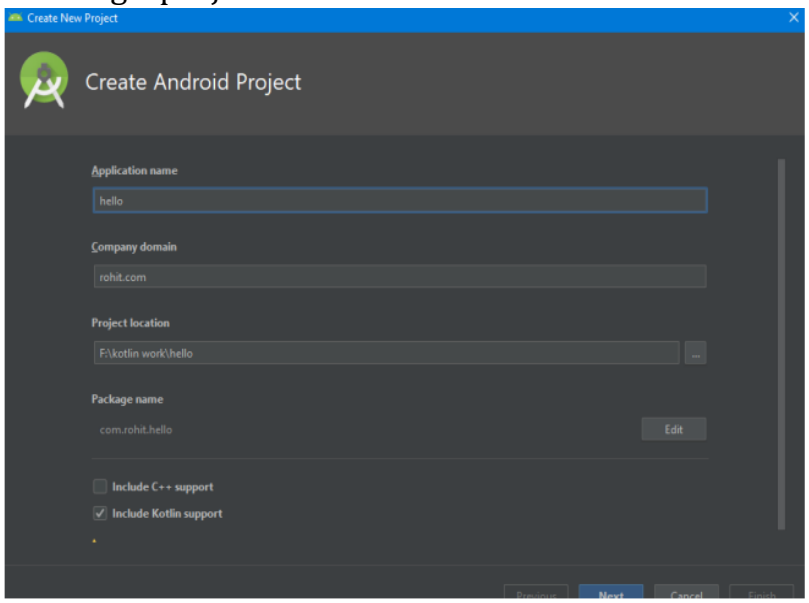
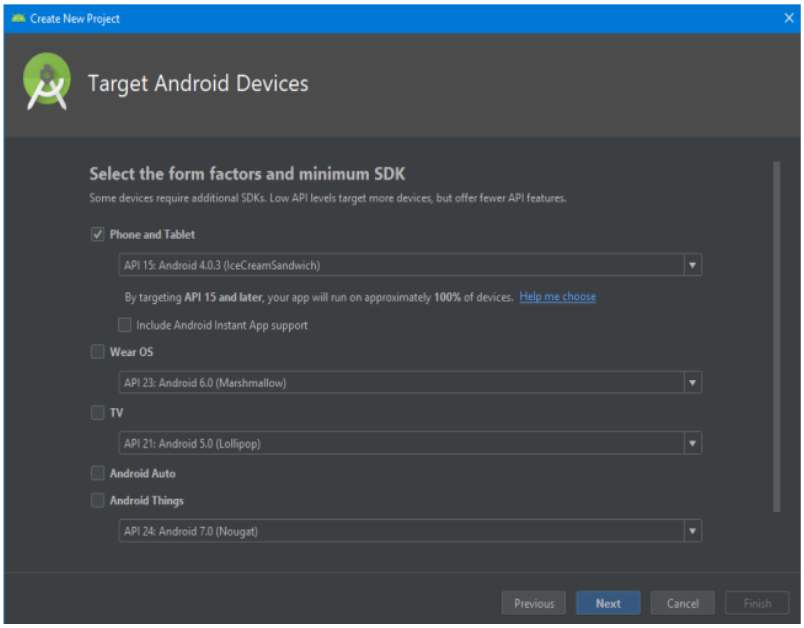
PRACTICAL 1 1.

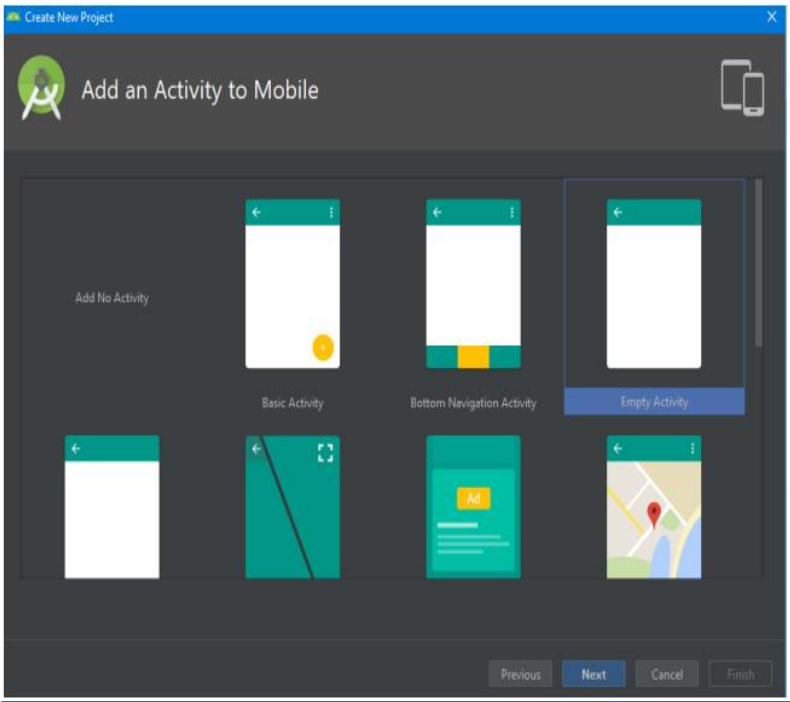
Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals: Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple "Hello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

