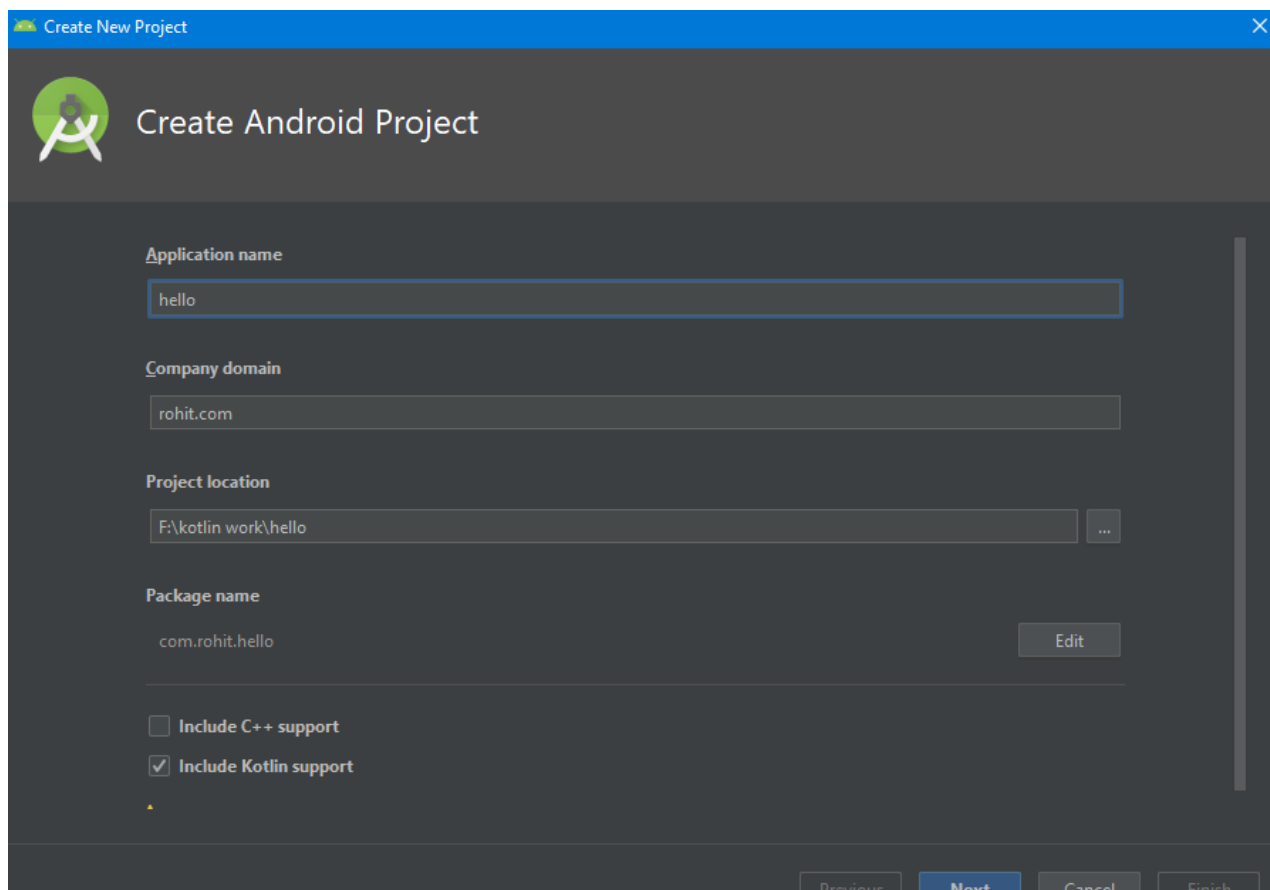



# PRACTICAL 1


1. Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals: Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple “Hello World” program.

## Solution:

Creating a project:



 Create New Project ✕

 Target Android Devices

### Select the form factors and minimum SDK

Some devices require additional SDKs. Low API levels target more devices, but offer fewer API features.

☒ Phone and Tablet

API 15: Android 4.0.3 (IceCreamSandwich) ▼

By targeting **API 15 and later**, your app will run on approximately **100%** of devices. [Help me choose](#)

