

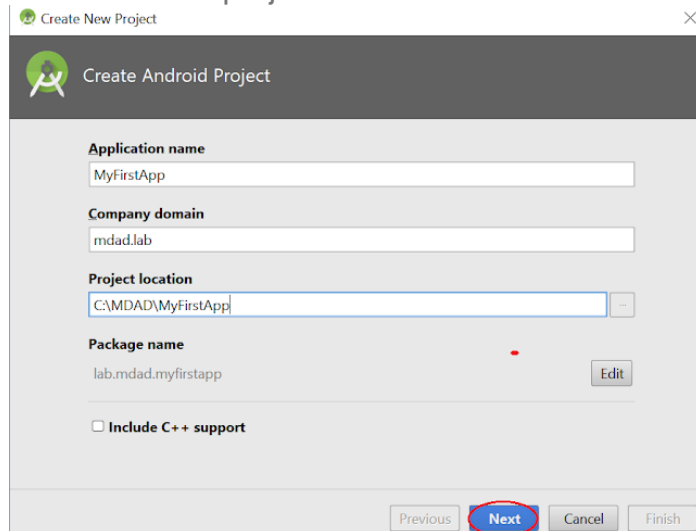
**LAB 2: Mobile Device (Native) Application 1**

Objective: Introduction to Android Mobile Device Application Development

Part 1: Create the First App

Like any programming, we begin with a Hello World example

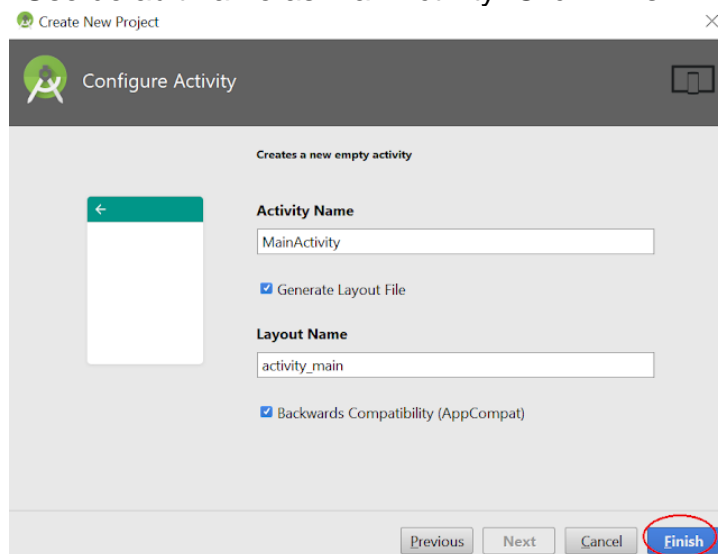
Step 1: Create a new project



Step 2: Select Phone and Tablet. Click Next

Step 3: Choose Empty Activity. Click Next

Step 4: Use default name as MainActivity. Click Finish

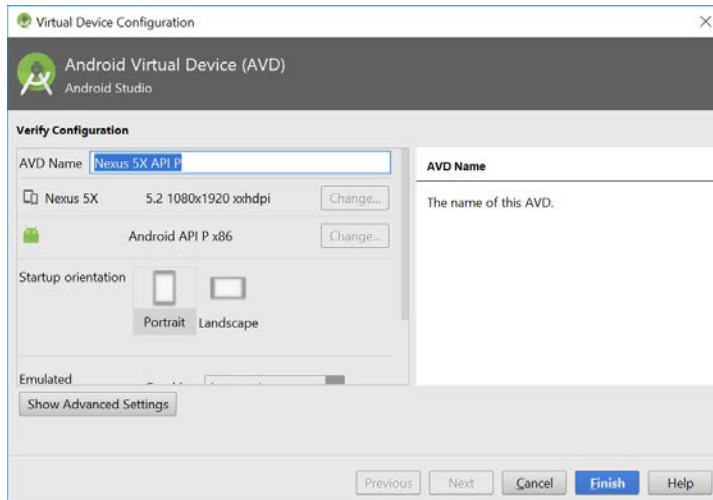


Step 5: Click Build> Rebuild Project.

