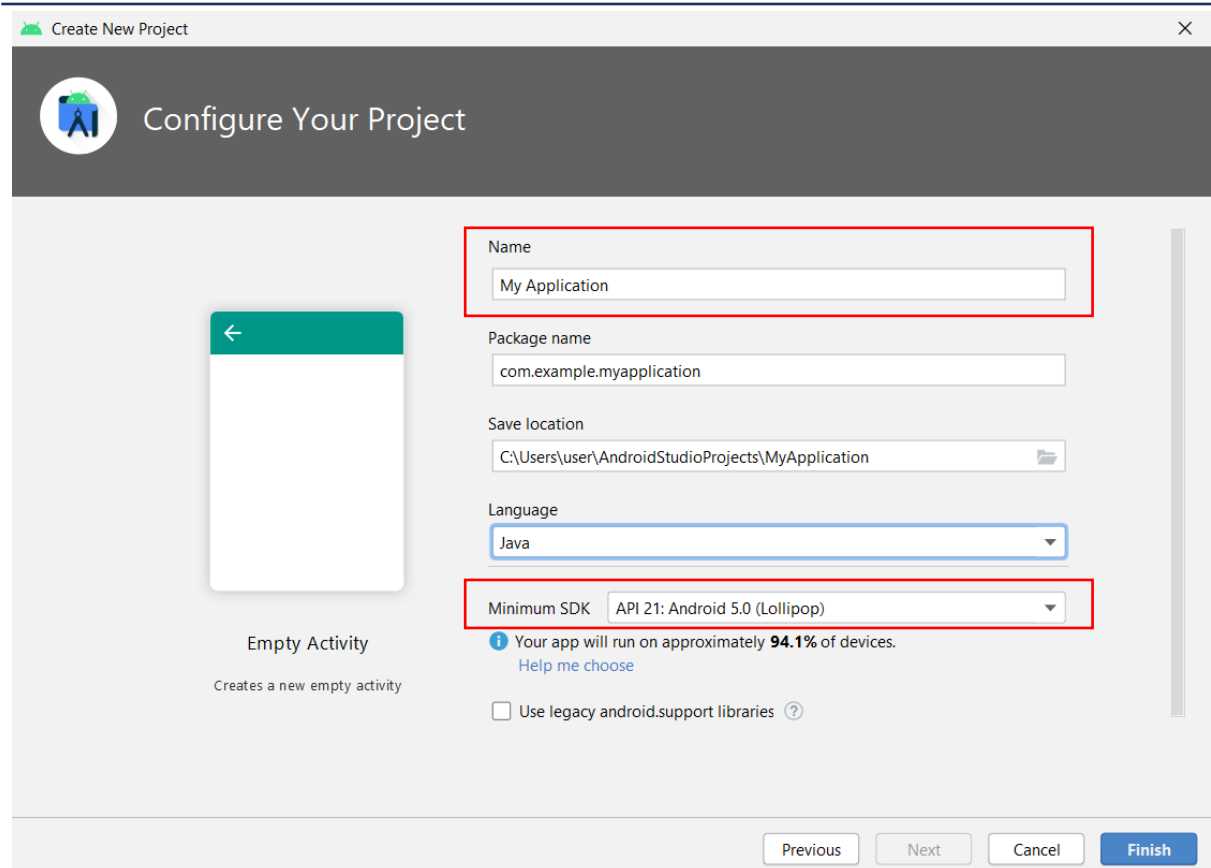
   Older version of Android studio application, after the given target Android devices screen, you need to customize the selected activity.

   Here we are describing the activity we have selected. Android Studio will provide default values [Activity Name: MainActivity] and [Layout Name: activity_main].

   Make sure to check the two options [Generate Layout File and Backwards Compatibility (AppCompat)].

   In the latest version of Android studio "Version 4.1.2" you don't need to select it.

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When you click Finish, Android Studio will start building your app. Once all processes are finished, you'll get the Android Studio Interface.