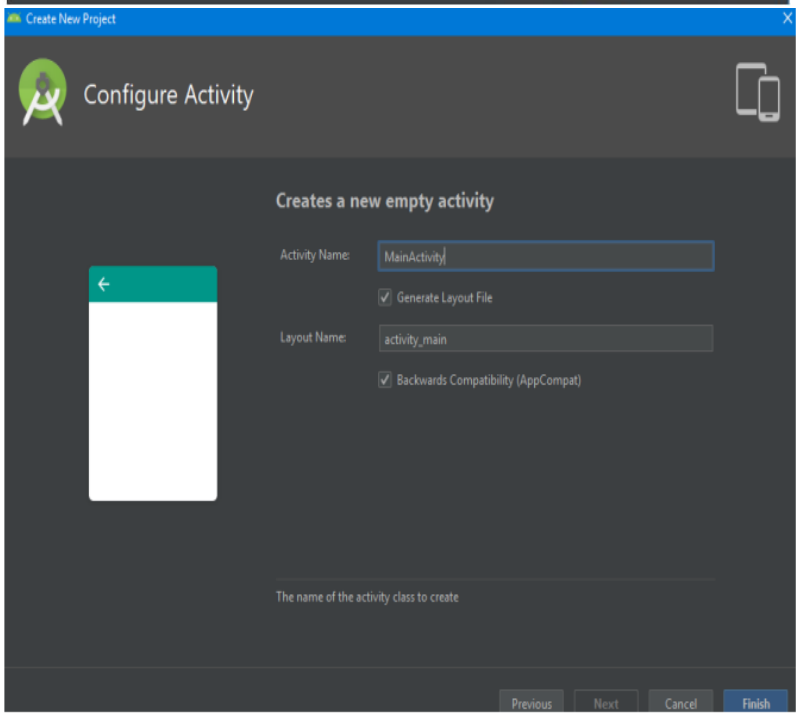
Solution:

Creating a project









MainActivity.java

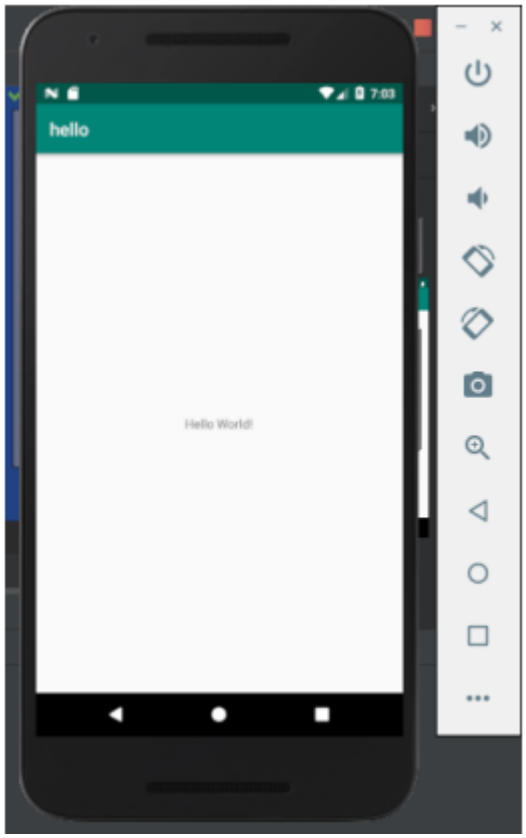
```
package com.rohit.hello;

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

public class MainActivity extends AppCompatActivity {
   @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

Activity_Main.xml

```
<?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 java broadcast receiver example works.

Step 1. Create an android app, For creating an Android app with java 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.java:

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.",
Toast.LENGTH_LONG).show()
}
}
```

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"
    android:exported="true">
    <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, thenthe system will launch your app.

Step 4. MainActivity code, no needs to do anything

MainActivity.java

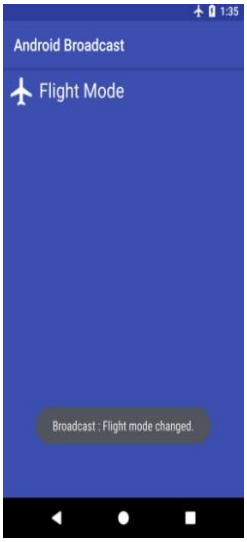
```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      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:

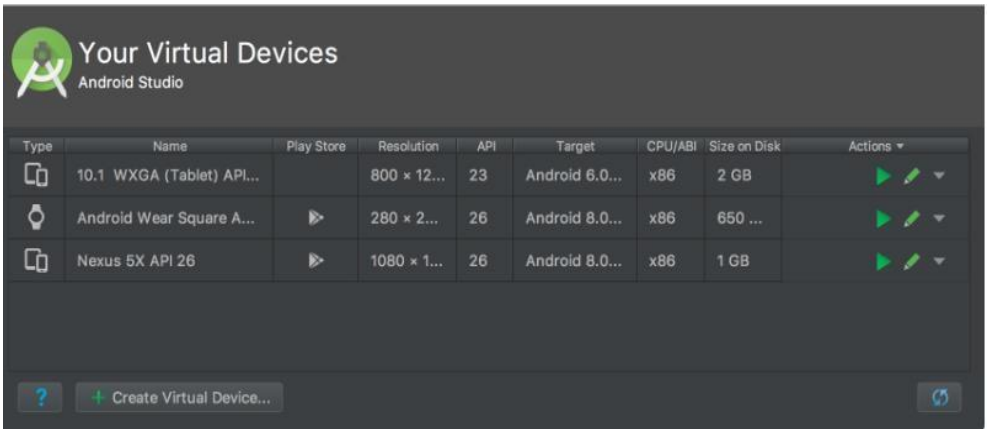
```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent" android:layout_height="match_parent"
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"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintStart_toEndOf="@+id/imageView"
   app:layout_constraintTop_toTopOf="@+id/imageView" />
</android.support.constraint.ConstraintLayout>
```