☐ Include Android Instant App support

☐ Wear OS

API 23: Android 6.0 (Marshmallow) ▼

☐ TV

API 21: Android 5.0 (Lollipop) ▼

☐ Android Auto

☐ Android Things

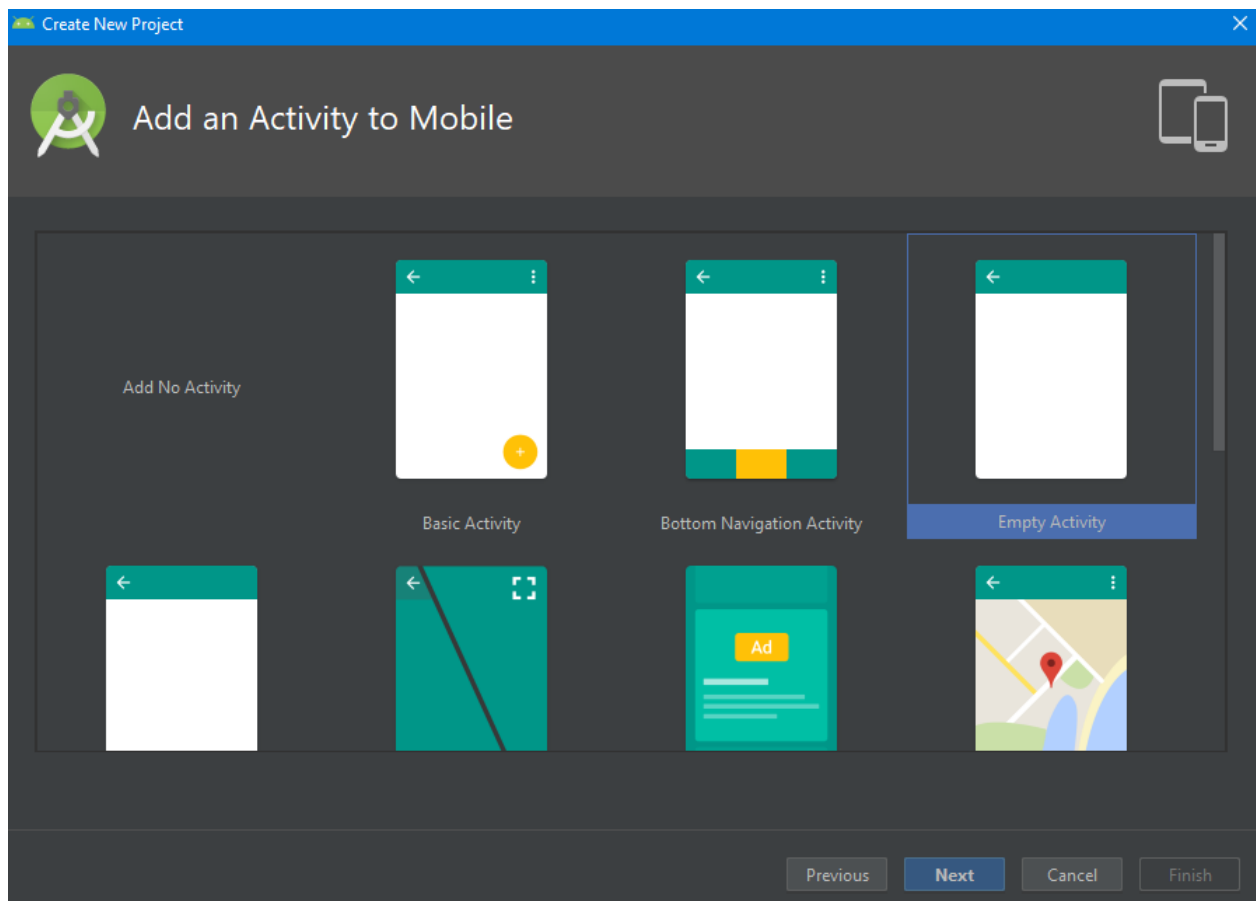
API 24: Android 7.0 (Nougat) ▼

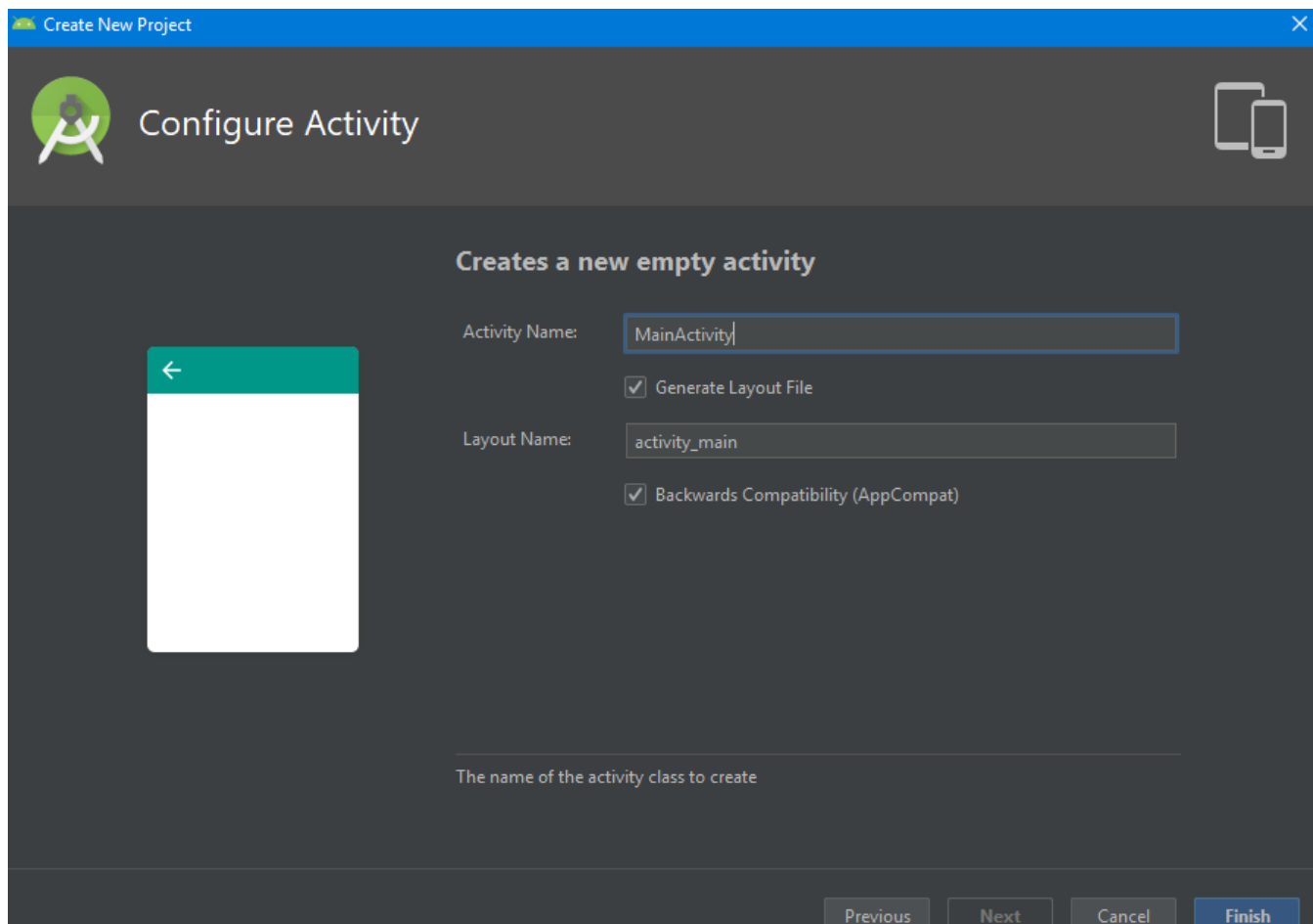
Previous

Next

Cancel

Finish





Activity\_Main.Kt

```
package com.rohit.hello

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

Activity\_Main.xml

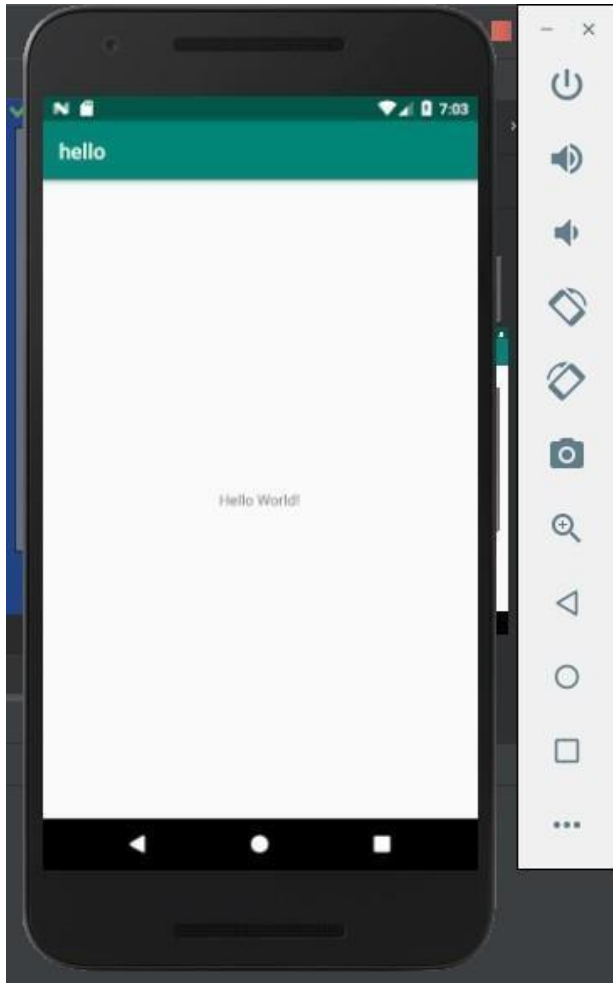
**Karan Kanojya (B20222538)**

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
```

```
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintLeft_toLeftOf="parent"  
app:layout_constraintRight_toRightOf="parent"  
app:layout_constraintTop_toTopOf="parent"/>  
</android.support.constraint.ConstraintLayout>
```

Apk in avd:



## BroadcastActivity:

How to receiving Broadcast

Apps can receive and android BroadcastReceiver in two ways: through manifest-declared receivers and context-registered receivers. In this example, we are approaching manifest-declared Receiver. Learn step by step to the kotlin broadcast receiver example works.

Step 1. Create an android app, For creating an Android app with kotlin read this tutorial.

Step 2. Creating Broadcast Receiver

Create and extend Subclass and BroadcastReceiver implement. onReceive(Context, Intent) where onReceive method each message is received as an Intent object parameter.