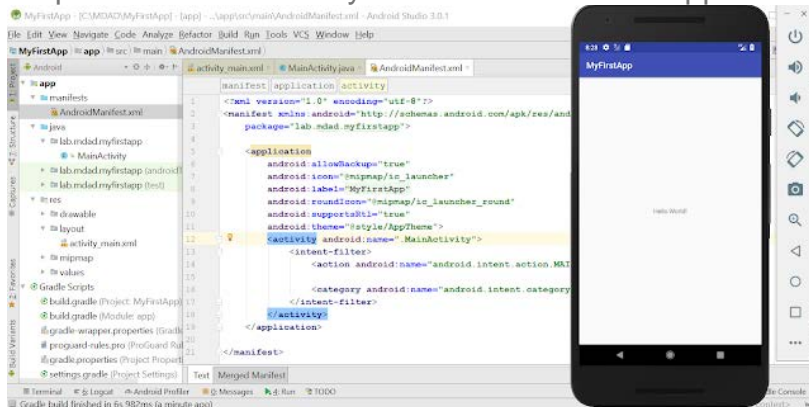
Step 6: Click on Run>Run App

Step 6B: If you do not have an Android Virtual device (AVD)

You need to click Create New Virtual Device

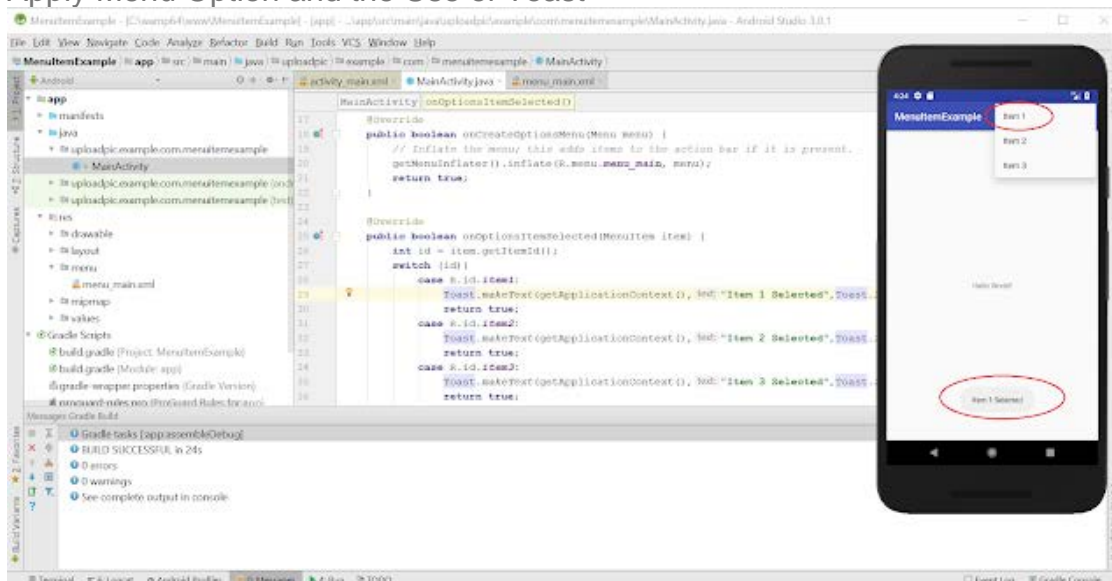


Step 7: You should see your First Hello World App



Part 2: Add Option Menu Items to Your App

Apply Menu Option and the Use of Toast



Step 1: Create a Menu folder

Right-clicked on **res** folder> New> Directory => type **menu** the folder/directory name

Step 2:

Right-click the **menu** directory > New > File and type **menu_main.xml** as the file name.