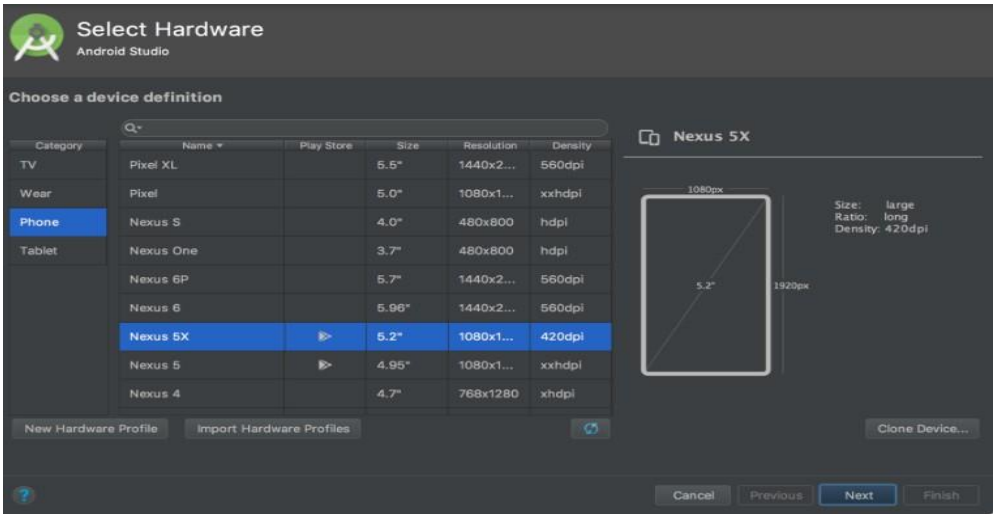

1:35
Android Broadcast
Flight Mode
Broadcast : Flight mode changed.

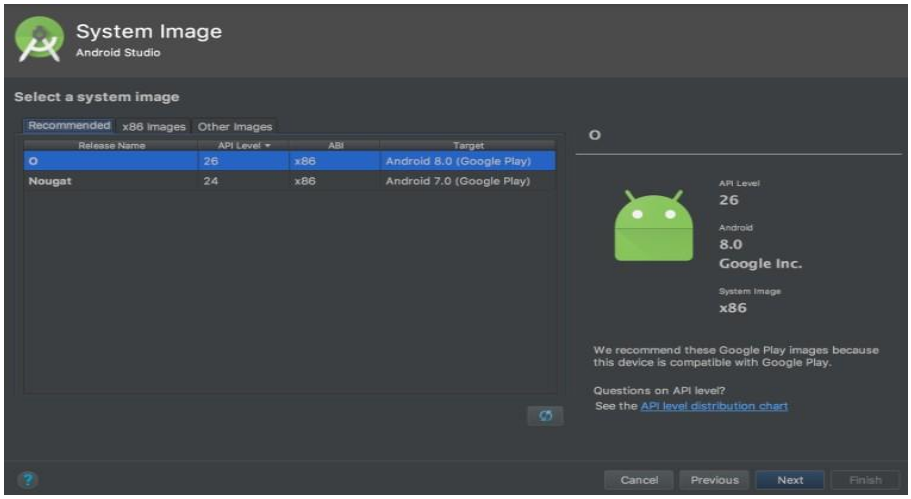
Create and manage virtual devices:

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

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






System Image
Android Studio
Select a system image
Recommended
x86 Images
Other Images
Release Name
API Level
ABI
Target
O
26
x86
Android 8.0 (Google Play)
Nougat
24
x86
Android 7.0 (Google Play)
O
API Level
26
Android
8.0
Google Inc.
System Image
x86
We recommend these Google Play images because this device is compatible with Google Play.
Questions on API level?
See the API level distribution chart
Cancel
Previous
Next
Finish

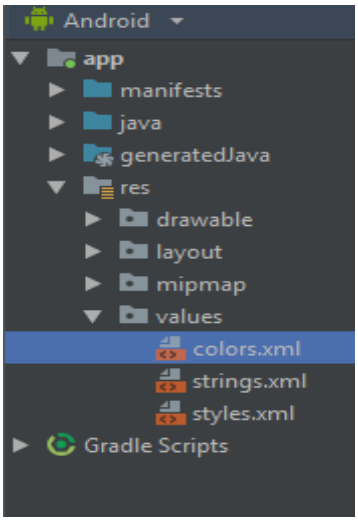

Android Virtual Device (AVD)
Android Studio
Verify Configuration
AVD Name
Nexus 5X API 26 2
Nexus 5X
5.2 1080x1920 xxhdpi
Change...
O
Android 8.0 x86
Change...
Startup orientation
Portrait
Landscape
Emulated Performance
Graphics:
Automatic
Device Frame
Enable Device Frame
Show Advanced Settings
AVD Name
The name of this AVD.
Cancel
Previous
Next
Finish

PRACTICAL 2

Programming Resources

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

Color:



Color.xml

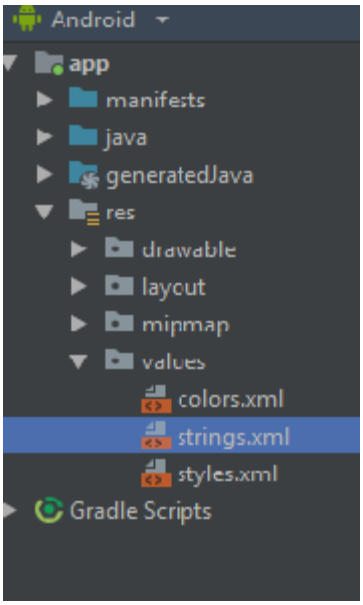
```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#008577</color>
    <color name="colorPrimaryDark">#00574B</color>
    <color name="colorAccent">#D81B60</color>
</resources>
```

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>
```

String:

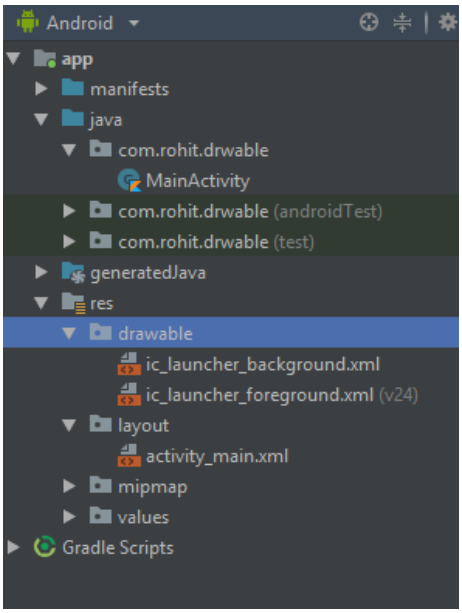


String.xml:

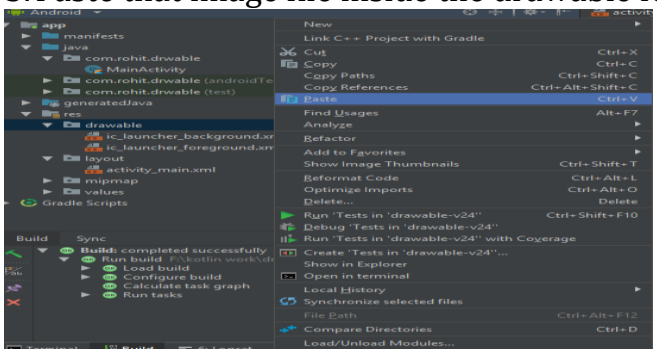
```
<resources>
    <string name="app_name">hello</string>
    <string name="numbers">
        <item>1</item>
        <item>2</item>
        <item>3</item>
        </item>
    </string>
</resources>
```

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 drawableresource file.

Dimension, Image:
Main_Activity.java:

```
package com.rohit.drwable;

import android.support.v7.app.AppCompatActivity;

import android.os.Bundle;


public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      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>
```

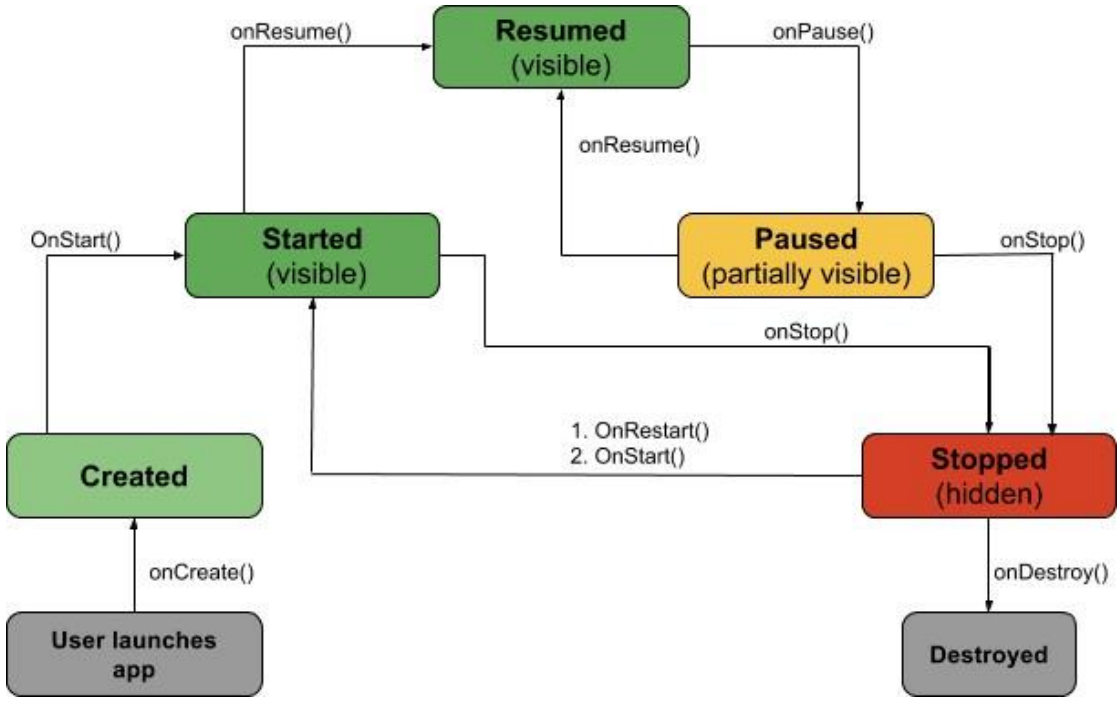
Output:

PRACTICAL 3

Programming Activities and fragments

Activity Life Cycle, Activity methods, Multiple Activities, Life Cycle of fragments and multiple fragments.

Activity Lifecycle:



- **onCreate():** Called by the OS when the activity is first created. This is where you initialize any UI elements or data objects. You also have the savedInstanceState of the activity that contains its previously saved state, and you can use it to recreate that state.\

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

public class MainActivity extends AppCompatActivity {

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

- **onStart():** Just before presenting the user with an activity, this method is called. It's always followed by onResume(). In here, you generally should start UI animations, audiobased content or anything else that requires the activity's contents to be on screen.
- **onResume():** As an activity enters the foreground, this method is called. Here you have agood place to restart animations, update UI elements, restart camera previews, resume audio/video playback or initialize any components that you release during onPause().
- **onPause():** This method is called before sliding into the background. Here you should stop any visuals or audio associated with the activity such as UI animations, music playback or the camera. This method is followed by onResume() if the activity returns tothe foreground or by onStop() if it becomes hidden.
- **onStop():** This method is called right after onPause(), when the activity is no longer visible to the user, and it's a good place to save data that you want to commit to the disk.It's followed by either onRestart(), if this activity is coming back to the foreground, or onDestroy() if it's being released from memory.
- **onRestart():** Called after stopping an activity, but just before starting it again. It's alwaysfollowed by onStart().
- **onDestroy():** This is the final callback you'll receive from the OS before the activity is destroyed. You can trigger an activity's desctruction by calling finish(), or it can be triggered by the system when the system needs to recoup memory. If your activity includes any background threads or other long-running resources, destruction could lead to a memory leak if they're not released, so you need to remember to stop these processeshere as well.

- EXAMPLE:

```
import android.os.Bundle
import android.support.design.widget.Snackbar import
android.support.v7.app.AppCompatActivityimport
android.view.Menu
import android.view.MenuItem
import android.util.Log

import kotlinx.android.synthetic.main.activity_state_change.*class

StateChangeActivity : AppCompatActivity() {

    val TAG = "StateChange"

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_state_change)
        setSupportActionBar(toolbar)

        fab.setOnClickListener { view ->
            Snackbar.make(view, "Replace with your own action",
                Snackbar.LENGTH_LONG)
                .setAction("Action", null).show()
```