MyReceiver.kt:

```
import android.content.BroadcastReceiver
```

```
import android.content.Context
```

```
import android.content.Intent
```

```
import android.widget.Toast
```

```
class MyReceiver : BroadcastReceiver() {
```

```
    override fun onReceive(context: Context, intent: Intent) {
```

```
        // TODO: This method is called when the BroadcastReceiver is receiving
```

```
        // an Intent broadcast.
```

```
        Toast.makeText(context, "Broadcast : Flight mode changed.",
```

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Toast.LENGTH\_LONG).show()

}



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```
}
```

3. Declare a broadcast receiver in the manifest file

add the element <receiver> in your app's manifest. Here is code snap

```
<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="in.eyehunt.androidbroadcasts">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"

        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">

        <activity android:name=".MainActivity">
            <intent-filter>

                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <receiver
            android:name=".MyReceiver"
            android:enabled="true"
```

Karan Kanojiya (B20222538)  
android:exported="true">

Karan Kanojiya (B20222538)

<intent-filter>

<action android:name="android.intent.action.AIRPLANE\_MODE"/>

</intent-filter>

```
</receiver>
```

```
</application>
```

```
</manifest>
```

Note: If the app is not running and broadcast receiver declared in AndroidManifest.xml, then the system will launch your app.

Step 4. MainActivity code, no needs to do anything

MainActivity.kt:

```
import android.support.v7.app.AppCompatActivity
```

```
import android.os.Bundle
```

```
class MainActivity : AppCompatActivity() {  
    override fun onCreate(savedInstanceState: Bundle?) {  
        super.onCreate(savedInstanceState)  
        setContentView(R.layout.activity_main)  
    }  
}
```

Step 5. Add following code in main\_activity.xml

add <ImageView> and <TextView> widget layout file.

main\_activity.xml:

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```
<?xml version="1.0" encoding="utf-8"?>
```

```
<android.support.constraint.ConstraintLayout  
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"
```

```
    android:layout_width="match_parent"
```

```
android:layout_height="match_parent"
android:background="@color/colorPrimary"
tools:context="in.eyehunt.androidbroadcasts.MainActivity">
```

```
<ImageView
```

```
    android:id="@+id/imageView"
    android:layout_width="40dp"
    android:layout_height="40dp"
    android:layout_margin="8dp"
    android:layout_marginTop="16dp"

    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:srcCompat="@mipmap/baseline_airplanemode_active_white_24" />
```

```
<TextView
```

```
    android:id="@+id/textView"
    android:layout_width="300dp"
    android:layout_height="36dp"
    android:layout_marginEnd="8dp"
    android:layout_marginStart="8dp"
    android:gravity="center_vertical"
    android:text="Flight Mode"

    android:textColor="@color/colorWhite"
    android:textSize="24dp"
```

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app:layout\_constraintEnd\_toEndOf="parent"



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```
app:layout_constraintStart_toEndOf="@+id/imageView"
```