Type the followings in the xml file

It contains three items as show below. It will create 3 items automatically inside the res/menu directory.

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:app="http://schemas.android.com/apk/res-auto"
      xmlns:tools="http://schemas.android.com/tools">

    <item android:id="@+id/item1"
          android:title="Item 1"/>
    <item android:id="@+id/item2"
          android:title="Item 2"/>
    <item android:id="@+id/item3"
          android:title="Item 3"
          app:showAsAction="withText"/>

</menu>
```

Step 3: At the **File: MainActivity.java**

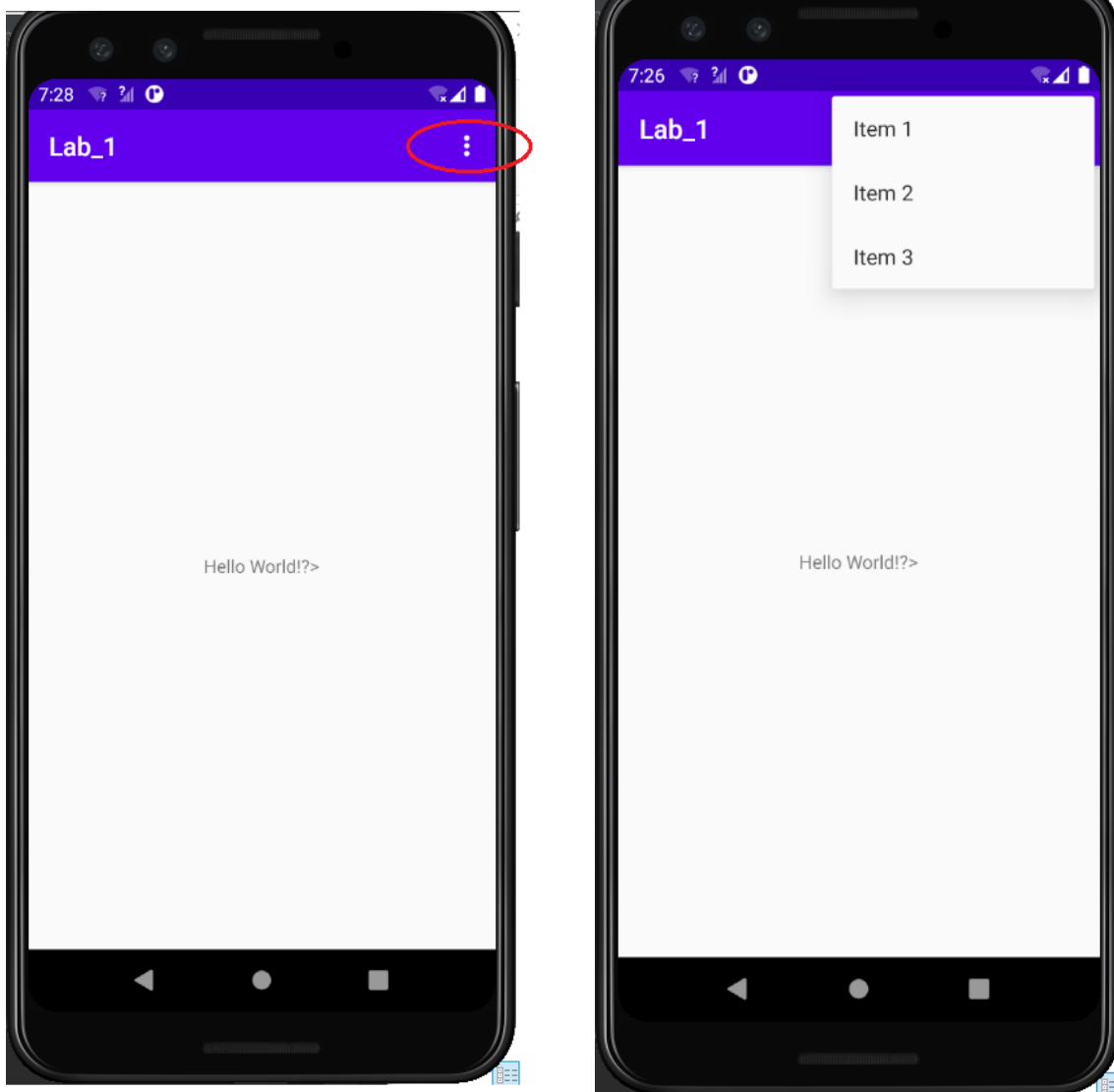
ADD in these 2 blocks of codes for method inside the class MainActivity