```
        }

        Log.i(TAG, "onCreate")
    }
}
override fun onStart() {
    super.onStart()
    Log.i(TAG, "onStart")
}

override fun onResume() {
    super.onResume()
    Log.i(TAG, "onResume")
}

override fun onPause() {
    super.onPause()
    Log.i(TAG, "onPause")
}

override fun onStop() {
    super.onStop()
    Log.i(TAG, "onStop")
}

override fun onRestart() {
    super.onRestart()
    Log.i(TAG, "onRestart")
}

override fun onDestroy() {
    super.onDestroy()
    Log.i(TAG, "onDestroy")
}

override fun onSaveInstanceState(outState: Bundle?) {
    super.onSaveInstanceState(outState)
    Log.i(TAG, "onSaveInstanceState")
}

override fun onRestoreInstanceState(savedInstanceState: Bundle?) {
    super.onRestoreInstanceState(savedInstanceState)
    Log.i(TAG, "onRestoreInstanceState")
```

Multiple Activities:

activity_first.xml code:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
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="ganeshannt.frist.FristActivity">

<Button
android:id="@+id/button2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:onClick="Ganesh"
```

```
android:text="click third activity"
android:textColor="@color/colorPrimary"
app:layout_constraintTop_toTopOf="parent"
tools:layout_editor_absoluteX="168dp"
android:layout_alignParentBottom="true"
android:layout_toEndOf="@+id/text"
android:layout_marginBottom="196dp" />

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="This s my first app!"
android:id="@+id/text"
tools:layout_editor_absoluteY="8dp"
tools:layout_editor_absoluteX="8dp" />
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/button"
android:text="click second activity"
android:textColor="@color/colorPrimary"
android:onClick="Ganesh"
tools:layout_editor_absoluteX="168dp"
app:layout_constraintTop_toTopOf="parent"
android:layout_above="@+id/button2"
android:layout_alignStart="@+id/button2"
android:layout_marginBottom="40dp" />

</RelativeLayout>
```

activity_second.xml code:

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

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_margin="20pt"
android:text="second acticity is working. .. "
android:textAllCaps="true"
android:textColor="@color/colorPrimaryDark"/>

</LinearLayout>
```

activity_third.xml code:

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

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_margin="20pt"
android:text="Third activity is working ..... "
android:textAllCaps="true"
android:textColor="@color/colorPrimary"
/>
```

```
</LinearLayout>
```

Activity_first.java

```
package rohit.technobeat;

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;

import rohit.technobeat.R;

public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);

      findViewById(R.id.second).setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, Activity_second.class);
            startActivity(intent);
         }
      });

      findViewById(R.id.third).setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, Activity_third.class);
            startActivity(intent);
         }
      });
   }
}
```

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>
```

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:i
d="@+id/n
ame"
android:layout_width="fill_pa
rent"
android:layout_height="wrap_c
ontent"
android:hint="@string/reminde
r" />

<LinearLayout
android:orientation="v
ertical"
android:layout_width="
fill_parent"
android:layout_height=
```

```
<Button
android:layout_width="
wrap_content"
android:layout_height="
wrap_content"
android:text="New
Button"
android:id="@+id/butto
n2" />
```

3. Table:
   Activity_main.xml
   !-- activity_main.xml -->
   <?xml version="1.0" encoding="utf-8"?>
   <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical">

   <TableLayout
   android:id="@+id/tableLayout"
   android:layout_width="match_parent"

```
android:layout_height="wrap_content"
android:padding="16dp">

<TableRow
   android:layout_width="match_parent"
   android:layout_height="wrap_content">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Row 1, Column 1"
      android:padding="8dp" />

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Row 1, Column 2"
      android:padding="8dp" />

</TableRow>

<TableRow
   android:layout_width="match_parent"
   android:layout_height="wrap_content">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Row 2, Column 1"
      android:padding="8dp" />

   <TextView
      android:layout_width="wrap_content"
```

```
            android:layout_height="wrap_content"
            android:text="Row 2, Column 2"
            android:padding="8dp" />

    </TableRow>

  </TableLayout>

</LinearLayout>
```

Activity_main.java

```
package com.r.table_view;

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

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

    Button btn1 = findViewById(R.id.btn1);
    Button btn2 = findViewById(R.id.btn2);
    Button btn3 = findViewById(R.id.btn3);
    Button btn4 = findViewById(R.id.btn4);
    Button btn5 = findViewById(R.id.btn5);
    Button btn6 = findViewById(R.id.btn6);
    Button btn7 = findViewById(R.id.btn7);
```

```
Button btn8 = findViewById(R.id.btn8);
Button btn9 = findViewById(R.id.btn9);

btn1.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
      Toast.makeText(MainActivity.this, "1", Toast.LENGTH_SHORT).show();
   }
});

btn2.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
      Toast.makeText(MainActivity.this, "2", Toast.LENGTH_SHORT).show();
   }
});

btn3.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
      Toast.makeText(MainActivity.this, "3", Toast.LENGTH_SHORT).show();
   }
});

btn4.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
      Toast.makeText(MainActivity.this, "4", Toast.LENGTH_SHORT).show();
   }
});

btn5.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
      Toast.makeText(MainActivity.this, "5", Toast.LENGTH_SHORT).show();
   }
});

btn6.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View v) {
```

```
            Toast.makeText(MainActivity.this, "6", Toast.LENGTH_SHORT).show();
        }
    });

    btn7.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(MainActivity.this, "7", Toast.LENGTH_SHORT).show();
        }
    });

    btn8.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(MainActivity.this, "8", Toast.LENGTH_SHORT).show();
        }
    });

    btn9.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(MainActivity.this, "9", Toast.LENGTH_SHORT).show();
        }
    });
  }
}
```

output:

4. Frame:

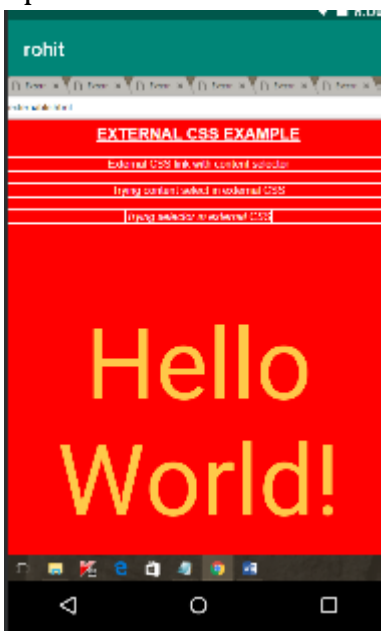
   Activity_main.xml

```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.java

```
package com.rohit.frame_layout;

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

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        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"
            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.java:

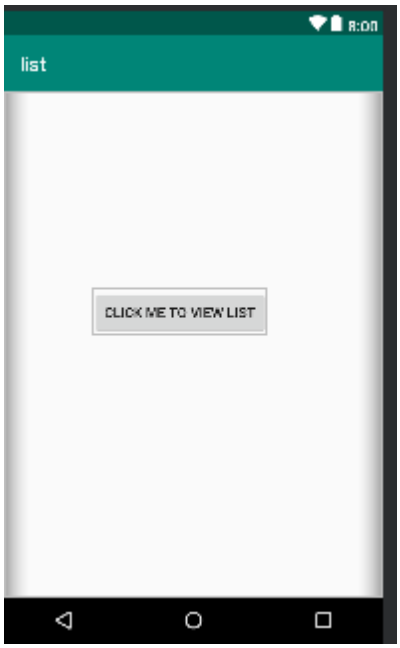
```
package com.rohit.list;

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

```
public class ListViewActivity extends AppCompatActivity {

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

main_Activity.java

```
package com.rohit.list;

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

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

      Button btn = findViewById(R.id.btn);
      btn.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, ListViewActivity.class);
            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>
```

mainActvity.java:

```
package com.rohit.grid_layout;

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

public class MainActivity extends AppCompatActivity {

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

output:


8:00
Grid_Layout
1
2
3
4
5
6
7
8
9

PRACTICAL 5

Programming UI elements

Design App With UI:

mainActivity.java:

```
package rohit.technobeat;

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;

public class MainActivity extends AppCompatActivity {

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

      findViewById(R.id.login).setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, LoginActivity.class);
            startActivity(intent);
         }
      });

      findViewById(R.id.newaccount).setOnClickListener(new
View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, RegisterActivity.class);
            startActivity(intent);
         }
      });
   }
}
```

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"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:background="@drawable/home"
    tools:context=".MainActivity">

    <ScrollView
        android:id="@+id/login_form"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
```

```
        <LinearLayout
            android:layout_width="match_parent"
             android:layout_height="wrap_content"
             android:orientation="vertical"
             android:gravity="center">


            <android.support.v7.widget.AppCompatTextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginTop="210dp"
                android:alpha="0.7"
                android:text="TECHNOBEAT"
                android:textColor="#000000"
                android:textSize="33dp"
                android:textStyle="bold"
                tools:layout_marginLeft="85dp" />


            <Button
                android:id="@+id/login"
                style="?android:textAppearanceSmall"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="16dp"
                android:text="Login"
                android:background="@drawable/round_button"
                android:alpha="0.8" android:textStyle="bold"
                />
            <Button
                android:id="@+id/newaccount"
                style="?android:textAppearanceSmall"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="16dp"
                android:text="REGISTER"
                android:background="@drawable/round_button"
                android:alpha="0.8" android:textStyle="bold"
                />

        </LinearLayout>
    </ScrollView>
</LinearLayout>
```

Output:


6:38
TechnoBeat
TECHNOBEAT
LOGIN
REGISTER

Alert:

PRACTICAL 6

Programming menus, dialog, dialog fragments

```
AlertDialog alertDialog = null;
Activity activity = getActivity(); // Assuming getActivity() method is available in the
context
if (activity != null) {
   AlertDialog.Builder builder = new AlertDialog.Builder(activity);
   builder.setPositiveButton(R.string.ok, new DialogInterface.OnClickListener() {
      @Override
      public void onClick(DialogInterface dialog, int id) {
         // User clicked OK button
      }
   });
   builder.setNegativeButton(R.string.cancel, new DialogInterface.OnClickListener()
{
      @Override
      public void onClick(DialogInterface dialog, int id) {
         // User cancelled the dialog
      }
   });
   // Set other dialog properties
   // ...

   alertDialog = builder.create();
}
```

output:

Menu:

menu.xml:

```
<?xml version=”1.0” encoding=”utf-8”?>
<menu
xmlns:android=”http://schemas.android.com/apk/res/android&#82
21;xmlns:app=”http://schemas.android.com/apk/res-auto”&gt;

<item
android:id=”@+id/menu_1”
android:icon=”@drawable/ic_menu_
1”android:title=”Menu 1”
```

```
<item
android:id=”@+id/menu_2”
android:icon=”@drawable/ic_menu_2”
android:title=”Menu 2” />

<item
android:id=”@+id/menu_3”
android:icon=”@drawable/ic_menu_3”
android:title=”Menu 3” />

<item
android:id=”@+id/menu_4”
android:icon=”@drawable/ic_menu_4”
android:title=”Menu 4” />

</menu>
```

MainActivity.java:

```
package rohit.com;


import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.view.Menu;

import android.view.MenuItem;

import android.widget.Toast;


public class MainActivity extends AppCompatActivity {
```

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

@Override
public boolean onCreateOptionsMenu(Menu menu) {
   getMenuInflater().inflate(R.menu.main, menu);
   return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
   switch (item.getItemId()) {
      case R.id.menu_1:
         Toast.makeText(this, "Menu 1 is selected", Toast.LENGTH_SHORT).show();
         return true;
      case R.id.menu_2:
         Toast.makeText(this, "Menu 2 is selected", Toast.LENGTH_SHORT).show();
         return true;
```