```
app:layout_constraintTop_toTopOf="@+id/imageView" />
```

</android.support.constraint.ConstraintLayout>

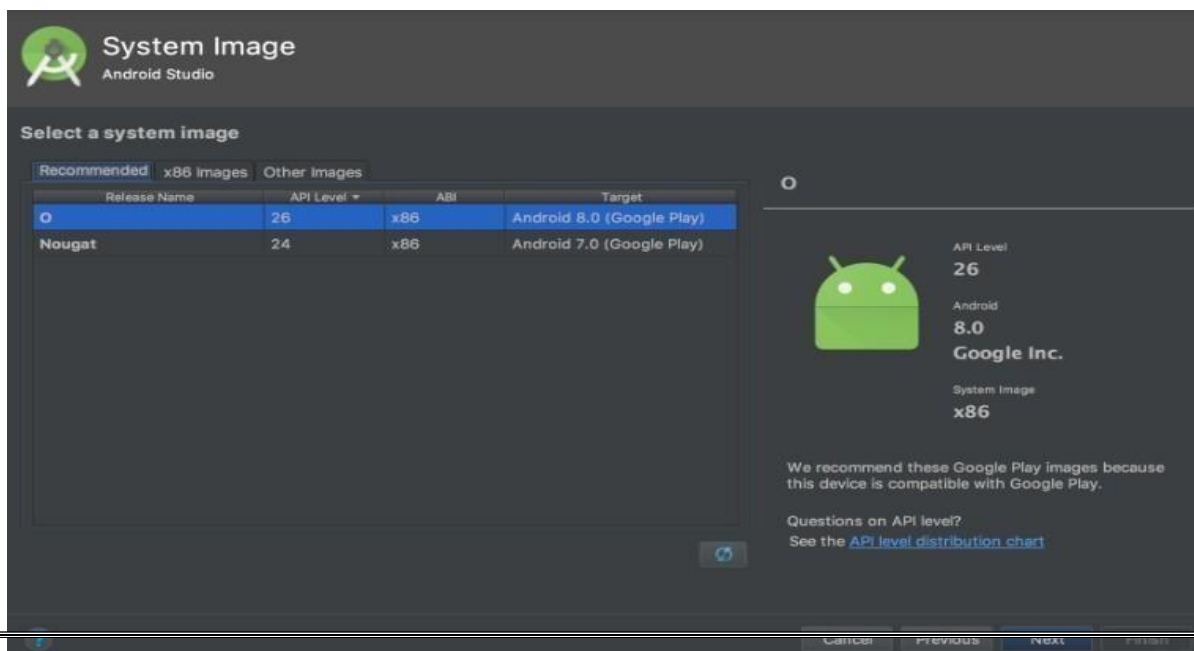
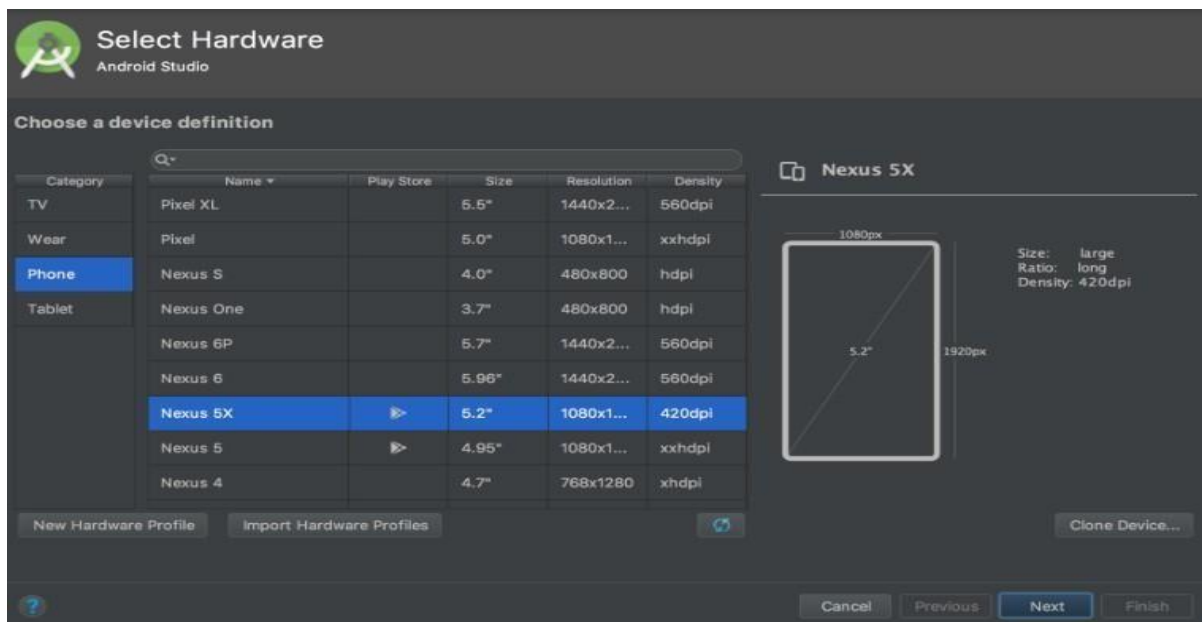
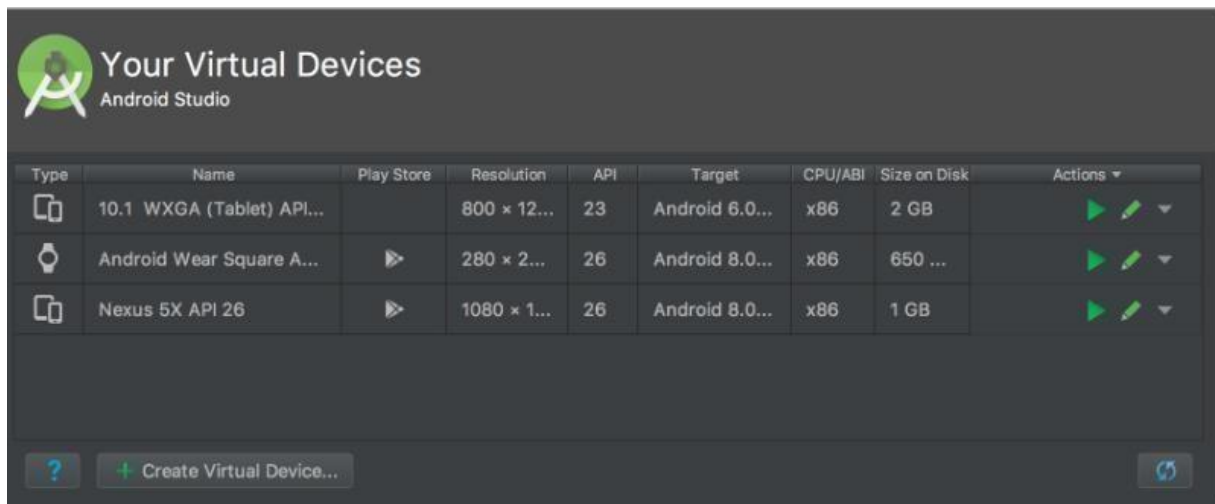


## Create and manage virtual devices:

To open the AVD Manager, do one of the following:

**Karan Kanojiya (B20222538)**

- Select Tools > AVD Manager.
- Click AVD Manager AVD Manager icon in the toolbar.



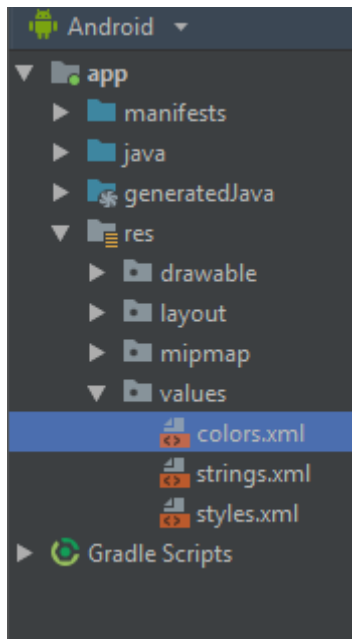


# PRACTICAL 2

## Programming Resources

Android Resources: (Color, Theme, String, Drawable, Dimension, Image).

### Color:



### Color.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#008577</color>
    <color name="colorPrimaryDark">#00574B</color>
    <color name="colorAccent">#D81B60</color>
</resources>
```