4. Android Studio Interface
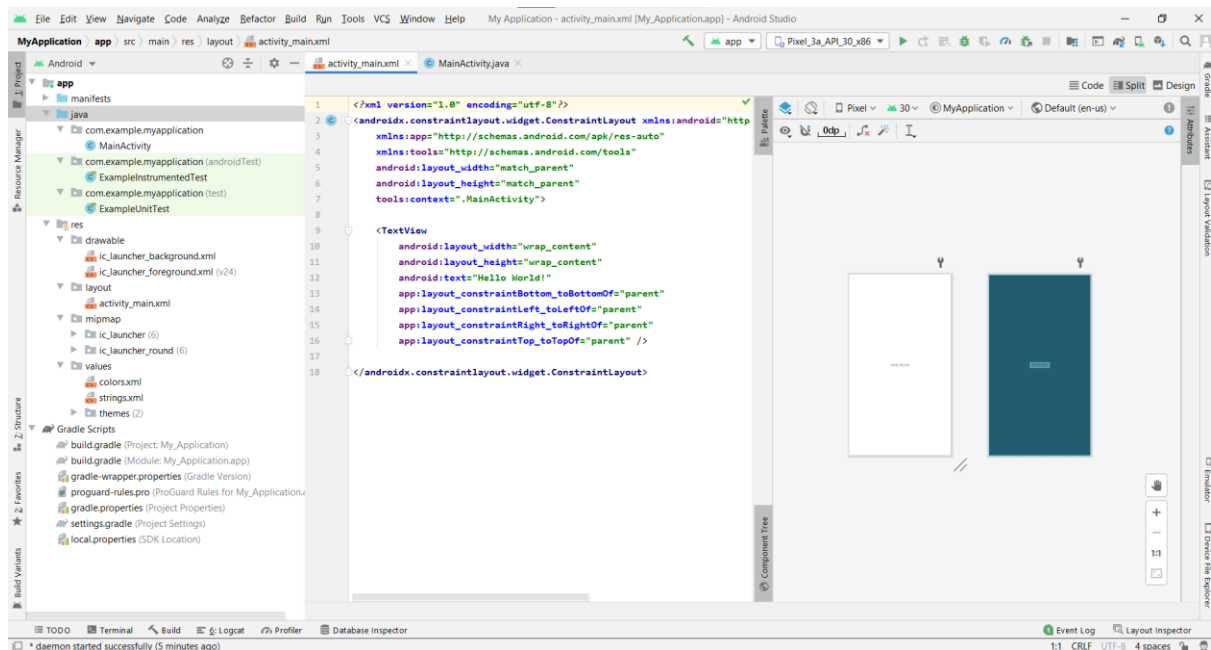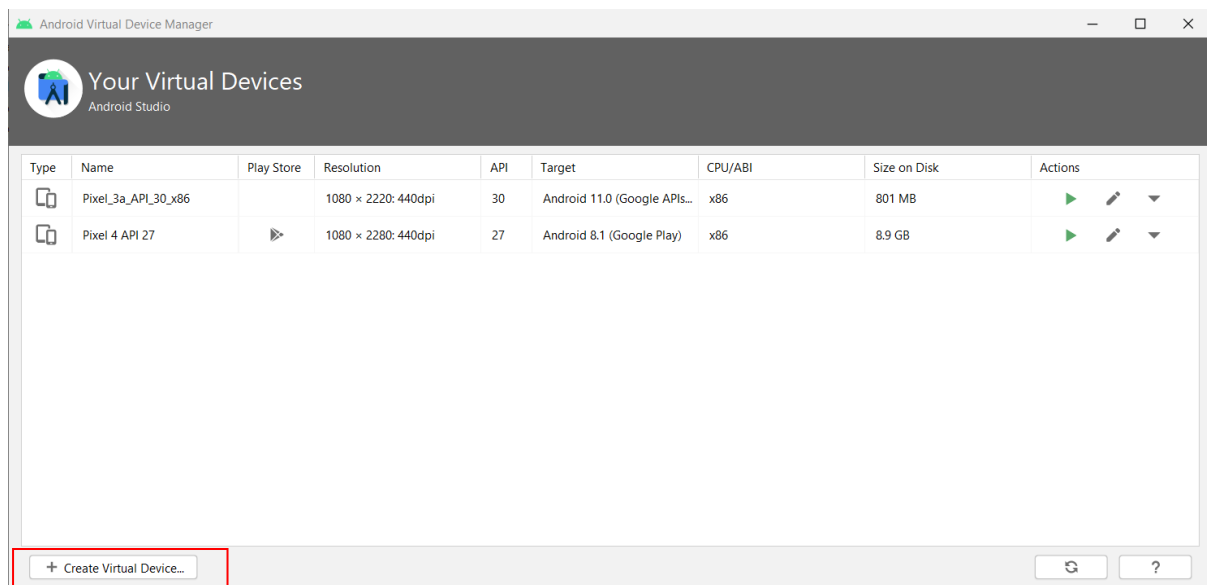
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Palette has all the elements to design an application. All buttons, text fields, textviews, imageviews and many more things are available here.