```
            case R.id.menu_3:
                Toast.makeText(this, "Menu 3 is selected", Toast.LENGTH_SHORT).show();
                return true;
            case R.id.menu_4:
                Toast.makeText(this, "Menu 4 is selected", Toast.LENGTH_SHORT).show();
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
}
```

Output:

PRACTICAL 7

Programs on Intents, Events Listeners and Adapters

Note: Refer Table layout code for Events Listeners and for Intent GUI code

Practical 8

Programs on Services, notification and broadcastreceivers

1. Programs on Services:

Services are commands which are used by java in functions to execute the task. They are :IntentService, onStartCommand(),onHandleIntent() etc.

2. notification and broadcast receivers:

Step 1. Create an android app, For creating an Android app with java 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.java:

```
package in.eyehunt.androidbroadcasts;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.widget.Toast;

public class MyReceiver extends BroadcastReceiver {

   @Override
   public void 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.",
Toast.LENGTH_LONG).show();
   }
}
```

Step 3. Declare a broadcast receiver in the manifest file add the element<receiver> in your app'smanifest. Here is code snap

AndroidManifest.xml:

```
<?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"
android:exported="true">
<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 thesystem will launch your app.

Step 4. MainActivity code, no needs to do anythingMainActivity.java:

```
package in.eyehunt.androidbroadcasts;

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

public class MainActivity extends AppCompatActivity {

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

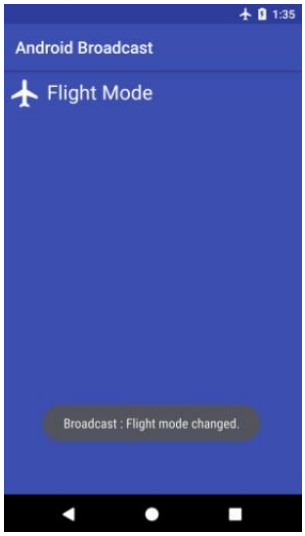
Step 5. Add following code in main_activity.xml
add <ImageView> and <TextView>widget layout file.

main_activity.xml:

```
<?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"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toEndOf="@+id/imageView"
app:layout_constraintTop_toTopOf="@+id/imageView" />
</android.support.constraint.ConstraintLayout>
```

Output:



PRACTICAL 9

Database Programming with SQLite

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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="wrap_content"
android:orientation="vertical"android:gravity="center"
tools:context="com.tutorialkart.sqlitetutorial.MainActivity">

<TextView android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="SQLite Tutorial - User Management"android:textSize="20dp"
android:padding="10dp" />

<LinearLayout android:layout_width="match_parent"
android:layout_height="wrap_content"android:orientation="vertical">
<EditText android:id="@+id/edittext_userid" android:hint="User ID"
android:gravity="center" android:layout_width="match_parent"
android:layout_height="wrap_content" />
<EditText android:id="@+id/edittext_name" android:hint="User Name"
android:gravity="center" android:layout_width="match_parent"
android:layout_height="wrap_content" />
<EditText android:id="@+id/edittext_age" android:hint="User Age"
android:gravity="center" android:layout_width="match_parent"
android:layout_height="wrap_content" />
</LinearLayout>

<LinearLayout android:layout_width="match_parent"
android:layout_height="wrap_content"android:orientation="horizontal">
<Button android:id="@+id/button_add_user"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_weight="1" android:onClick="addUser" android:text="Add" />

<Button android:id="@+id/button_delete_user"
android:layout_width="wrap_content" android:layout_height="wrap_content"
android:layout_weight="1" android:onClick="deleteUser" android:text="Delete" />

<Button android:id="@+id/button_show_all" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:layout_weight="1"
```

```
android:onClick="showAllUsers" android:text="Show All" />
</LinearLayout>
<TextView android:id="@+id/textview_result"
android:layout_width="match_parent"
android:layout_height="wrap_content" />
<LinearLayout android:id="@+id/ll_entries"
 android:padding="15dp"
android:orientation="vertical"
android:layout_width="match_parent"
android:layout_height="wrap_content">
</LinearLayout>
</LinearLayout>
```

UserModel.java:

```
package com.tutorialkart.sqlitetutorial;

public class UserModel {
   private String userid;
   private String name;
   private String age;

   public UserModel(String userid, String name, String age) {
      this.userid = userid;
      this.name = name;
      this.age = age;
   }

   public String getUserid() {
      return userid;
   }

   public void setUserid(String userid) {
      this.userid = userid;
   }

   public String getName() {
      return name;
   }

   public void setName(String name) {
      this.name = name;
```

```
    }

    public String getAge() {
        return age;
    }

    public void setAge(String age) {
        this.age = age;
    }
}
```

DBContract.java

```
package com.tutorialkart.sqlitetutorial;

import android.provider.BaseColumns;

public class DBContract {
    /* Inner class that defines the table contents */
    public static class UserEntry implements BaseColumns {
        public static final String TABLE_NAME = "users";
        public static final String COLUMN_USER_ID = "userid";
        public static final String COLUMN_NAME = "name";
        public static final String COLUMN_AGE = "age";
    }
}
```

UserDBHelper.java:

```
package com.tutorialkart.sqlitetutorial;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteConstraintException;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteException;
import android.database.sqlite.SQLiteOpenHelper;
```

```
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteConstraintException;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteException;
import android.database.sqlite.SQLiteOpenHelper;
import java.util.ArrayList;

public class UsersDBHelper extends SQLiteOpenHelper {
   private static final String DATABASE_NAME = "FeedReader.db";
   private static final int DATABASE_VERSION = 1;

   private static final String SQL_CREATE_ENTRIES =
         "CREATE TABLE " + DBContract.UserEntry.TABLE_NAME + " (" +
               DBContract.UserEntry.COLUMN_USER_ID + " TEXT PRIMARY KEY," +
               DBContract.UserEntry.COLUMN_NAME + " TEXT," +
               DBContract.UserEntry.COLUMN_AGE + " TEXT)";

   private static final String SQL_DELETE_ENTRIES =
         "DROP TABLE IF EXISTS " + DBContract.UserEntry.TABLE_NAME;

   public UsersDBHelper(Context context) {
      super(context, DATABASE_NAME, null, DATABASE_VERSION);
   }

   @Override
   public void onCreate(SQLiteDatabase db) {
      db.execSQL(SQL_CREATE_ENTRIES);
   }

   @Override
   public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
      db.execSQL(SQL_DELETE_ENTRIES);
      onCreate(db);
   }

   @Override
```

```
    public void onDowngrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        onUpgrade(db, oldVersion, newVersion);
    }

    public boolean insertUser(UserModel user) {
        SQLiteDatabase db = getWritableDatabase();

        ContentValues values = new ContentValues();
        values.put(DBContract.UserEntry.COLUMN_USER_ID, user.getUserid());
        values.put(DBContract.UserEntry.COLUMN_NAME, user.getName());
        values.put(DBContract.UserEntry.COLUMN_AGE, user.getAge());

        long newRowId = db.insert(DBContract.UserEntry.TABLE_NAME, null, values);
        return newRowId != -1;
    }

    public boolean deleteUser(String userid) {
        SQLiteDatabase db = getWritableDatabase();
        String selection = DBContract.UserEntry.COLUMN_USER_ID + " LIKE ?";
        String[] selectionArgs = { userid };
        int deletedRows = db.delete(DBContract.UserEntry.TABLE_NAME, selection,
selectionArgs);
        return deletedRows > 0;
    }

    public ArrayList<UserModel> readUser(String userid) {
        ArrayList<UserModel> users = new ArrayList<>();
        SQLiteDatabase db = getWritableDatabase();
        Cursor cursor = null;

        try {
            cursor = db.rawQuery("SELECT * FROM " +
DBContract.UserEntry.TABLE_NAME +
                    " WHERE " + DBContract.UserEntry.COLUMN_USER_ID + "='" + userid +
"'", null);
            String name;
            String age;
            if (cursor.moveToFirst()) {
                while (!cursor.isAfterLast()) {
                    name =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_NAME));
```

```
                age =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_AGE));
                users.add(new UserModel(userid, name, age));
                cursor.moveToNext();
            }
        }
    } catch (SQLiteException e) {
        db.execSQL(SQL_CREATE_ENTRIES);
        return new ArrayList<>();
    } finally {
        if (cursor != null) {
            cursor.close();
        }
    }

    return users;
  }

  public ArrayList<UserModel> readAllUsers() {
    ArrayList<UserModel> users = new ArrayList<>();
    SQLiteDatabase db = getWritableDatabase();
    Cursor cursor = null;

    try {
        cursor = db.rawQuery("SELECT * FROM " +
DBContract.UserEntry.TABLE_NAME, null);
        String userid;
        String name;
        String age;
        if (cursor.moveToFirst()) {
            while (!cursor.isAfterLast()) {
                userid =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_USER_ID)
);
                name =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_NAME));
                age =
cursor.getString(cursor.getColumnIndex(DBContract.UserEntry.COLUMN_AGE));
                users.add(new UserModel(userid, name, age));
                cursor.moveToNext();
            }
```

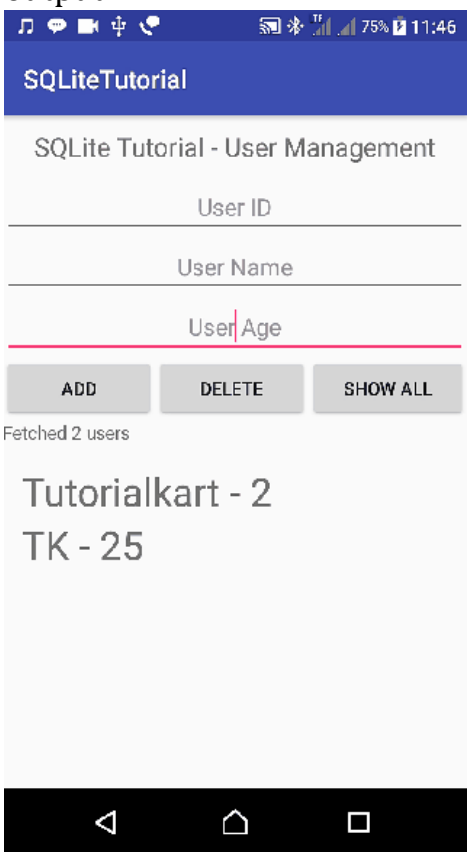
```
            }
        } catch (SQLiteException e) {
            db.execSQL(SQL_CREATE_ENTRIES);
            return new ArrayList<>();
        } finally {
            if (cursor != null) {
                cursor.close();
            }
        }

        return users;
    }
}
```

MainActivity.java:

```
package com.tutorialkart.sqlitetutorial;

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    private UsersDBHelper usersDBHelper;

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

        usersDBHelper = new UsersDBHelper(this);
    }

    public void addUser(View v) {
        String userid = edittext_userid.getText().toString();
        String name = edittext_name.getText().toString();
        String age = edittext_age.getText().toString();
        boolean result = usersDBHelper.insertUser(new UserModel(userid, name, age));
```

```
        edittext_age.setText("");
        edittext_name.setText("");
        edittext_userid.setText("");
        textview_result.setText("Added user : " + result);
        ll_entries.removeAllViews();
    }

    public void deleteUser(View v) {
        String userid = edittext_userid.getText().toString();
        boolean result = usersDBHelper.deleteUser(userid);

        textview_result.setText("Deleted user : " + result);
        ll_entries.removeAllViews();
    }

    public void showAllUsers(View v) {
        ArrayList<UserModel> users = usersDBHelper.readAllUsers();
        ll_entries.removeAllViews();
        for (UserModel user : users) {
            TextView tv_user = new TextView(this);
            tv_user.setTextSize(30);
            tv_user.setText(user.getName() + " - " + user.getAge());
            ll_entries.addView(tv_user);
        }
        textview_result.setText("Fetched " + users.size() + " users");
    }
}
```

output:


75% 11:46
SQLiteTutorial
SQLite Tutorial - User Management
User ID
User Name
User Age
ADD
DELETE
SHOW ALL
Fetched 2 users
Tutorialkart - 2
TK - 25