```
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    int id = item.getItemId();
    switch (id){
        case R.id.item1:
            Toast.makeText(getApplicationContext(), "Item 1 Selected", Toast.LENGTH_LONG).show();
            return true;
        case R.id.item2:
            Toast.makeText(getApplicationContext(), "Item 2 Selected", Toast.LENGTH_LONG).show();
            return true;
        case R.id.item3:
            Toast.makeText(getApplicationContext(), "Item 3 Selected", Toast.LENGTH_LONG).show();
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}

// move cursor to Menu in the code above, and press
// ALT+ Enter keys to import class for Menu. Do the same for MenuItem and Toast
```

Click the red-circled menu > select **Item 1**. The **Item 1 Selected** toast message appears for a short while.



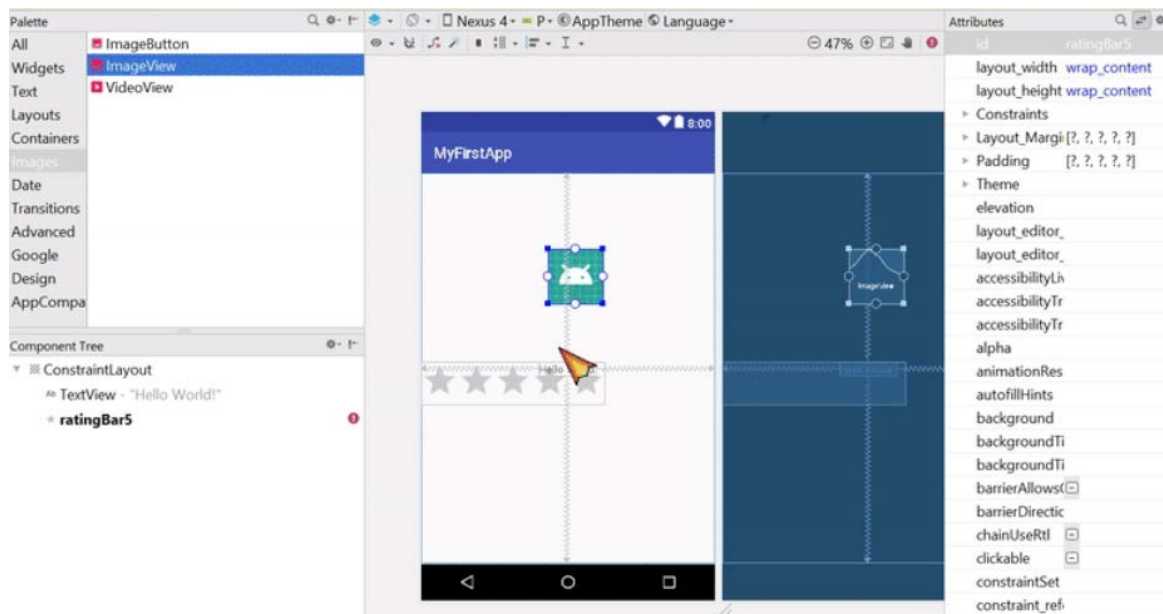