Click on the run button and that will take us to an AVD manager. Here, we have to set up our virtual device.

5. Set up a Virtual Device in Android Studio

A virtual device is some space in the memory that functions as a phone. We can have multiple virtual devices with different versions of Android OS running on it. This is helpful when testing your app for backward compatibility. Multiple devices can be used to debug instant messaging applications.

Click on 'Create New Virtual Device' and Android Studio will give you a lot more options to configure your Virtual Device.

Android Virtual Device Manager									— □ ×

Your Virtual Devices
Android Studio

| Type	Name	Play Store	Resolution	API	Target	CPU/ABI	Size on Disk	Actions
▢	Pixel_3a_API_30_x86		1080 × 2220: 440dpi	30	Android 11.0 (Google APIs...	x86	801 MB	▶ ✎ ▼
▢	Pixel 4 API 27	▷	1080 × 2280: 440dpi	27	Android 8.1 (Google Play)	x86	8.9 GB	▶ ✎ ▼

+ Create Virtual Device...   ↻   ?

AVD name is simply the name given to your virtual device. You can just let it be what it is, or give it a name to remember your configuration.

You also have to select the device to run the app on.

Let the remaining options be set to default and click on finish.

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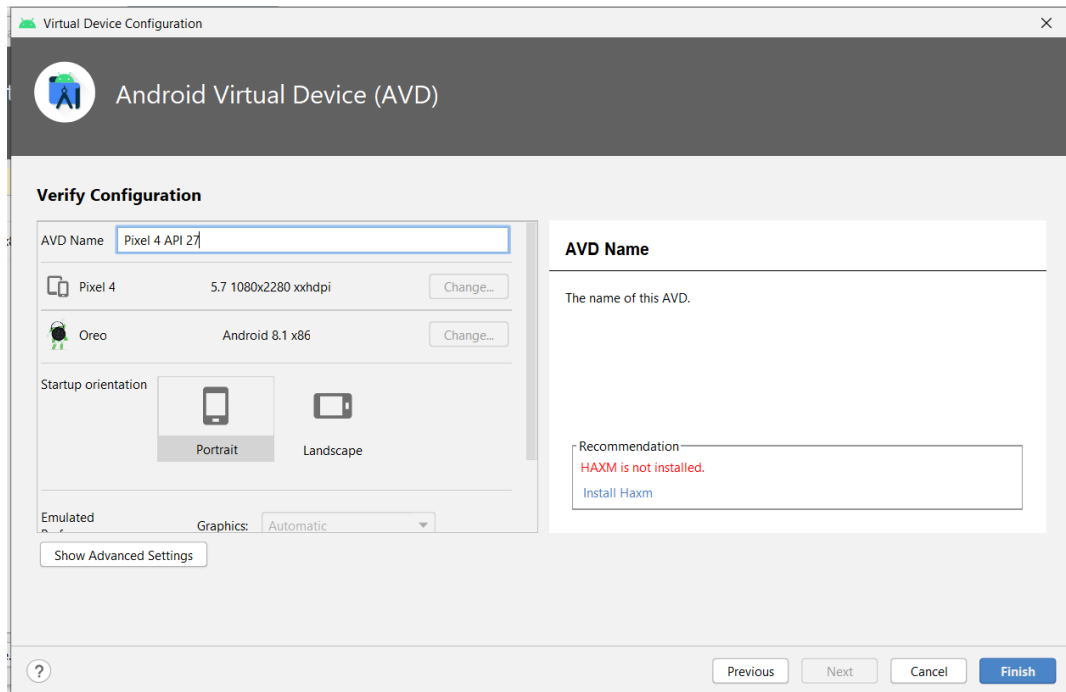
Now you have a virtual device set up and can use it to run the app. Once everything is set, Android Studio will take about a minute and then launch your virtual device. If it doesn't already launch your App, click the run button again and this time the emulator will launch the app.
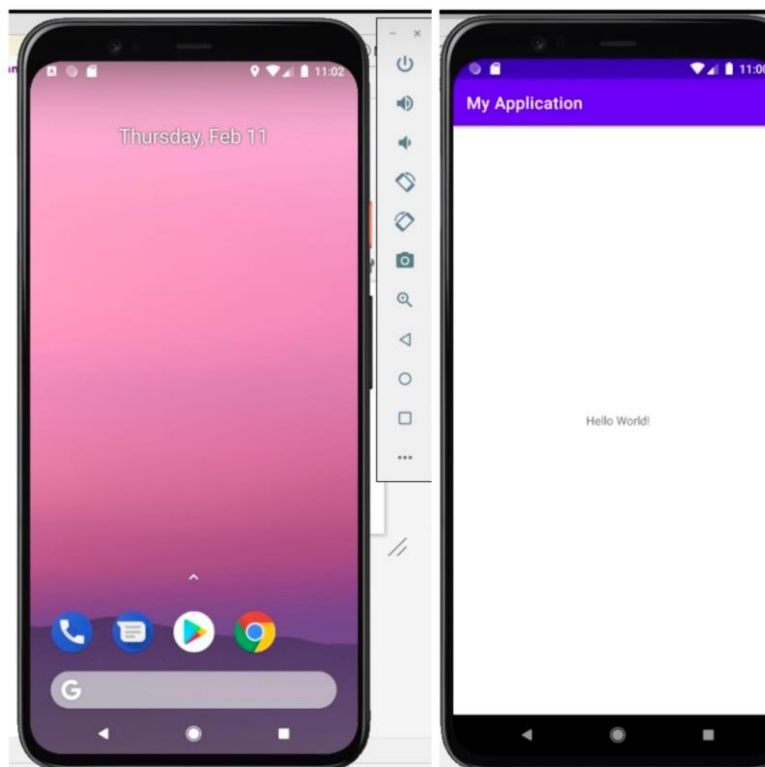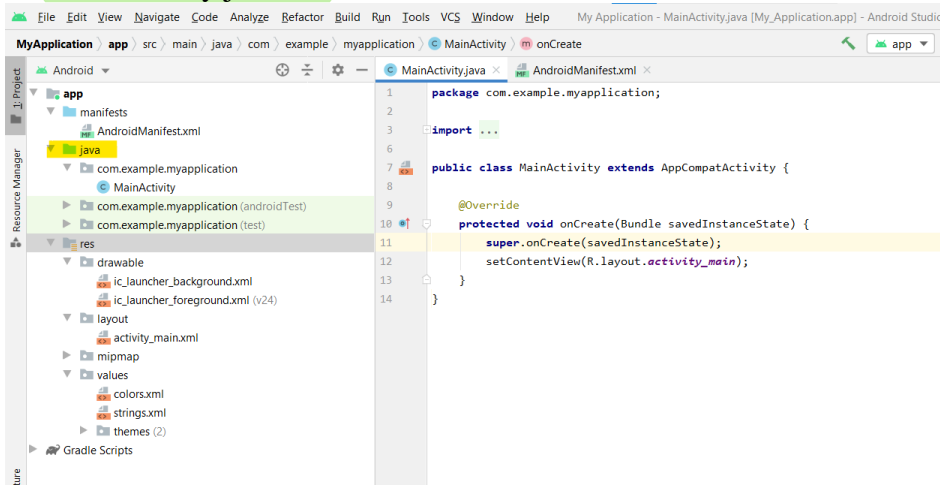
6. Java Folder

   Expand your project folder on left side folder structure and find the java folder. It contains the java code of your application.
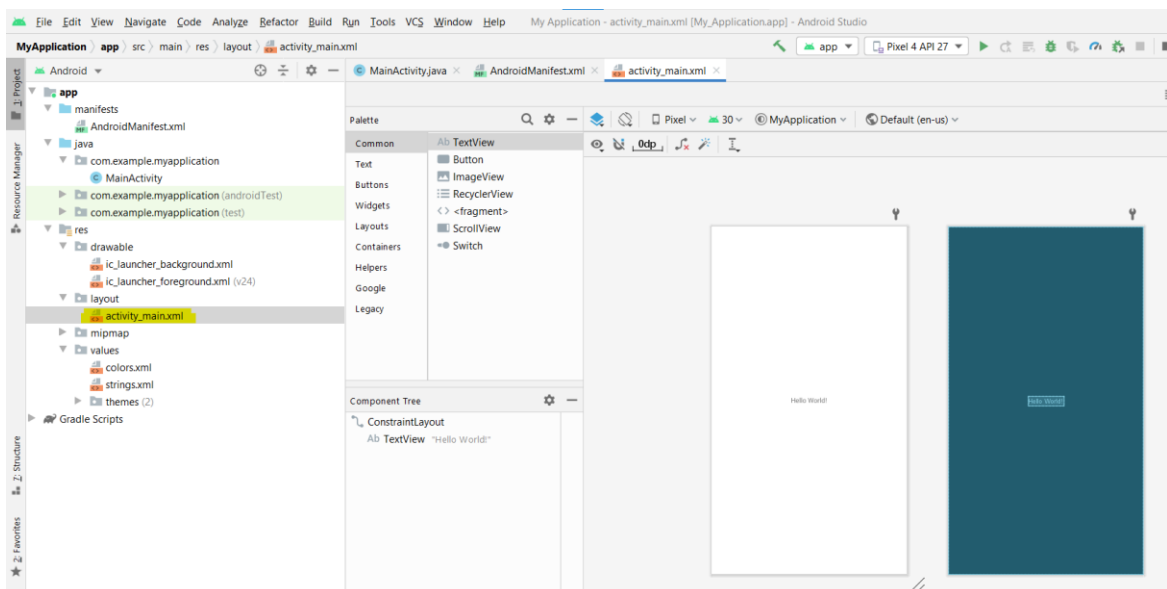
   Open MainActivity.java file.

   You can add new activities for your project here.

   Right click on your MainActivity.java file → New → Activity
   This will add a new java file as well as the interface connected with this java file.

7. User Interface

   Find the layout folder inside src folder.

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This folder contains the user interfaces of your application. Initially it has the activity_main.xml file which is connected with the MainActivity.java file.

Once you open this xml file you will be able to see the interface on screen. You can edit this screen using the design view and text view.

In design view you can drag and drop anything from the pallet.
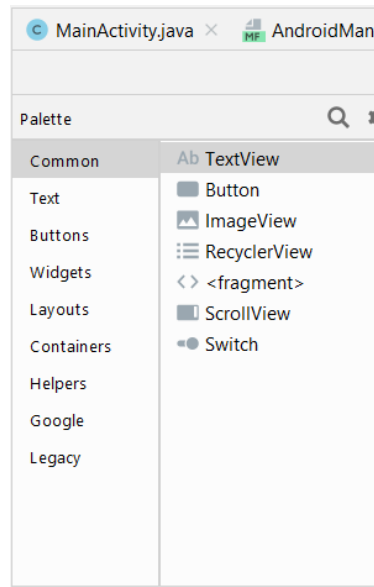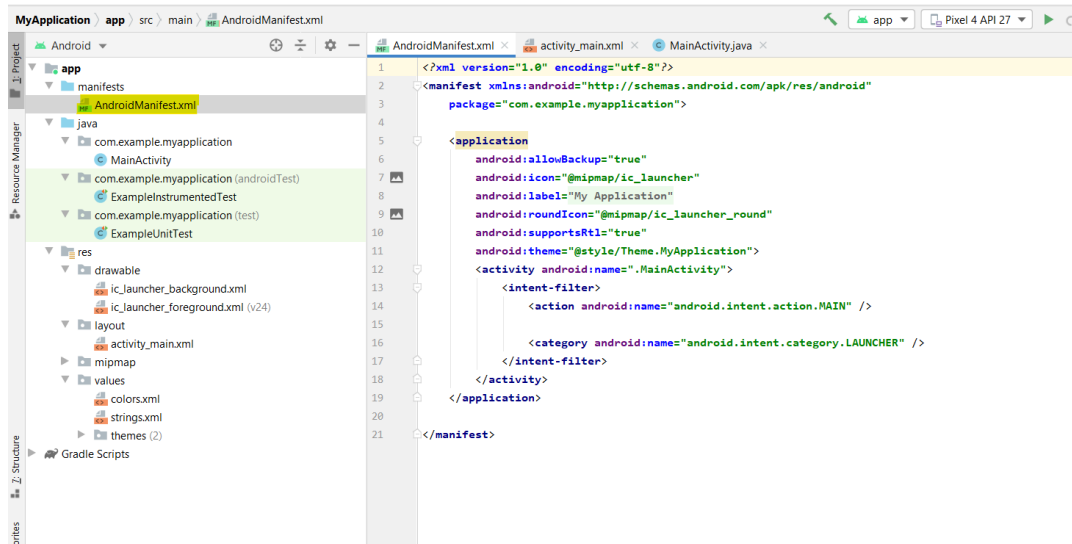