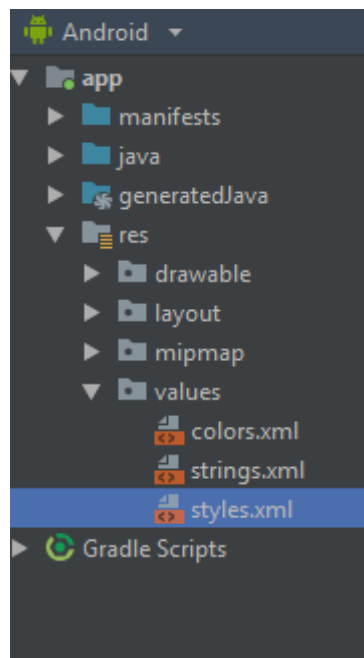
### Theme:

### Style.xml

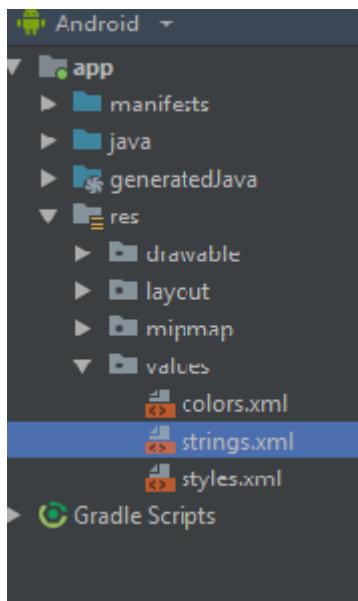
```
<resources>

    <!-- Base application theme. -->
    <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your theme here. -->
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
    </style>

</resources>
```



## String:

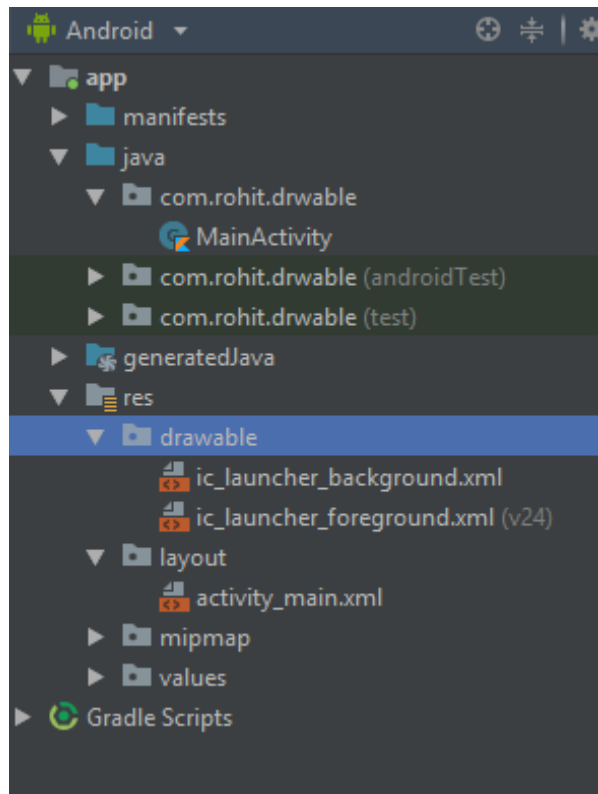


## String.xml:

```
<resources>
  <string name="app_name">hello</string>
  <string name="numbers">
    <item>1</item>
    <item>2</item>
    <item>3</item>
  </string>
</resources>
```