Part 2 Android Native app with Menu Option and Toast

☐ Show your output to your tutor

Lab Tutor's Signature: _____

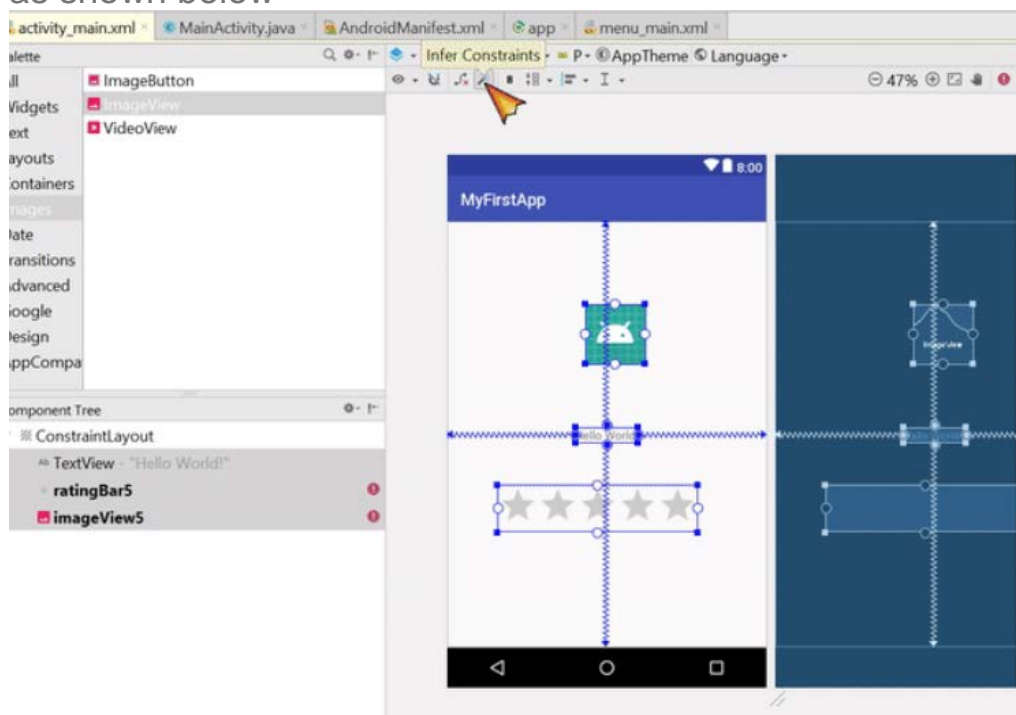
Part 3: To add ImageView and Ratingbar to the App and use the infer constraint for the layout

Step 1: Add **Widgets/Ratingbar** and **Widgets/imageView** as shown below

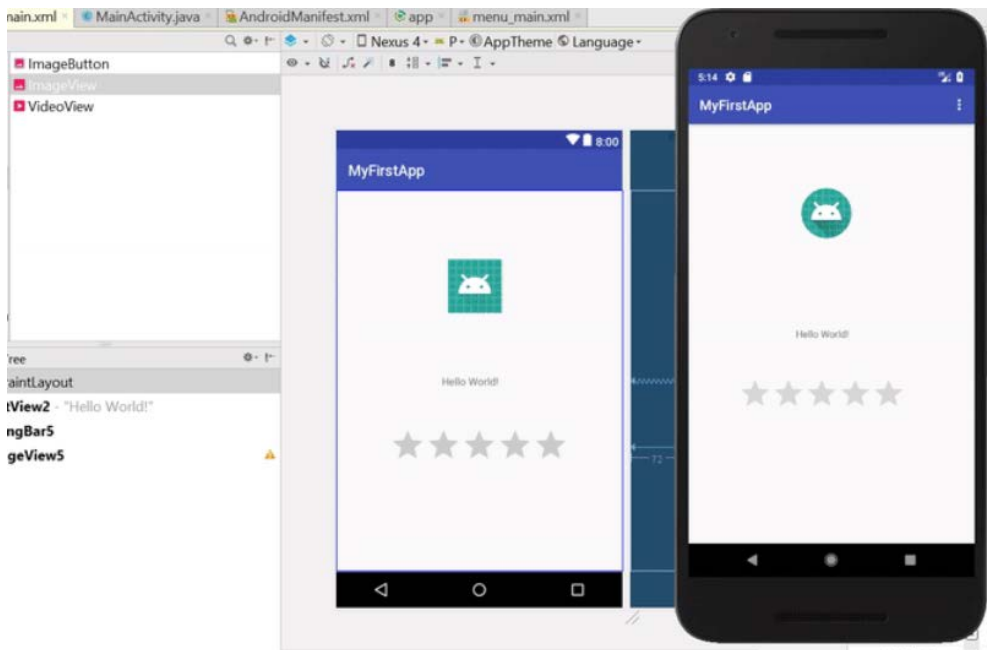


Step 2: Click Build>Rebuild Project. Run>Run App. See your emulator
You can see that your imageview and ratingbars were out of alignment when you run the app on the AVD.

Step 3: Use your mouse, select all the components and apply Infer constraint as shown below



Step 4: Click Run>Run App. See your emulator



Part 4: To add ImageView and onClickListener

Step 1: Download 2 pictures from <https://bit.ly/2QnzP4L>

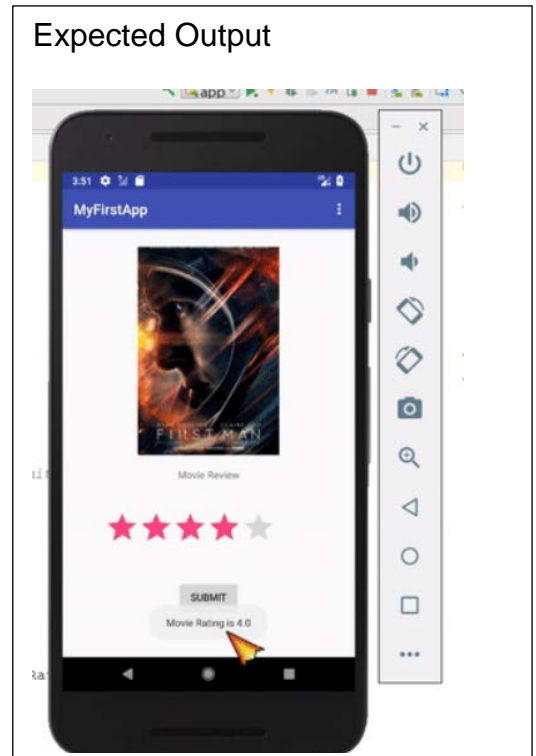
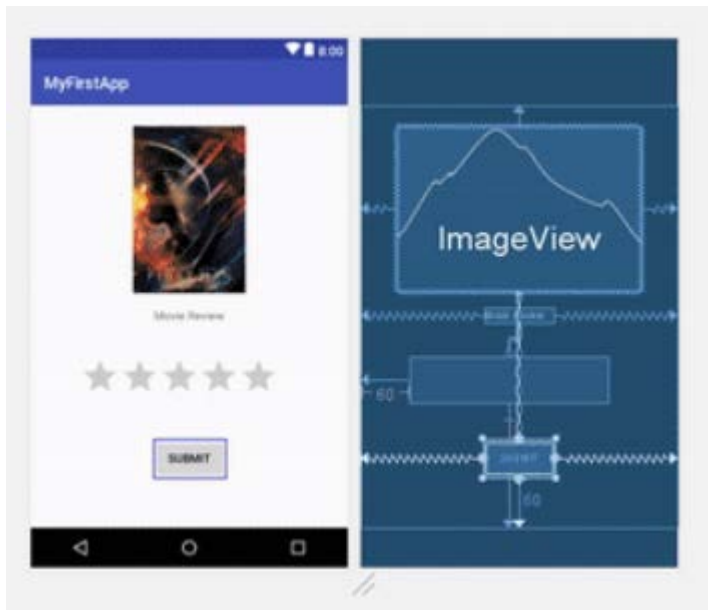
Step 2: Copy and paste the 2 pictures into res>drawable folder

Step 3: Remember to rename the image file name to lowercase (only jpg and png format are accepted and file size of image should not be too big).

Most download traffic consists of images. As a result, the smaller you can make your downloadable images, the better a network experience your app can provide for users. This page provides guidance on making image files smaller and more network-friendly.

Please Note the image name can only include lowercase a-z, 0-9, or underscore, otherwise there will have an error when you rebuild the android project. The error message like ” **Error: ‘-’ is not a valid file-based resource name character: File-based resource names must contain only lowercase a-z, 0-9, or underscore** ”

Step 4: Add a submit button



Step5 : Add java coding to MainActivity.java

Here are the partial codes given to you

Add it in the MainActivity.java