Use the properties to do modifications to added items on screen.

If select code tab at the top right corner of the mobile interface, your screen will be switched to the xml view of your user interface. Spilt view gives both code and UI view in the Android studio interface.
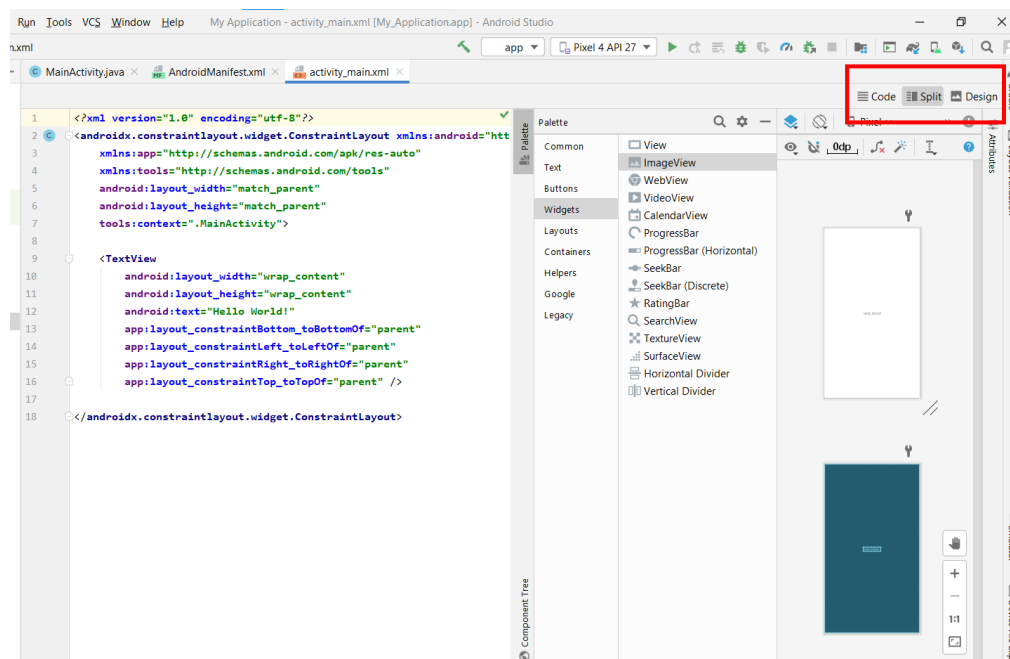
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You can edit your interface from this xml view as well.

Other important files in your project

> **AndroidManifest.xml**: Every application must have an AndroidManifest.xml file (with precisely that name) in its root directory. The manifest file presents essential information about your app to the Android system, information the system must have before it can run any of the app's code.
> **drawable**: Stores all the graphic files in your application.

Exercise

Develop a mobile application that will display your registration number, name and batch name on screen. Use three separate texts to make this application.

Note: Click the run button to run your application using the built AVD.

Change the properties (color, size etc) of the texts and background of the interface.