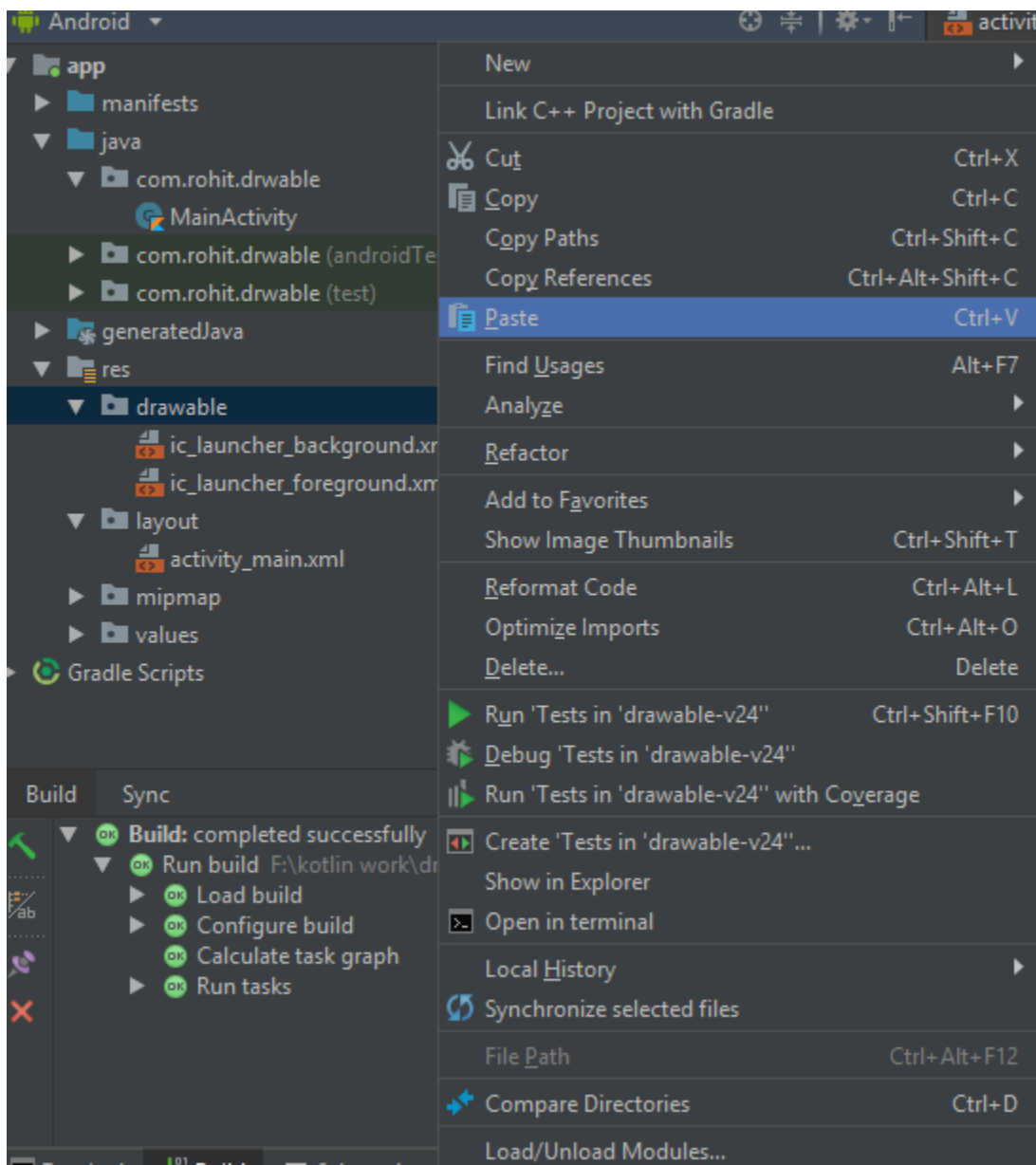
## Drawable:

1. Right click on drawable folder



2. Copy the image if you want to create image drawable
3. Paste that image file inside the drawable folder





**Note:** to create drawable resource, right click on drawable folder and select drawable resource file.

**Dimension, Image:**

**Main\_Activity.kt:**

```
package com.rohit.drawable
import android.support.v7.app.AppCompatActivity
```

**Karan kanojiya (B20222538)**

```
import android.os.Bundle
```

```
class MainActivity : AppCompatActivity() {
```

```
    override fun onCreate(savedInstanceState: Bundle?) {
```

```
super.onCreate(savedInstanceState)
setContentView(R.layout.activity_main)
}
```

### activity\_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:background="@drawable/one">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"/>

</LinearLayout>
```

### Output:



# PRACTICAL 4

## Programs related to different Layouts

Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.

### 1. linear layout:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical" >

    <Button android:id="@+id/btnStartService"
        android:layout_width="270dp"
        android:layout_height="wrap_content"
        android:text="start_service"/>

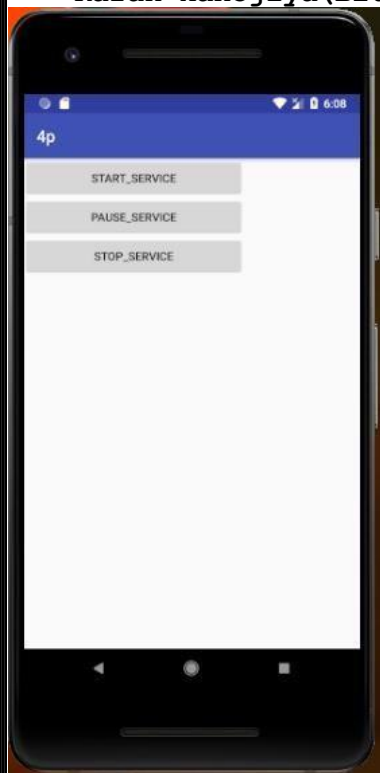
    <Button android:id="@+id/btnPauseService"
        android:layout_width="270dp"
        android:layout_height="wrap_content"
        android:text="pause_service"/>

    <Button android:id="@+id/btnStopService"
        android:layout_width="270dp"
        android:layout_height="wrap_content"
        android:text="stop_service"/>

</LinearLayout>
```

**Output:**

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## 2. Relative:

```
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="fill_p
arent"
android:paddingLeft="16dp"
android:paddingRight="16dp" >

<EditText
android:id="@+id
/name"
android:layout_width="fill_par
ent"
android:layout_height="wrap_co
ntent"
android:hint="@string/reminder
" />

<LinearLayout
android:orientation="vertical"
android:layout_width="fill_paren
t"
android:layout_height="fill_pare
nt"
android:layout_alignParentStart=
```

```

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="New Button"
    android:id="@+id/button2" />

</LinearLayout>

</RelativeLayout>