```
//#1 Declare a ratingBar object as
// a class variable of MainActivity.java
RatingBar ratingBar;
```

Bind Java ratingBar object with xml GUI component R.id.ratingBar1

```
//#2 binding the xml view with java ratingBar using its id, R.id.ratingBar1
ratingBar = (RatingBar) findViewById(R.id.ratingBar1);
```

Bind Java Button with xml GUI component btnSubmit

```
//#3 binding the xml view with java button using its id, R.id.btnSubmit
Button button = (Button) findViewById(R.id.btnSubmit);
```

This is a OnClickListener for button btnSubmit

```
//#4 Button click Listener
button.setOnClickListener(new View.OnClickListener() {
```

```
public void onClick(View v){

    }

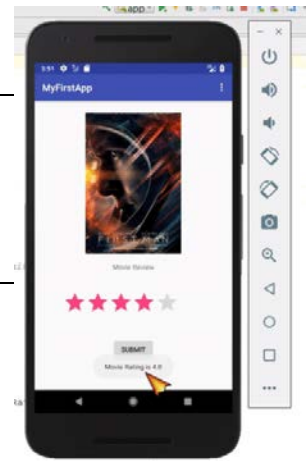
});
```

Toast is to show/display text on the screen for a short duration of time
 Toast.LENGTH_SHORT

Expected Output

Place this code inside the `onClick(View v)` method

```
//#5 Show the rating value on Toast
Toast.makeText(MainActivity.this, "Movie Rating is " +
String.valueOf(ratingBar.getRating()),
Toast.LENGTH_SHORT).show();
```



Step 6 : Run the App to see the output results

Part 5: To change Image in ImageView

Place the codes in the correct sections
 Here are the partial codes:

```
//#6 Define count , ImageView and movieName
int count=0;
ImageView iv;
String movieName ="First Man";
```

```
//#7 bind the xml view with java iv using its id, R.id.imageView1
iv =(ImageView)findViewById(R.id.imageView1);
```

```
//#8 Show the rating value and movieName on Toast
Toast.makeText(MainActivity.this, "Movie Rating is for " + movieName +
": " +String.valueOf(ratingBar.getRating()),
Toast.LENGTH_SHORT).show();
```

```
//#9 Toggle the image after submit button clicked
```



```
if ( count%2==0) //even number 0,2,4,6
{
    iv.setImageResource(R.drawable.earlyman); //toggle ImageView to
    earlyman
    movieName = "Early Man";
}
else
{
    iv.setImageResource(R.drawable.firstman); //toggle ImageView to
    firstman
    movieName = "First Man";
}

//#10 increase the count and reset ratingBar to zero

count++; //increase count by 1
ratingBar.setRating(0);
```

Click Build>Rebuild Project. Run the App to see the output results.