```

## Output:



### 3. Table: Activity\_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TableLayout android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="150dp">
        <TableRow>
            <Button
                android:id="@+id/btn1"
                android:text="1"
                android:layout_gravity="center"
            />
            <Button
                android:id="@+id/btn2"
                android:text="2"
                android:layout_gravity="center"
            />
            <Button
                android:id="@+id/btn3"

```

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```
android:text="3"
```

```
android:layout_gravity="center"
```

&lt;/TableRow&gt;

&lt;Button

<TableRow>
------------



**Karan kanojiya (B20222538)**

```
        />
        <Button android:id="@+id/btn4"
            android:text="4"
            android:layout_gravity="center"

            android:id="@+id/btn5"
            android:text="5"
            android:layout_gravity="center"
        /><Button
            android:id="@+id/btn6"
            android:text="6"
            android:layout_gravity="center"
        />
    </TableRow>
    <TableRow>
        <Button
            android:id="@+id/btn7"
            android:text="7"
            android:layout_gravity="center"

        />
```

```
        <Button
            android:id="@+id/btn8"
            android:text="8"
            android:layout_gravity="center"

        /><Button
            android:id="@+id/btn9"
            android:text="9"
            android:layout_gravity="center"

        />
    </TableRow>
</TableLayout>

</LinearLayout>
```

### Activity\_main.kt

```
package com.r.table_view

import android.support.v7.app.AppCompatActivity
import android.os.Bundle
import kotlinx.android.synthetic.main.activity_main.*
import org.jetbrains.anko.toast

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        btn1.setOnClickListener {
            toast("1")
        }

        btn2.setOnClickListener {
            toast("2")
        }

        btn3.setOnClickListener {
            toast("3")
        }

        btn4.setOnClickListener {
            toast("4")
        }

        btn5.setOnClickListener {
            toast("5")
        }

        btn6.setOnClickListener {
            toast("6")
        }
    }
}
```

Output:



#### 4. Frame:

##### Activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ImageView android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:src="@drawable/red"
        android:scaleType="centerCrop"/>

    <TextView
        android:textSize="100dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:gravity="center"
        android:textColor="@color/rohit"
        android:layout_marginTop="220dp"
        />

</FrameLayout>
```

## Activity\_main.kt

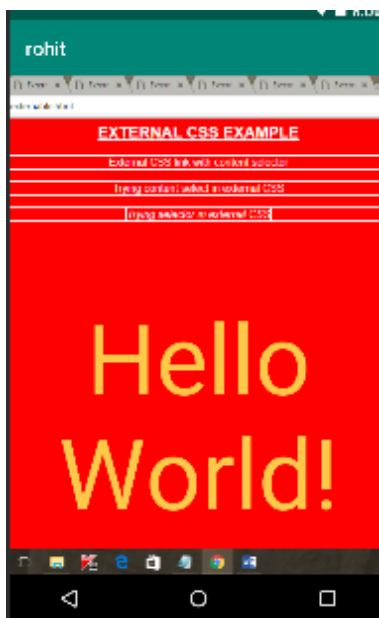
```
package com.rohit.frame_layout

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

Output:



## 5. List View:

### Activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btn"
```

= ""

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```
        android:text="Click me to view list"
        android:layout_marginTop="200dp"
        android:layout_marginLeft="90dp"/>
</LinearLayout>
```

## String.xml

```
<resources>
    <string name="app_name">list</string>

    <array name="insert_list">
        <item>one</item>
        <item>two</item>
        <item>three</item>
        <item>four</item>
        <item>five</item>
        <item>six</item>
        <item>seven</item>
        <item>eight</item>
        <item>nine</item>
        <item>ten</item>
    </array>
</resources>
```

## Activity\_list\_view.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<ListView
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".list_view" android:entries="@array/insert_list">

</ListView>
```

## List\_view.kt:

```
package com.rohit.list

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class list_view : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_list_view)
    }
}
```

## main\_Activity.kt

**Karan Kanojiya (B20222538)**

```
package com.rohit.list

import android.content.Intent
import android.support.v7.app.AppCompatActivity
import android.os.Bundle
import kotlinx.android.synthetic.main.activity_main.*

class MainActivity : AppCompatActivity() {
```



**Karan Kanojiya (B20222538)**

```
override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_main)

    btn.setOnClickListener {
        val intent =Intent(this, list_view::class.java)
        startActivity(intent)
    }
}
```

## Output



## 6. Grid layout:

```
7. <?xml version="1.0" encoding="utf-8"?>
    <GridLayout
        xmlns:android="http://schemas.android.com/apk/res/android"
        xmlns:tools="http://schemas.android.com/tools"
        xmlns:app="http://schemas.android.com/apk/res-auto"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:context=".MainActivity"
        android:rowCount="3"
        android:columnCount="3"
        android:padding="20dp">

        <Button
            android:layout_width="110dp"
            android:layout_height="100dp"
            android:text="1"/>

        <Button
            android:layout_width="110dp"
            android:layout_height="100dp"
            android:text="2"/>

        <Button
            android:layout_width="110dp"
            android:layout_height="100dp"
```

```
        android:text="3"/>
    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="4"/>

    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="5"/>

    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="6"/>

    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="7"/>

    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="8"/>

    <Button
        android:layout_width="110dp"
        android:layout_height="100dp"
        android:text="9"/>

</GridLayout>
```

mainActivity.kt:

```
package com.rohit.grid_layout

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

Output:

