

Practical 1:-Create an application to demonstrate android lifecycle

MainActivity.java

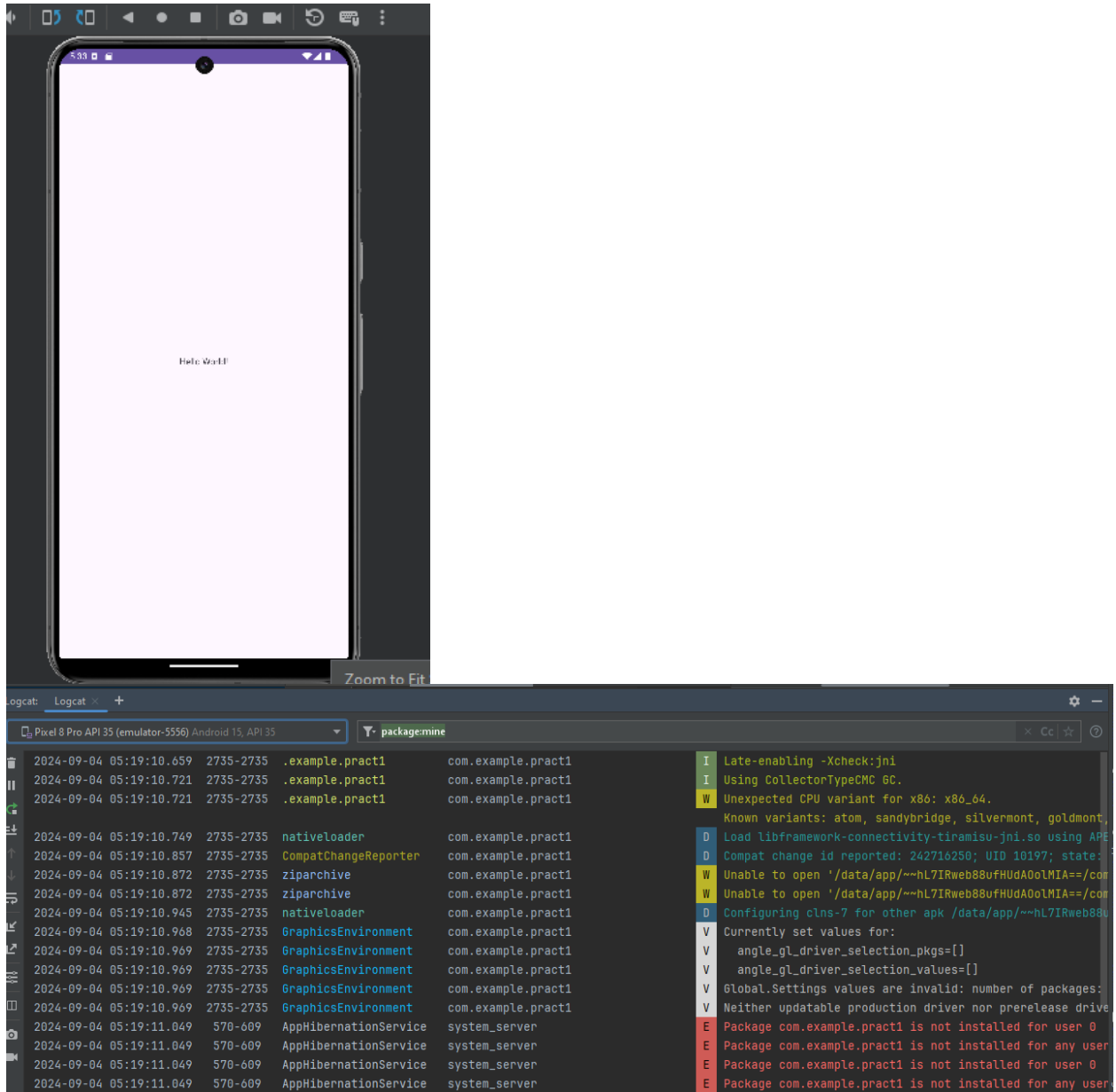
```
package com.example.pract1;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActivity {

    private static final String TAG = "lifecycle";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d(TAG, "onCreate invoked");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d(TAG, "onStart invoked");
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d(TAG, "onResume invoked");
    }
    @Override
    protected void onPause() {
        super.onPause();
        Log.d(TAG, "onPause invoked");
    }
    @Override
    protected void onStop() {
        super.onStop();
        Log.d(TAG, "onStop invoked");
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d(TAG, "onRestart invoked");
    }
}
```

```
}  
@Override  
protected void onDestroy() {  
    super.onDestroy();  
    Log.d(TAG, "onDestroy invoked");  
}  
}
```

Output:-



Practical 2:- Create an application using Linear Layout.

MainActivity.java

```
package com.example.pract2;
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private Button btn1;
    private EditText ed1;
    private TextView txt1;

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

        // Initialize views
        btn1 = findViewById(R.id.button);
        ed1 = findViewById(R.id.editTextTextPersonName);
        txt1 = findViewById(R.id.textView);

        // Set up button click listener
        btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Get text from EditText and set it to TextView
                String msg = ed1.getText().toString();
                txt1.setText(msg);
            }
        });
    }
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editTextTextPersonName"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:inputType="textPersonName"
        android:minHeight="48dp"
        android:text="Enter Text"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHeight_default="wrap"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.3"
        app:layout_constraintWidth_default="wrap" />

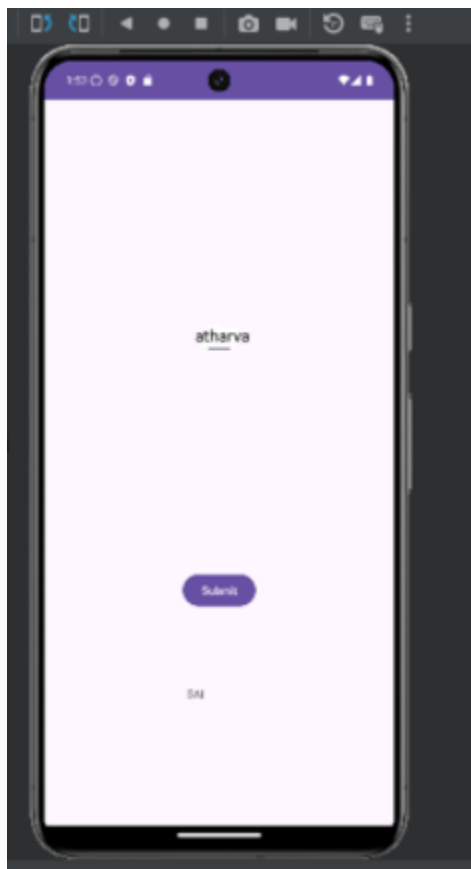
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextTextPersonName"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintVertical_bias="0.2" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="122dp"
        android:layout_height="62dp"
        android:text="TextView"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.56"
```

```
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.866" />
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 3:- Create an application to display message in Toast.

MainActivity.java

```
package com.example.pract3;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

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

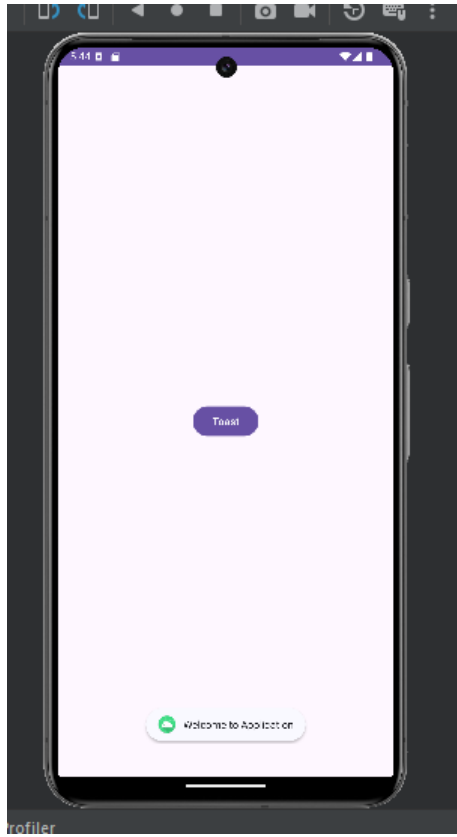
    // This method will be called when the button is clicked
    public void Toaster(View view) {
        Toast.makeText(this, "Welcome to Application", Toast.LENGTH_LONG).show();
    }
}
```

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"
    xmlns:tools="http://schemas.android.com/tools"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/Div"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="Toaster"
        android:text="Toast" />
</LinearLayout>
```

Output:-



Practical 4:-Create an application to display basic calculator.

MainActivity.java

```
package com.example.pract4;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    private EditText value1;
    private EditText value2;
    private TextView result;

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

        value1 = findViewById(R.id.value1);
        value2 = findViewById(R.id.value2);
        result = findViewById(R.id.result);

        Button buttonAdd = findViewById(R.id.button_add);
        Button buttonSub = findViewById(R.id.button_sub);
        Button buttonMul = findViewById(R.id.button_mul);
        Button buttonDiv = findViewById(R.id.button_div);

        buttonAdd.setOnClickListener(this::performOperation);
        buttonSub.setOnClickListener(this::performOperation);
        buttonMul.setOnClickListener(this::performOperation);
        buttonDiv.setOnClickListener(this::performOperation);
    }

    private void performOperation(View view) {
        String val1 = value1.getText().toString();
        String val2 = value2.getText().toString();
```



```
if (val1.isEmpty() || val2.isEmpty()) {  
    result.setText("Please enter both values.");  
    return;  
}  
  
double num1 = Double.parseDouble(val1);  
double num2 = Double.parseDouble(val2);  
double res = 0;  
  
// Get the text of the button to determine the operation  
String operator = ((Button) view).getText().toString();  
  
switch (operator) {  
    case "Add":  
        res = num1 + num2;  
        result.setText("Addition: " + res);  
        break;  
    case "Sub":  
        res = num1 - num2;  
        result.setText("Subtraction: " + res);  
        break;  
    case "Mul":  
        res = num1 * num2;  
        result.setText("Multiplication: " + res);  
        break;  
    case "Div":  
        if (num2 != 0) {  
            res = num1 / num2;  
            result.setText("Division: " + res);  
        } else {  
            result.setText("Cannot divide by zero");  
        }  
        break;  
    default:  
        result.setText("Unknown operation");  
        break;  
}  
}  
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp">

    <EditText
        android:id="@+id/value1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_marginBottom="8dp"
        android:hint="Value 1"
        android:inputType="numberDecimal"
        android:padding="16dp" />

    <EditText
        android:id="@+id/value2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/value1"
        android:layout_marginBottom="16dp"
        android:hint="Value 2"
        android:inputType="numberDecimal"
        android:padding="16dp" />

    <Button
        android:id="@+id/button_add"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/value2"
        android:layout_marginEnd="8dp"
        android:text="Add"
        android:layout_alignParentStart="true" />

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

```
android:layout_height="wrap_content"  
android:layout_alignBaseline="@id/button_add"  
android:layout_marginStart="8dp"  
android:layout_toEndOf="@id/button_add"  
android:text="Sub" />
```

<Button

```
android:id="@+id/button_mul"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_alignBaseline="@id/button_add"  
android:layout_marginStart="8dp"  
android:layout_toEndOf="@id/button_sub"  
android:text="Mul" />
```

<Button

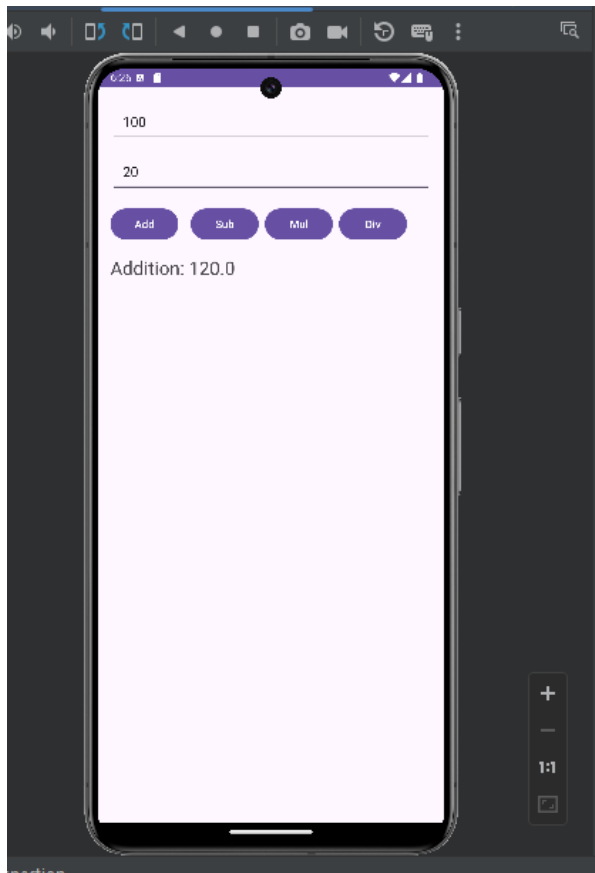
```
android:id="@+id/button_div"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_alignBaseline="@id/button_add"  
android:layout_marginStart="8dp"  
android:layout_toEndOf="@id/button_mul"  
android:text="Div" />
```

<TextView

```
android:id="@+id/result"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_below="@id/button_add"  
android:layout_marginTop="16dp"  
android:text="Result: "  
android:textSize="24sp" />
```

</RelativeLayout>

Output:-



Practical 5:- Create an application to demonstrate implicit and explicit intent.

MainActivity.java

```
package com.example.pract5;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main); // Ensure activity_main.xml is correctly set up
    }
    // Method to handle button click and start MainActivity2
    public void Intenter(View view) {
        // Create an Intent to start MainActivity2
        Intent intent = new Intent(MainActivity.this, MainActivity2.class);
        startActivity(intent); // Start the new activity
    }
}
```

MainActivity2.java

```
package com.example.pract5;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity2 extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // Set the content view to the layout defined in activity_main2.xml
        setContentView(R.layout.activity_main2);
    }
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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"  
tools:context=".MainActivity">
```

```
<Button  
    android:id="@+id/Div"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Next Page >"  
    android:onClick="Intenter"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintHorizontal_bias="0.5"  
    app:layout_constraintVertical_bias="0.5" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_main2.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.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"  
    tools:context=".MainActivity2">  
    <TextView  
        android:id="@+id/textView"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Welcome to new page"  
        android:textSize="34sp"  
        app:layout_constraintBottom_toBottomOf="parent"  
        app:layout_constraintEnd_toEndOf="parent"  
        app:layout_constraintStart_toStartOf="parent"  
        app:layout_constraintTop_toTopOf="parent"/>  
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml

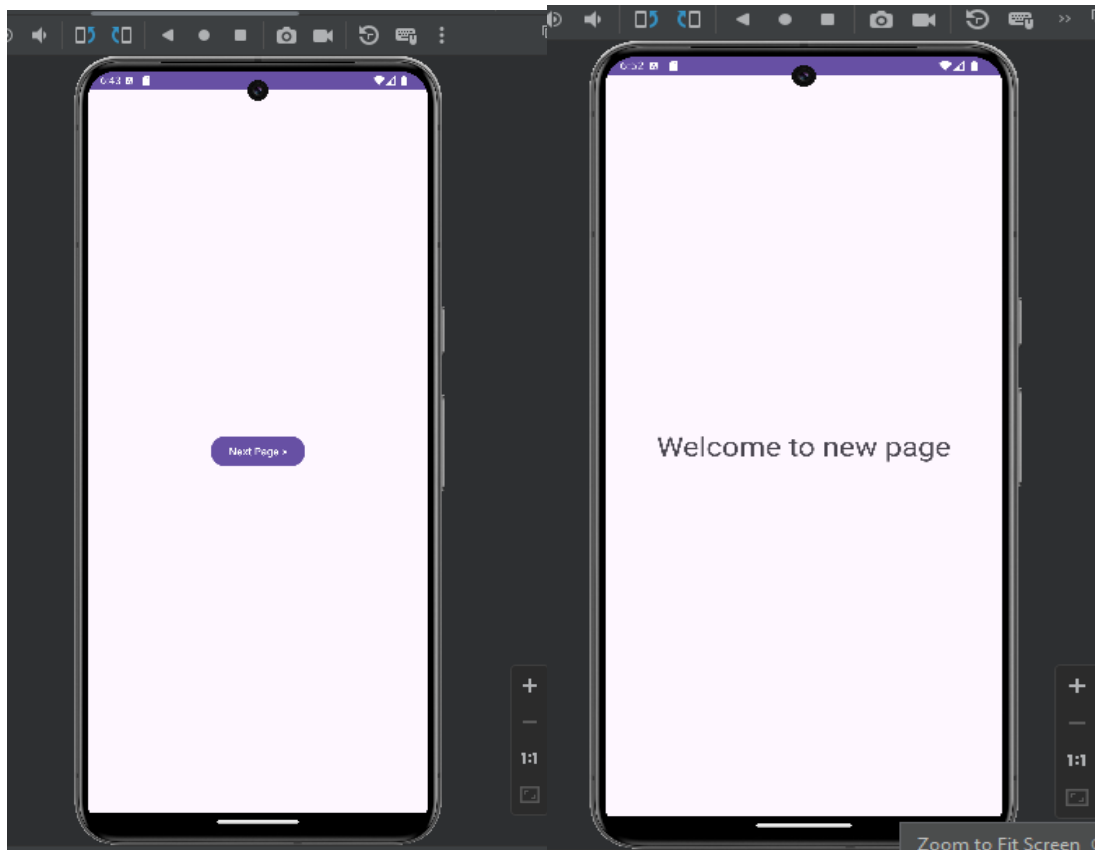
```
<activity  
    android:name=".MainActivity"  
    android:exported="true">
```

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

<category android:name="android.intent.category.LAUNCHER" />
</intent-filter>
</activity>
<activity
    android:name=".MainActivity2"
    android:exported="true">
<intent-filter>
<action android:name="android.intent.action.MAIN" />

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

Output:-



Practical 6:- Create an application to display UI components.

MainActivity.java

```
package com.example.pract6;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RatingBar;
public class MainActivity extends AppCompatActivity {
    EditText e1;
    RadioButton r1, r2;
    CheckBox c1, c2;
    Button b1;
    RatingBar rb1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = findViewById(R.id.et1);
        r1 = findViewById(R.id.rb1);
        r2 = findViewById(R.id.rb2);
        c1 = findViewById(R.id.cb1);
        c2 = findViewById(R.id.cb2);
        b1 = findViewById(R.id.b1);
        rb1 = findViewById(R.id.ratingbar1);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String gender;
                String name = e1.getText().toString();
                StringBuilder course = new StringBuilder();
                String rating = String.valueOf(rb1.getRating());
                if (r1.isChecked()) {
                    gender = r1.getText().toString();
                } else {
                    gender = r2.getText().toString();
                }
                if (c1.isChecked()) {
                    course.append(c1.getText().toString());
                }
            }
        });
    }
}
```



```
    }  
    if (c2.isChecked()) {  
        if (course.length() > 0) {  
            course.append(", ");  
        }  
        course.append(c2.getText().toString());  
    }  
  
    Intent intent = new Intent(MainActivity.this, Main2Activity.class);  
    intent.putExtra("NAME", name);  
    intent.putExtra("GENDER", gender);  
    intent.putExtra("COURSE", course.toString());  
    intent.putExtra("RATING", rating);  
    startActivity(intent);  
}  
});  
}
```

Main2Activity.java

```
package com.example.pract6;  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.TextView;  
public class Main2Activity extends AppCompatActivity {  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity2_main);  
        // Find the TextView elements by their IDs  
        TextView tv1 = findViewById(R.id.tv_name);  
        TextView tv2 = findViewById(R.id.tv_gender);  
        TextView tv3 = findViewById(R.id.tv_Course);  
        TextView tv4 = findViewById(R.id.tv_rating);  
        // Retrieve the Intent and its extras  
        Intent intent = getIntent();  
        String name = intent.getStringExtra("NAME");  
        String gender = intent.getStringExtra("GENDER");  
        String course = intent.getStringExtra("COURSE");  
        String rating = intent.getStringExtra("RATING");  
        // Set the text for each TextView  
        tv1.setText("Name: " + name);  
        tv2.setText("Gender: " + gender);  
        tv3.setText("Course: " + course);  
        tv4.setText("Rating: " + rating);  
    }  
}
```

```
}  
}
```

Activity_main.xml

```
<androidx.constraintlayout.widget.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"  
    tools:context=".MainActivity">  
<TextView  
    android:id="@+id/tv1"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Registration Form"  
    android:textSize="36sp"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintBottom_toTopOf="@+id/tv_name"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.5"  
    app:layout_constraintVertical_bias="0.0"  
    android:layout_marginTop="29dp"  
    android:layout_marginBottom="16dp"/>  
<TextView  
    android:id="@+id/tv_name"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Enter Name : "  
    android:textSize="30sp"  
    app:layout_constraintTop_toBottomOf="@+id/tv1"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.0"  
    app:layout_constraintVertical_bias="0.0"  
    android:layout_marginTop="16dp"/>  
<EditText  
    android:id="@+id/et1"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="16dp"  
    android:ems="10"  
    android:hint="@android:string/unknownName"  
    android:inputType="textPersonName"
```

```
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tv_name"
        app:layout_constraintVertical_bias="0.0" />
<RadioGroup
    android:id="@+id/radiogp1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintTop_toBottomOf="@+id/et1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintVertical_bias="0.0"
    android:orientation="horizontal"
    android:layout_marginTop="16dp">
<RadioButton
    android:id="@+id/rb1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Female"
    android:textSize="30sp"/>
<RadioButton
    android:id="@+id/rb2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Male"
    android:textSize="30sp"/>
</RadioGroup>
<CheckBox
    android:id="@+id/cb1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="php"
    android:textSize="36sp"
    app:layout_constraintTop_toBottomOf="@+id/radiogp1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    android:layout_marginTop="16dp"/>
<CheckBox
    android:id="@+id/cb2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Java"
```

```
        android:textSize="36sp"
        app:layout_constraintTop_toBottomOf="@+id/radiogp1"
        app:layout_constraintStart_toEndOf="@+id/cb1"
        app:layout_constraintHorizontal_bias="0.0"
        android:layout_marginStart="16dp"
        android:layout_marginTop="16dp"/>
<RatingBar
    android:id="@+id/ratingbar1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintTop_toBottomOf="@+id/cb1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintVertical_bias="0.0"
    android:layout_marginTop="16dp"/>
<Button
    android:id="@+id/b1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Submit"
    android:textSize="30sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintVertical_bias="1.0"
    android:layout_marginBottom="16dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

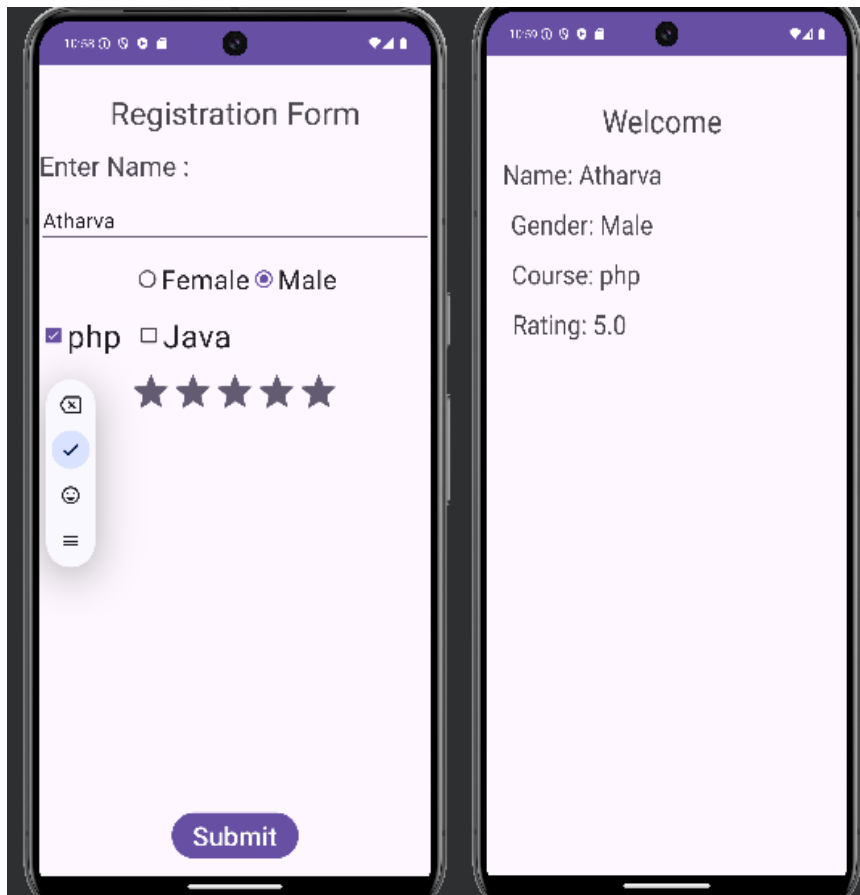
Activity2_main.xml

```
<androidx.constraintlayout.widget.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"
    tools:context=".Main2Activity">
<TextView
    android:id="@+id/tv1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Welcome"
    android:textSize="36sp"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintStart_toStartOf="parent"
```

```
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintVertical_bias="0.0"
android:layout_marginTop="48dp"
android:layout_marginStart="104dp"
android:layout_marginEnd="115dp"
android:layout_marginBottom="623dp"/>
<TextView
    android:id="@+id/tv_name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textSize="30sp"
    app:layout_constraintTop_toBottomOf="@+id/tv1"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintVertical_bias="0.0"
    android:layout_marginTop="16dp"
    android:layout_marginStart="20dp"
    android:layout_marginEnd="37dp"/>
<TextView
    android:id="@+id/tv_gender"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textSize="30sp"
    app:layout_constraintTop_toBottomOf="@+id/tv_name"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintVertical_bias="0.0"
    android:layout_marginTop="16dp"
    android:layout_marginStart="30dp"
    android:layout_marginEnd="38dp"/>
<TextView
    android:id="@+id/tv_Course"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textSize="30sp"
    app:layout_constraintTop_toBottomOf="@+id/tv_gender"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintVertical_bias="0.0"
    android:layout_marginTop="16dp"
    android:layout_marginStart="31dp"
    android:layout_marginEnd="40dp"/>
```

```
<TextView
    android:id="@+id/tv_rating"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:textSize="30sp"
    app:layout_constraintTop_toBottomOf="@+id/tv_Course"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintVertical_bias="0.0"
    android:layout_marginTop="16dp"
    android:layout_marginStart="32dp"
    android:layout_marginEnd="41dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 7:- Create an application to display image using ImageView.

MainActivity.java

```
package com.example.pract7;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

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

        Button btn1 = findViewById(R.id.bt1);
        ImageView iv = findViewById(R.id.iv);

        btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                iv.setImageResource(R.drawable.img);
            }
        });
    }
}
```

Activity_main.xml

```
<RelativeLayout 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"
    tools:context=".MainActivity">

    <!-- ImageView taking up most of the screen space above the Button -->
    <ImageView
        android:id="@+id/iv2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentBottom="@+id/bt1"
        android:layout_marginBottom="19dp"
        android:src="@drawable/ic_launcher_foreground"
    />
</RelativeLayout>
```

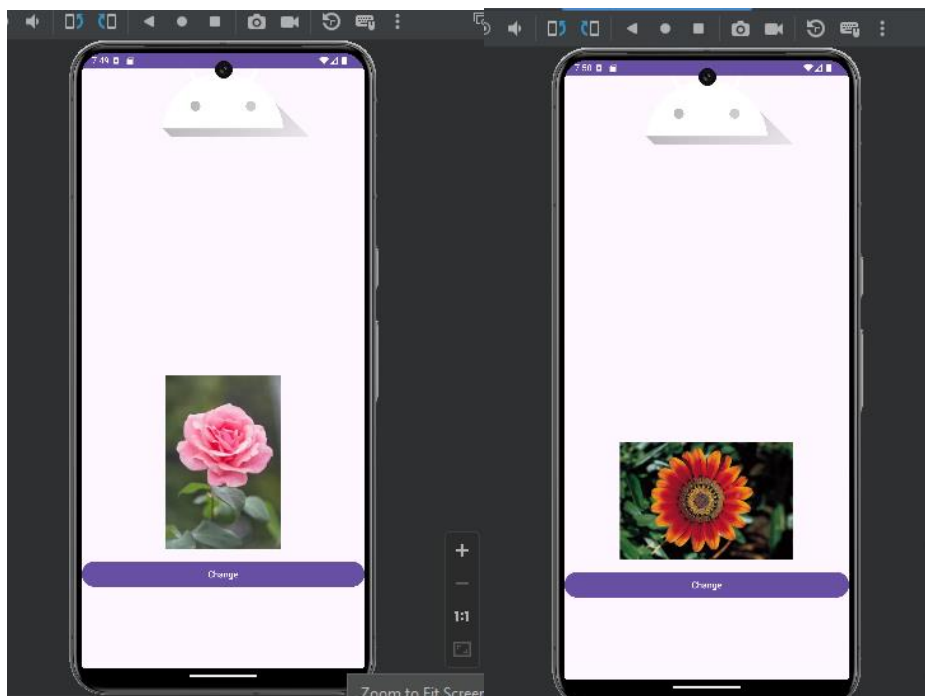
```
        android:scaleType="centerCrop" />

<!-- Button centered at the bottom of the layout -->
<Button
    android:id="@+id/bt1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_alignParentBottom="true"
    android:layout_marginBottom="125dp"
    android:text="Change" />

<!-- ImageView above the Button -->
<ImageView
    android:id="@+id/iv"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_above="@+id/bt1"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_marginTop="16dp"
    android:layout_marginBottom="16dp"
    app:srcCompat="@drawable/pic" />

</RelativeLayout>
```

Output:-



Practical 8:- Create an application to draw filled circle.

MainActivity.java

```
package com.example.pract8;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.os.Bundle;
import android.content.Context;
import android.view.View;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(new Mview(this));
    }

    private class Mview extends View {
        private Paint p;

        public Mview(Context context) {
            super(context);
            p = new Paint();
        }

        @Override
        protected void onDraw(Canvas canvas) {
            super.onDraw(canvas);
            int x = getWidth();
            int y = getHeight();
            int rad = 100;

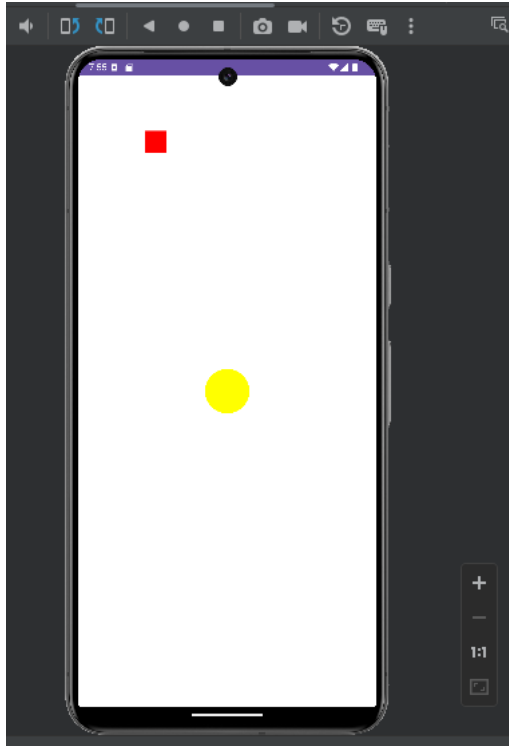
            // Set background color to white
            canvas.drawColor(Color.WHITE);

            // Draw a yellow circle at the center
            p.setStyle(Paint.Style.FILL);
            p.setColor(Color.YELLOW);
            canvas.drawCircle(x / 2, y / 2, rad, p);

            // Draw a red rectangle
            p.setColor(Color.RED); // Optional: Set a different color for visibility
        }
    }
}
```

```
        canvas.drawRect(300, 250, 400, 350, p); // Adjust these values as needed  
    }  
}  
}
```

Output:-




```
        AlertDialog alert = aBuilder.create();
        alert.setTitle("Alert!!");
        alert.show();
    }
});
}
```

Activity_main.xml

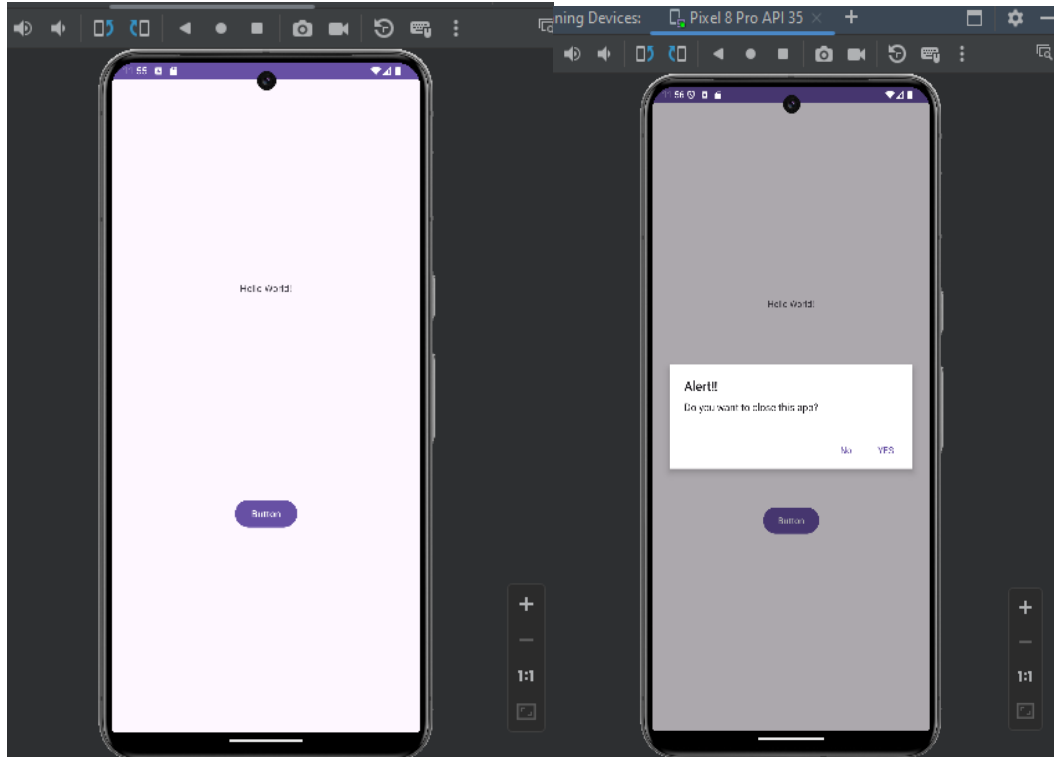
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"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

    <TextView
        android:id="@+id/TextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toTopOf="@id/Button"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.7" />

    <Button
        android:id="@+id/Button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        app:layout_constraintTop_toBottomOf="@id/TextView"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintVertical_bias="0.3"
        tools:ignore="UnknownId" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 10:- Create an application to CRUD operations in Files.

MainActivity.java

```
package com.example.pract10;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Context;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Button;
import android.widget.Toast;

import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.IOException;

public class MainActivity extends AppCompatActivity {

    private static final String FILE_NAME = "file.txt"; // Use a constant for the file name

    private EditText etText;
    private Button bRead, bWrite, bDelete;
    private TextView tvText;

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

        // Initialize views
        etText = findViewById(R.id.txtcontent);
        bRead = findViewById(R.id.btnread);
        bWrite = findViewById(R.id.btnwrite);
        tvText = findViewById(R.id.textView);
        bDelete = findViewById(R.id.btn_delete);

        // Set initial text from the file
        tvText.setText(readFile(FILE_NAME));

        // Set up button click listeners
        bRead.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
public void onClick(View view) {
    tvText.setText(readFile(FILE_NAME));
    Toast.makeText(MainActivity.this, "File read", Toast.LENGTH_SHORT).show();
}
});

bWrite.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        saveFile(FILE_NAME, etText.getText().toString());
        Toast.makeText(MainActivity.this, "Text saved", Toast.LENGTH_SHORT).show();
    }
});

bDelete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        deleteFile();
    }
});
}

private void saveFile(String fileName, String text) {
    try (FileOutputStream fos = openFileOutput(fileName, Context.MODE_PRIVATE)) {
        fos.write(text.getBytes());
    } catch (IOException e) {
        e.printStackTrace();
        Toast.makeText(MainActivity.this, "Error saving file", Toast.LENGTH_SHORT).show();
    }
}

private String readFile(String fileName) {
    StringBuilder text = new StringBuilder();
    try (FileInputStream fis = openFileInput(fileName)) {
        int character;
        while ((character = fis.read()) != -1) {
            text.append((char) character);
        }
    } catch (IOException e) {
        e.printStackTrace();
        Toast.makeText(MainActivity.this, "Error reading file", Toast.LENGTH_SHORT).show();
    }
    return text.toString();
}

public void clearFile(View view) {
```

```
        etText.getText().clear();
    }

    private void deleteFile() {
        File file = new File(getFilesDir(), FILE_NAME);
        if (file.exists() && file.delete()) {
            Toast.makeText(MainActivity.this, "File deleted", Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(MainActivity.this, "File not found or deletion failed", Toast.LENGTH_SHORT).show();
        }
    }
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/txtcontent"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="17dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="15dp"
        android:inputType="textPersonName"
        tools:ignore="TouchTargetSizeCheck,SpeakableTextPresentCheck" />

    <Button
        android:id="@+id/btnwrite"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/txtcontent"
        android:layout_alignParentStart="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="267dp"
        android:layout_marginTop="213dp"
        android:layout_marginEnd="56dp"
        android:layout_marginBottom="407dp"
```



```
android:text="Write" />
```

```
<Button
```

```
    android:id="@+id/btnread"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentTop="true"  
    android:layout_alignParentEnd="true"  
    android:layout_alignParentBottom="true"  
    android:layout_marginStart="49dp"  
    android:layout_marginTop="309dp"  
    android:layout_marginEnd="274dp"  
    android:layout_marginBottom="374dp"  
    android:text="Read" />
```

```
<TextView
```

```
    android:id="@+id/textView"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentTop="true"  
    android:layout_alignParentEnd="true"  
    android:layout_alignParentBottom="true"  
    android:layout_marginStart="16dp"  
    android:layout_marginTop="696dp"  
    android:layout_marginEnd="337dp"  
    android:layout_marginBottom="16dp"  
    android:text="TextView" />
```

```
<Button
```

```
    android:id="@+id/btn_clear"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentTop="true"  
    android:layout_alignParentEnd="true"  
    android:layout_alignParentBottom="true"  
    android:layout_marginStart="54dp"  
    android:layout_marginTop="456dp"  
    android:layout_marginEnd="269dp"  
    android:layout_marginBottom="227dp"
```

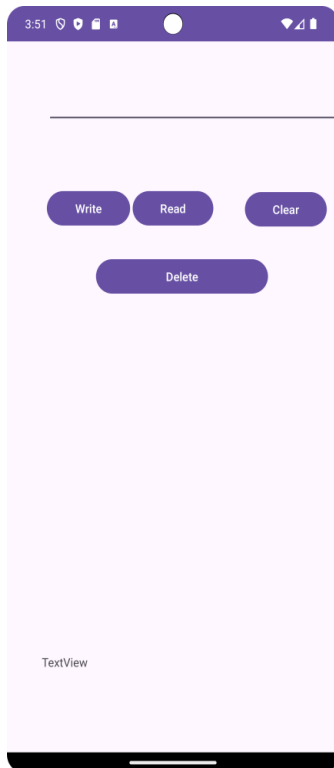
```
android:onClick="clearFile"  
android:text="Clear" />
```

<Button

```
    android:id="@+id/btn_delete"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentTop="true"  
    android:layout_alignParentEnd="true"  
    android:layout_alignParentBottom="true"  
    android:layout_marginStart="253dp"  
    android:layout_marginTop="465dp"  
    android:layout_marginEnd="68dp"  
    android:layout_marginBottom="218dp"  
    android:onClick="deleteFile"  
    android:text="Delete" />
```

</RelativeLayout>

Output:-



Practical 11:- Write an application to switch on and off the WiFi.

MainActivity.java

```
package com.example.pract11;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.bluetooth.BluetoothAdapter;
import android.content.Context;
import android.content.Intent;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.view.View;
import android.widget.CompoundButton;
import android.widget.Switch;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    Switch wifiiii, bluetoot;
    WifiManager wifiManager;
    BluetoothAdapter bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();

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

        wifiManager = (WifiManager) getApplicationContext().getSystemService(Context.WIFI_SERVICE);

        wifiiii = (Switch) findViewById(R.id.switch1);
        wifiiii.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
                if (isChecked) {
                    wifiManager.setWifiEnabled(true);
                    Toast.makeText(MainActivity.this, "WIFI ON", Toast.LENGTH_SHORT).show();
                } else {
                    wifiManager.setWifiEnabled(false);
                    Toast.makeText(MainActivity.this, "WIFI OFF", Toast.LENGTH_SHORT).show();
                }
            }
        });

        bluetoot = (Switch) findViewById(R.id.switch3);
        bluetoot.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
```

```
@SuppressWarnings("MissingPermission")
@Override
public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
    if (isChecked) {
        if (bluetoothAdapter == null) {
            Toast.makeText(getApplicationContext(), "Bluetooth not supported", Toast.LENGTH_SHORT).show();
        } else {
            if (!bluetoothAdapter.isEnabled()) {
                Intent enableBtIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
                startActivityForResult(enableBtIntent, 0);
                Toast.makeText(getApplicationContext(), "Bluetooth Turned ON", Toast.LENGTH_SHORT).show();
            }
        }
    } else {
        if (bluetoothAdapter != null) {
            bluetoothAdapter.disable();
            Toast.makeText(getApplicationContext(), "Bluetooth Turned OFF", Toast.LENGTH_SHORT).show();
        }
    }
}
});
}
```

Activity_main.xml

```
<androidx.constraintlayout.widget.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"
    tools:context=".MainActivity">
```

```
<TextView
    android:id="@+id/tv1"
    android:layout_width="228dp"
    android:layout_height="33dp"
    android:text="WIFI Enable/Disable"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintHorizontal_bias="0.164"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toLeftOf="@+id/switch1"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.394" />
```

```
<TextView
```

```
android:id="@+id/tv"  
android:layout_width="269dp"  
android:layout_height="55dp"  
android:text="Bluetooth Enable/Disable"  
android:textSize="24sp"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintHorizontal_bias="0.163"  
app:layout_constraintLeft_toLeftOf="parent"  
app:layout_constraintRight_toLeftOf="@+id/switch3"  
app:layout_constraintTop_toTopOf="parent" />
```

<Switch

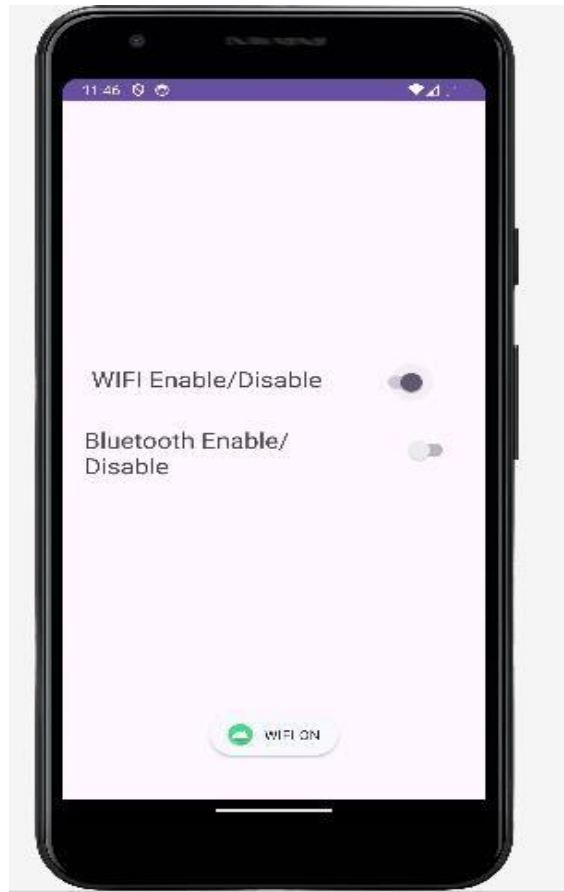
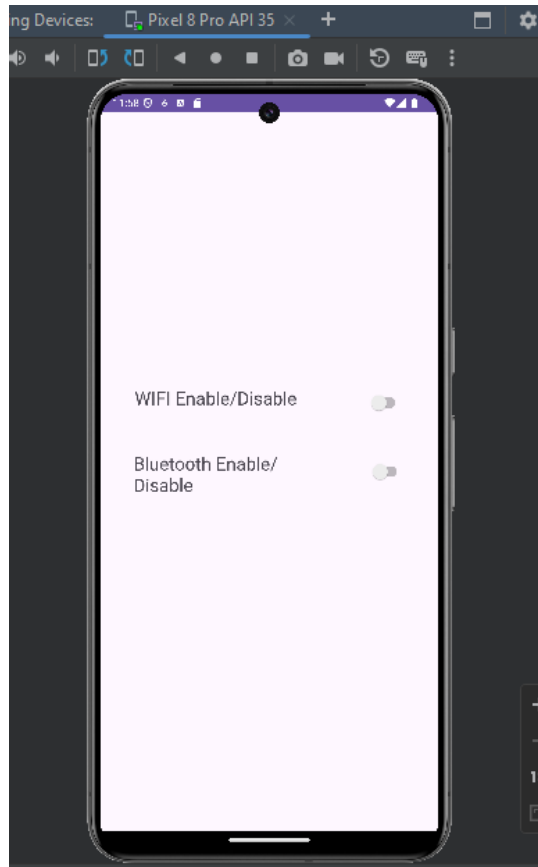
```
android:id="@+id/switch1"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_marginStart="36dp"  
android:minWidth="48dp"  
android:minHeight="48dp"  
android:textOff="OFF"  
android:textOn="ON"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintHorizontal_bias="0.0"  
app:layout_constraintStart_toEndOf="@+id/tv1"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.399" />
```

<Switch

```
android:id="@+id/switch3"  
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:minWidth="48dp"  
android:minHeight="48dp"  
android:textOff="OFF"  
android:textOn="ON"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintStart_toEndOf="@+id/tv"  
app:layout_constraintTop_toTopOf="parent" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

Output:-



Practical 12:- Create an application to switch on and off the Bluetooth.

MainActivity.java

```
package com.example.pract11;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.bluetooth.BluetoothAdapter;
import android.content.Context;
import android.content.Intent;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.view.View;
import android.widget.CompoundButton;
import android.widget.Switch;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    Switch wifiiii, bluetoot;
    WifiManager wifiManager;
    BluetoothAdapter bluetoothAdapter = BluetoothAdapter.getDefaultAdapter();

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

        wifiManager = (WifiManager) getApplicationContext().getSystemService(Context.WIFI_SERVICE);

        wifiiii = (Switch) findViewById(R.id.switch1);
        wifiiii.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
                if (isChecked) {
                    wifiManager.setWifiEnabled(true);
                    Toast.makeText(MainActivity.this, "WIFI ON", Toast.LENGTH_SHORT).show();
                } else {
                    wifiManager.setWifiEnabled(false);
                    Toast.makeText(MainActivity.this, "WIFI OFF", Toast.LENGTH_SHORT).show();
                }
            }
        });

        bluetoot = (Switch) findViewById(R.id.switch3);
```

```
bluetooth.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {  
    @SuppressWarnings("MissingPermission")  
    @Override  
    public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {  
        if (isChecked) {  
            if (bluetoothAdapter == null) {  
                Toast.makeText(getApplicationContext(), "Bluetooth not supported", Toast.LENGTH_SHORT).show();  
            } else {  
                if (!bluetoothAdapter.isEnabled()) {  
                    Intent enableBtIntent = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);  
                    startActivityForResult(enableBtIntent, 0);  
                    Toast.makeText(getApplicationContext(), "Bluetooth Turned ON", Toast.LENGTH_SHORT).show();  
                }  
            }  
        } else {  
            if (bluetoothAdapter != null) {  
                bluetoothAdapter.disable();  
                Toast.makeText(getApplicationContext(), "Bluetooth Turned OFF", Toast.LENGTH_SHORT).show();  
            }  
        }  
    }  
});  
}
```

Activity_main.xml

```
<androidx.constraintlayout.widget.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"  
    tools:context=".MainActivity">
```

```
<TextView  
    android:id="@+id/tv1"  
    android:layout_width="228dp"  
    android:layout_height="33dp"  
    android:text="WIFI Enable/Disable"  
    android:textSize="24sp"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintHorizontal_bias="0.164"  
    app:layout_constraintLeft_toLeftOf="parent"  
    app:layout_constraintRight_toLeftOf="@+id/switch1"  
    app:layout_constraintTop_toTopOf="parent"  
    app:layout_constraintVertical_bias="0.394" />
```



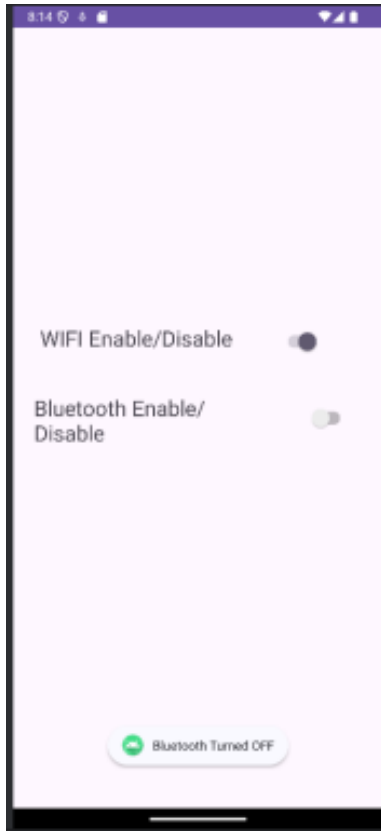
```
<TextView
    android:id="@+id/tv"
    android:layout_width="269dp"
    android:layout_height="55dp"
    android:text="Bluetooth Enable/Disable"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintHorizontal_bias="0.163"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toLeftOf="@+id/switch3"
    app:layout_constraintTop_toTopOf="parent" />
```

```
<Switch
    android:id="@+id/switch1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="36dp"
    android:minWidth="48dp"
    android:minHeight="48dp"
    android:textOff="OFF"
    android:textOn="ON"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toEndOf="@+id/tv1"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.399" />
```

```
<Switch
    android:id="@+id/switch3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:minWidth="48dp"
    android:minHeight="48dp"
    android:textOff="OFF"
    android:textOn="ON"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/tv"
    app:layout_constraintTop_toTopOf="parent" />
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 13:- Create an application to CRUD operations in SQLite.

MainActivity.java

```
package com.example.pract13;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements android.view.View.OnClickListener {
    SQLiteDatabase db;
    EditText editSearchContact, editName, editEmailAddress, editMessage;
    Button Add, Delete, Modify, View, search;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Create database, ContactDb database name
        db = openOrCreateDatabase("ContactDb", Context.MODE_PRIVATE, null);
        // Create table Contact
        db.execSQL("CREATE TABLE IF NOT EXISTS Contact(cId INTEGER PRIMARY KEY AUTOINCREMENT, Name
VARCHAR, Mail VARCHAR, CMessage VARCHAR);");
        // Initialize EditTexts and Buttons
        editSearchContact = findViewById(R.id.editTextSearch);
        editName = findViewById(R.id.editTextName);
        editEmailAddress = findViewById(R.id.editTextEmailAddress);
        editMessage = findViewById(R.id.editTextMessage);
        Add = findViewById(R.id.btnSave);
        Delete = findViewById(R.id.btnDelete);
        Modify = findViewById(R.id.btnupdate);
        View = findViewById(R.id.btnselect);
        search = findViewById(R.id.btnselectparticular);
        // Set OnClickListener for Buttons
        Add.setOnClickListener(this);
        Delete.setOnClickListener(this);
        Modify.setOnClickListener(this);
        View.setOnClickListener(this);
        search.setOnClickListener(this);
    }
    // Show a Toast message
    public void msg(Context context, String str) {
```

```
Toast.makeText(context, str, Toast.LENGTH_SHORT).show();
}
@Override
public void onClick(android.view.View v) {
    if (v.getId() == R.id.btnSave) {
        // Code for save data
        if (editName.getText().toString().trim().isEmpty() ||
            editEmailAddress.getText().toString().trim().isEmpty() ||
            editMessage.getText().toString().trim().isEmpty()) {
            msg(this, "Please enter all values");
            return;
        }
        db.execSQL("INSERT INTO Contact(Name, Mail, CMessage) VALUES('" +
            editName.getText().toString() + "', '" +
            editEmailAddress.getText().toString() + "', '" +
            editMessage.getText().toString() + "');");
        editName.getText().clear();
        editEmailAddress.getText().clear();
        editMessage.getText().clear();
        msg(this, "Response Noted, Thanks!!");
    } else if (v.getId() == R.id.btnupdate) {
        // Code for update data
        if (editSearchContact.getText().toString().trim().isEmpty()) {
            msg(this, "Enter Name");
            return;
        }
        Cursor c = db.rawQuery("SELECT * FROM Contact WHERE Name='" +
            editSearchContact.getText().toString() + "'", null);
        if (c.moveToFirst()) {
            db.execSQL("UPDATE Contact SET Name='" + editName.getText().toString() + "', " +
                "Mail='" + editEmailAddress.getText().toString() + "', " +
                "CMessage='" + editMessage.getText().toString() + "' " +
                "WHERE Name='" + editSearchContact.getText().toString() + "'");
            editName.getText().clear();
            editEmailAddress.getText().clear();
            editMessage.getText().clear();
            editSearchContact.getText().clear();
            msg(this, "Record Modified");
        } else {
            msg(this, "Invalid Name");
        }
    } else if (v.getId() == R.id.btndel) {
        // Code for delete data
        if (editSearchContact.getText().toString().trim().isEmpty()) {
            msg(this, "Please enter Name");
            return;
        }
    }
```

```
}
Cursor c = db.rawQuery("SELECT * FROM Contact WHERE Name='" +
    editSearchContact.getText().toString() + "'", null);
if (c.moveToFirst()) {
    db.execSQL("DELETE FROM Contact WHERE Name='" +
        editSearchContact.getText().toString() + "'");
    editName.getText().clear();
    editEmailAddress.getText().clear();
    editMessage.getText().clear();
    msg(this, "Record Deleted");
} else {
    msg(this, "Invalid Name");
}
} else if (v.getId() == R.id.btnselect) {
    // Code for select all data
    Cursor c = db.rawQuery("SELECT * FROM Contact", null);
    if (c.getCount() == 0) {
        msg(this, "No records found");
        return;
    }
    StringBuilder buffer = new StringBuilder();
    while (c.moveToNext()) {
        buffer.append("Name: ").append(c.getString(1)).append("\n");
        buffer.append("Mail: ").append(c.getString(2)).append("\n\n");
        buffer.append("Message: ").append(c.getString(3)).append("\n\n");
    }
    msg(this, buffer.toString());
} else if (v.getId() == R.id.btnselectparticular) {
    // Code for select particular data
    if (editSearchContact.getText().toString().trim().isEmpty()) {
        msg(this, "Enter Name");
        return;
    }
    Cursor c = db.rawQuery("SELECT * FROM Contact WHERE Name='" +
        editSearchContact.getText().toString() + "'", null);
    if (c.moveToFirst()) {
        editName.setText(c.getString(1));
        editEmailAddress.setText(c.getString(2));
        editMessage.setText(c.getString(3));
    } else {
        msg(this, "Invalid Name");
    }
}
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btnselect"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="50dp"
        android:layout_marginLeft="50dp"
        android:layout_marginBottom="201dp"
        android:text="View" />

    <Button
        android:id="@+id/btnsave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/btnselect"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_marginEnd="69dp"
        android:layout_marginRight="69dp"
        android:layout_marginBottom="0dp"
        android:text="Save" />

    <Button
        android:id="@+id/btnupdate"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignStart="@+id/btnselect"
        android:layout_alignParentBottom="true"
        android:layout_marginStart="-7dp"
        android:layout_marginBottom="72dp"
        android:text="Update" />

    <Button
        android:id="@+id/btnselectperticular"
```

```
android:layout_width="wrap_content"
android:layout_height="48dp"
android:layout_below="@+id/editTextMessage"
android:layout_alignParentStart="true"
android:layout_alignParentLeft="true"
android:layout_alignParentEnd="true"
android:layout_alignParentRight="true"
android:layout_marginStart="141dp"
android:layout_marginLeft="141dp"
android:layout_marginTop="125dp"
android:layout_marginEnd="136dp"
android:layout_marginRight="136dp"
android:layout_marginBottom="127dp"
android:text="Search" />
```

<Button

```
android:id="@+id/btnDel"
android:layout_width="102dp"
android:layout_height="wrap_content"
android:layout_below="@+id/btnsave"
android:layout_alignParentStart="true"
android:layout_alignParentLeft="true"
android:layout_alignParentEnd="true"
android:layout_alignParentRight="true"
android:layout_marginStart="240dp"
android:layout_marginLeft="240dp"
android:layout_marginTop="79dp"
android:layout_marginEnd="42dp"
android:layout_marginRight="42dp"
android:layout_marginBottom="74dp"
android:text="Delete" />
```

<EditText

```
android:id="@+id/editTextSearch"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignParentStart="true"
android:layout_alignParentLeft="true"
android:layout_alignParentTop="true"
android:layout_marginStart="68dp"
android:layout_marginLeft="68dp"
android:layout_marginTop="54dp"
android:ems="10"
android:hint="Search"
android:inputType="textPersonName"
android:minHeight="48dp"
```

```
android:text="" />
```

```
<EditText
```

```
    android:id="@+id/editTextEmailAddress"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentLeft="true"  
    android:layout_alignParentTop="true"  
    android:layout_marginStart="67dp"  
    android:layout_marginLeft="67dp"  
    android:layout_marginTop="145dp"  
    android:ems="10"  
    android:hint="Enter Your EmailAddress"  
    android:inputType="textPersonName"  
    android:minHeight="48dp"  
    android:text="" />
```

```
<EditText
```

```
    android:id="@+id/editTextMessage"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentLeft="true"  
    android:layout_alignParentTop="true"  
    android:layout_marginStart="67dp"  
    android:layout_marginLeft="67dp"  
    android:layout_marginTop="196dp"  
    android:ems="10"  
    android:hint="Enter Your Message"  
    android:inputType="textPersonName"  
    android:minHeight="48dp"  
    android:text="" />
```

```
<EditText
```

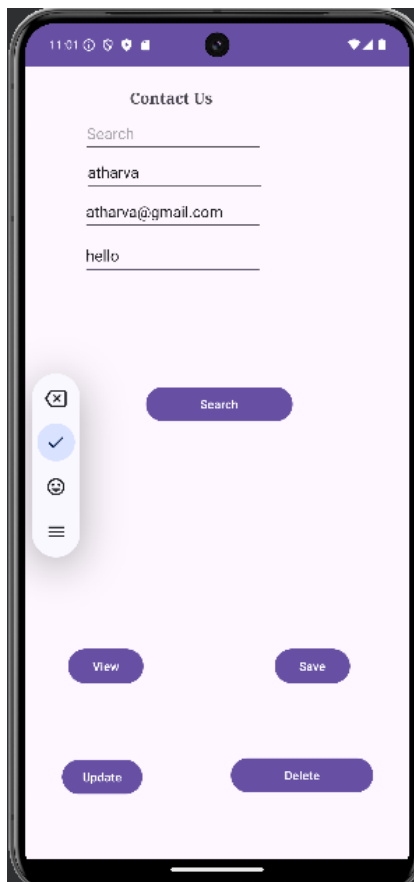
```
    android:id="@+id/editTextName"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentLeft="true"  
    android:layout_alignParentTop="true"  
    android:layout_marginStart="69dp"  
    android:layout_marginLeft="69dp"  
    android:layout_marginTop="99dp"  
    android:ems="10"  
    android:hint="Enter Your Name"
```



```
android:inputType="textPersonName"  
android:minHeight="48dp"  
android:text="" />
```

```
<TextView  
    android:id="@+id/textView5"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_alignParentStart="true"  
    android:layout_alignParentLeft="true"  
    android:layout_alignParentTop="true"  
    android:layout_marginStart="122dp"  
    android:layout_marginLeft="122dp"  
    android:layout_marginTop="24dp"  
    android:text="Contact Us"  
    android:textSize="18sp"  
    android:textStyle="bold"  
    app:fontFamily="serif" />  
</RelativeLayout>
```

Output:-



Practical 14:- Create an application to do animations like rotate, move and fade the image.

MainActivity.java

```
package com.example.pract14;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.ImageView;

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

    public void move(View view) {
        ImageView image = findViewById(R.id.imageView);
        if (image != null) {
            Animation animate1 = AnimationUtils.loadAnimation(getApplicationContext(), R.anim.move);
            animate1.setAnimationListener(new Animation.AnimationListener() {
                @Override
                public void onAnimationStart(Animation animation) {
                    // Code to execute when animation starts
                }

                @Override
                public void onAnimationEnd(Animation animation) {
                    // Code to execute when animation ends
                }

                @Override
                public void onAnimationRepeat(Animation animation) {
                    // Code to execute on animation repeat
                }
            });
            image.startAnimation(animate1);
        }
    }
}
```

```
}

public void fade(View view) {
    ImageView image = findViewById(R.id.imageView);
    if (image != null) {
        Animation animate2 = AnimationUtils.loadAnimation(getApplicationContext(), R.anim.fade_in);
        image.startAnimation(animate2);
    }
}

public void rotate(View view) {
    ImageView image = findViewById(R.id.imageView);
    if (image != null) {
        Animation animate3 = AnimationUtils.loadAnimation(getApplicationContext(), R.anim.rotate);
        image.startAnimation(animate3);
    }
}

public void blink(View view) {
    ImageView image = findViewById(R.id.imageView);
    if (image != null) {
        Animation animate4 = AnimationUtils.loadAnimation(getApplicationContext(), R.anim.blink);
        image.startAnimation(animate4);
    }
}
}
```

Activity_main.xml

```
<RelativeLayout 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"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="150dp"
        android:layout_height="150dp"
        android:layout_margin="8dp"
        app:srcCompat="@drawable/pic" />
```

```
<Button
    android:id="@+id/button3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/imageView"
    android:layout_marginTop="8dp"
    android:onClick="rotate"
    android:text="Rotate" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/button3"
    android:layout_marginTop="8dp"
    android:onClick="fade"
    android:text="Fade" />
```

```
<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/button2"
    android:layout_marginTop="8dp"
    android:onClick="blink"
    android:text="Blink" />
```

```
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@id/button4"
    android:layout_marginTop="8dp"
    android:onClick="move"
    android:text="Move" />
```

```
</RelativeLayout>
```

Blink.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
<alpha
```

```
        android:fromAlpha="0.0"  
        android:toAlpha="1.0"  
        android:interpolator="@android:anim/accelerate_interpolator"  
        android:duration="600"  
        android:repeatMode="reverse"  
        android:repeatCount="infinite"/>  
</set>
```

Rotate.xml

```
<set xmlns:android="http://schemas.android.com/apk/res/android">  
<rotate  
    android:fromDegrees="0"  
    android:toDegrees="360"  
    android:pivotX="50%"  
    android:pivotY="50%"  
    android:duration="600"  
    android:repeatCount="infinite"/>  
</set>
```

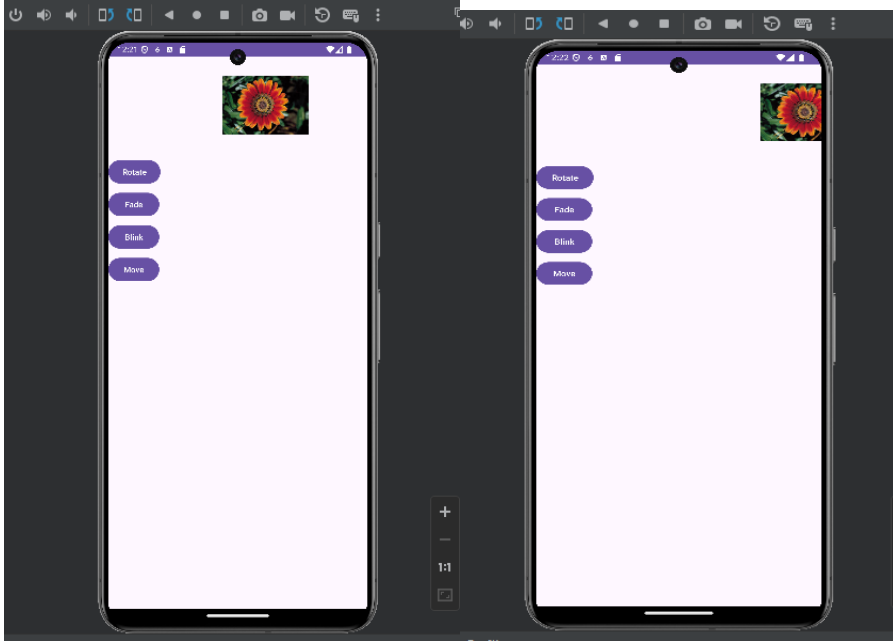
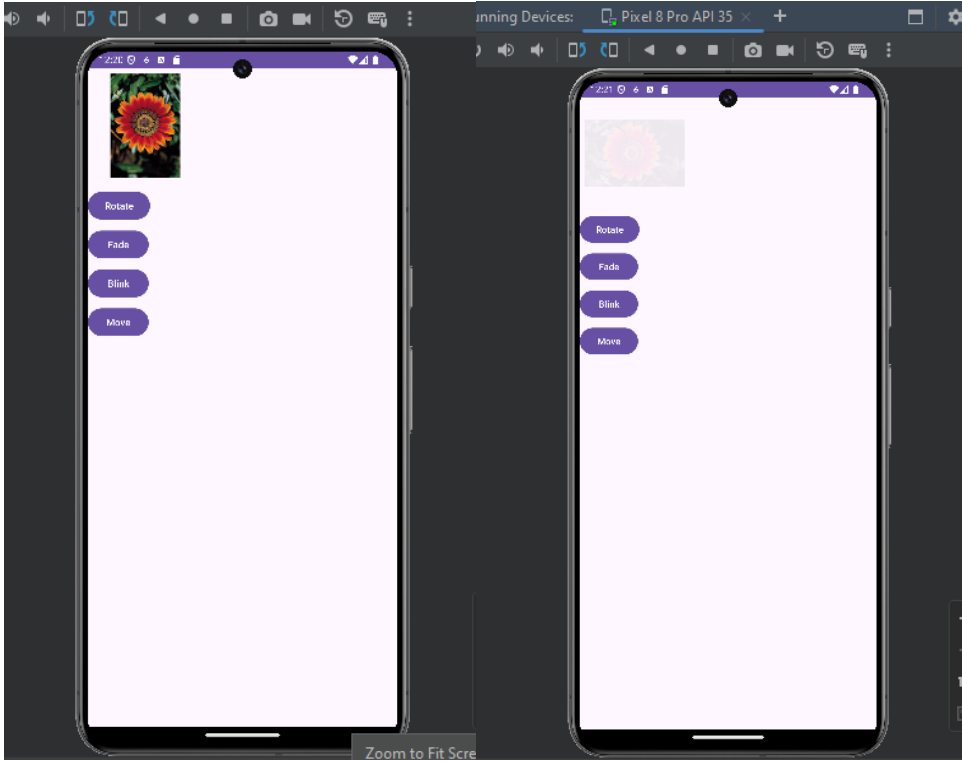
Fade_in.xml

```
<set xmlns:android="http://schemas.android.com/apk/res/android">  
<alpha  
    android:fromAlpha="0.0"  
    android:toAlpha="1.0"  
    android:duration="600"/>  
</set>
```

Move.xml

```
<set xmlns:android="http://schemas.android.com/apk/res/android">  
<translate  
    android:fromXDelta="-100%p"  
    android:toXDelta="100%p"  
    android:duration="600"  
    android:repeatCount="infinite"  
    android:repeatMode="reverse"/>  
</set>
```

Output:-



Practical 15:- Create an application to demonstrate Shared Preference.

MainActivity.java

```
package com.example.pract15;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    SharedPreferences sharedPreferences;
    EditText email;
    EditText password;
    CheckBox remember;

    public static final String mypreferences = "mypref";
    public static final String Email = "emailKey";
    public static final String Password = "passwordKey";

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

        email = findViewById(R.id.editText_email);
        password = findViewById(R.id.editText_password);
        remember = findViewById(R.id.checkBox);
        sharedPreferences = getSharedPreferences(mypreferences, Context.MODE_PRIVATE);

        loadPreferences();
    }

    private void loadPreferences() {
        if (sharedPreferences.contains(Email)) {
            email.setText(sharedPreferences.getString(Email, ""));
            remember.setChecked(true); // Check the box if email is present
        }
    }
}
```

```
        if (sharedPreferences.contains(Password)) {  
            password.setText(sharedPreferences.getString(Password, ""));  
        }  
    }  
  
    public void Get(View view) {  
        loadPreferences();  
    }  
  
    public void Save(View view) {  
        if (remember.isChecked()) {  
            String e = email.getText().toString();  
            String p = password.getText().toString();  
            SharedPreferences.Editor editor = sharedPreferences.edit();  
            editor.putString(Email, e);  
            editor.putString(Password, p);  
            editor.apply(); // Use apply() for asynchronous saving  
            Toast.makeText(getApplicationContext(), "Value stored in shared preference",  
                Toast.LENGTH_SHORT).show();  
        }  
    }  
  
    public void clear(View view) {  
        email.setText("");  
        password.setText("");  
        remember.setChecked(false); // Clear the checkbox state  
    }  
}
```

Activity_main.xml

```
<androidx.constraintlayout.widget.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"  
    tools:context=".MainActivity">  
  
    <TextView  
        android:id="@+id/textView_emailId"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"
```



```
android:text="Email Id:"  
android:textSize="24sp"  
app:layout_constraintBottom_toBottomOf="parent"  
app:layout_constraintEnd_toEndOf="parent"  
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent"  
app:layout_constraintVertical_bias="0.2" />
```

<TextView

```
    android:id="@+id/textView_password"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Password:"  
    android:textSize="24sp"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toBottomOf="@id/textView_emailId"  
    app:layout_constraintVertical_bias="0.1" />
```

<EditText

```
    android:id="@+id/editText_email"  
    android:layout_width="0dp"  
    android:layout_height="54dp"  
    android:layout_marginEnd="16dp"  
    android:hint="@android:string/untitled"  
    android:inputType="textEmailAddress"  
    android:textSize="24sp"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toBottomOf="@id/textView_emailId"  
    app:layout_constraintWidth_percent="0.8" />
```

<EditText

```
    android:id="@+id/editText_password"  
    android:layout_width="0dp"  
    android:layout_height="54dp"  
    android:layout_marginEnd="16dp"  
    android:hint="@android:string/untitled"  
    android:inputType="textPassword"  
    android:textSize="24sp"  
    app:layout_constraintEnd_toEndOf="parent"
```

```
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toBottomOf="@id/textView_password"  
app:layout_constraintWidth_percent="0.8" />
```

```
<CheckBox  
    android:id="@+id/checkBox"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:text="Remember Me"  
    android:textSize="18sp"  
    app:layout_constraintTop_toBottomOf="@id/editText_password"  
    app:layout_constraintEnd_toEndOf="parent" />
```

```
<Button  
    android:id="@+id/button_signIn"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:onClick="Save"  
    android:text="Sign In"  
    android:textSize="18sp"  
    app:layout_constraintTop_toBottomOf="@id/checkBox"  
    app:layout_constraintEnd_toEndOf="parent" />
```

```
<Button  
    android:id="@+id/button_clear"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:onClick="clear"  
    android:text="Clear"  
    android:textSize="18sp"  
    app:layout_constraintTop_toBottomOf="@id/button_signIn"  
    app:layout_constraintEnd_toEndOf="parent" />
```

```
<Button  
    android:id="@+id/button_getData"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:onClick="Get"  
    android:text="Get Data"  
    android:textSize="18sp"  
    app:layout_constraintTop_toBottomOf="@id/button_clear"  
    app:layout_constraintEnd_toEndOf="parent" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

Output:-



Practical 16:- Write an application to download an image using http url connection.

MainActivity.java

```
package com.example.pract16;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.ConnectivityManager;
import android.net.NetworkCapabilities;
import android.net.NetworkInfo;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;

import java.io.IOException;
import java.io.InputStream;
import java.net.HttpURLConnection;
import java.net.MalformedURLException;
import java.net.URL;
import java.net.URLConnection;

public class MainActivity extends AppCompatActivity {

    private Bitmap bitmap = null;
    private Button b1;
    private ImageView imgView;

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

        b1 = findViewById(R.id.button);
        imgView = findViewById(R.id.imageView);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```

```
        if (checkInternetConnection()) {  
            downloadImage("https://hips.hearstapps.com/hmg-prod.s3.amazonaws.com/images/2022-chevrolet-  
corvette-z06-1607016574.jpg?crop=0.737xw:0.738xh;0.181xw,0.218xh&resize=980:*");  
        }  
    }  
});  
}
```

```
private void downloadImage(String urlStr) {  
    // Show ProgressBar or equivalent instead of ProgressDialog  
    final String url = urlStr;  
    new Thread(() -> {  
        InputStream in = null;  
        Message msg = Message.obtain();  
        msg.what = 1;  
        try {  
            in = openHttpConnection(url);  
            bitmap = BitmapFactory.decodeStream(in);  
            Bundle bundle = new Bundle();  
            bundle.putParcelable("bitmap", bitmap);  
            msg.setData(bundle);  
            in.close();  
        } catch (Exception e) {  
            e.printStackTrace();  
        }  
        messageHandler.sendMessage(msg);  
    }).start();  
}
```

```
private InputStream openHttpConnection(String urlStr) throws IOException, IOException {  
    InputStream in = null;  
    int resCode;  
    URL url = new URL(urlStr);  
    URLConnection urlConn = url.openConnection();  
    if (!(urlConn instanceof HttpURLConnection)) {  
        throw new IOException("URL is not an Http URL");  
    }  
    HttpURLConnection httpConn = (HttpURLConnection) urlConn;  
    httpConn.setAllowUserInteraction(false);  
    httpConn.setInstanceFollowRedirects(true);  
    httpConn.setRequestMethod("GET");  
    httpConn.connect();  
    resCode = httpConn.getResponseCode();  
    if (resCode == HttpURLConnection.HTTP_OK) {  
        in = httpConn.getInputStream();  
    }  
}
```

```
        return in;
    }

    @SuppressWarnings("HandlerLeak")
    private Handler messageHandler = new Handler() {
        @Override
        public void handleMessage(Message msg) {
            super.handleMessage(msg);
            imageView.setImageBitmap((Bitmap) (msg.getData().getParcelable("bitmap")));
            // Dismiss ProgressBar or equivalent here
        }
    };

    private boolean checkInternetConnection() {
        ConnectivityManager connectivityManager = (ConnectivityManager)
        getSystemService(CONNECTIVITY_SERVICE);
        if (connectivityManager != null) {
            NetworkCapabilities capabilities =
            connectivityManager.getNetworkCapabilities(connectivityManager.getActiveNetwork());
            if (capabilities != null && (capabilities.hasTransport(NetworkCapabilities.TRANSPORT_WIFI) ||
            capabilities.hasTransport(NetworkCapabilities.TRANSPORT_CELLULAR))) {
                Toast.makeText(this, "Connected", Toast.LENGTH_LONG).show();
                return true;
            } else {
                Toast.makeText(this, "Not Connected", Toast.LENGTH_LONG).show();
                return false;
            }
        }
        Toast.makeText(this, "No Connectivity Manager", Toast.LENGTH_LONG).show();
        return false;
    }
}
```

Activity_main.xml

```
<androidx.constraintlayout.widget.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"
    tools:context=".MainActivity">

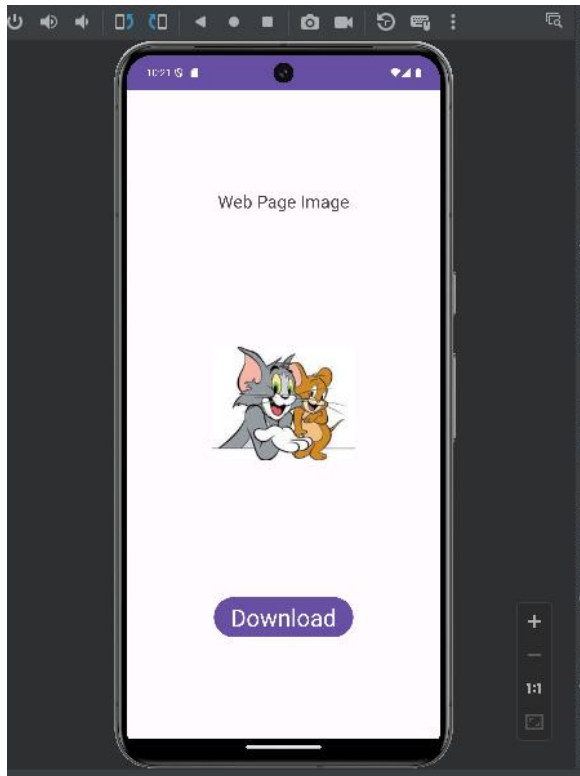
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
android:text="Web Page Image"
android:textSize="25sp"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintBottom_toTopOf="@+id/imageView"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintVertical_bias="0.2" />
```

```
<ImageView
    android:id="@+id/imageView"
    android:layout_width="205dp"
    android:layout_height="262dp"
    app:layout_constraintBottom_toTopOf="@+id/button"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView"
    app:layout_constraintVertical_bias="0.6"
    app:srcCompat="@drawable/tom" />
```

```
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Download"
    android:textAppearance="@style/TextAppearance.AppCompat.Display1"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/imageView"
    app:layout_constraintVertical_bias="0.8" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 17:- Create an application to play a video.

MainActivity.java

```
package com.example.pract17;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.MediaController;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity {

    private VideoView videoView;
    private MediaController mediaController;

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

        videoView = findViewById(R.id.videoView);
        mediaController = new MediaController(this);

        // Set the video path
        videoView.setVideoPath("android.resource://" + getPackageName() + "/" + R.raw.video);

        // Set the MediaController
        mediaController.setAnchorView(videoView);
        videoView.setMediaController(mediaController);

        // Start playing the video
        videoView.start();
    }

    @Override
    protected void onPause() {
        super.onPause();
        if (videoView != null && videoView.isPlaying()) {
            videoView.pause();
        }
    }

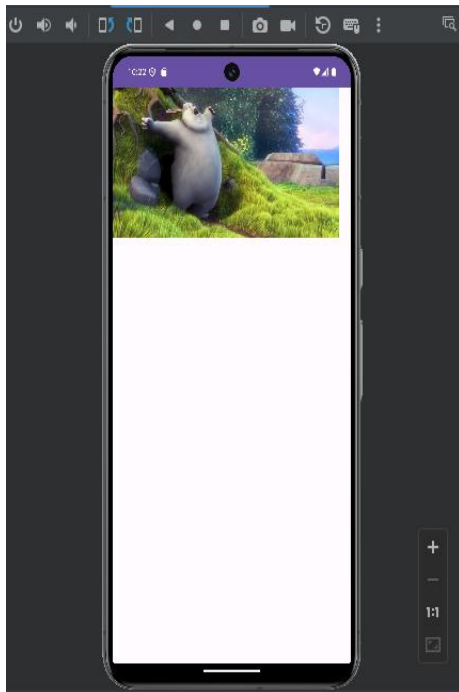
    @Override
    protected void onResume() {
        super.onResume();
        if (videoView != null && !videoView.isPlaying()) {
            videoView.start();
        }
    }
}
```

```
    }  
  }  
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout 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"  
    tools:context=".MainActivity">  
    <VideoView  
        android:id="@+id/videoView"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content" />  
</RelativeLayout>
```

Output:-



Practical 18:- Write an application to display latitude and longitude of the current location.

MainActivity.java

```
package com.example.pract18;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.pm.PackageManager;
import android.location.Location;
import android.os.Build;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import androidx.annotation.RequiresApi;
import androidx.core.app.ActivityCompat;
import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.tasks.OnSuccessListener;

import static android.Manifest.permission.ACCESS_FINE_LOCATION;

public class MainActivity extends AppCompatActivity {
    private FusedLocationProviderClient fusedLocationClient;
    private TextView locationTextView;

    @RequiresApi(api = Build.VERSION_CODES.M)
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        requestPermissions();
        fusedLocationClient = LocationServices.getFusedLocationProviderClient(this);

        Button btnGetLocation = findViewById(R.id.btn);
        locationTextView = findViewById(R.id.location);

        btnGetLocation.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (ActivityCompat.checkSelfPermission(MainActivity.this, ACCESS_FINE_LOCATION) !=
                    PackageManager.PERMISSION_GRANTED) {
                    // Permission is not granted, show a message or handle accordingly
                    return;
                }
            }
        });
    }
}
```

```
    }

    fusedLocationClient.getLastLocation().addOnSuccessListener(MainActivity.this, new
    OnSuccessListener<Location>() {
        @Override
        public void onSuccess(Location location) {
            if (location != null) {
                String locationText = "Latitude: " + location.getLatitude() + "\nLongitude: " + location.getLongitude();
                locationTextView.setText(locationText);
            } else {
                locationTextView.setText("Location not found");
            }
        }
    });
}

private void requestPermissions() {
    ActivityCompat.requestPermissions(this, new String[]{ACCESS_FINE_LOCATION}, 1);
}
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/location"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="90dp"
        android:text="Location!"
        android:textSize="24sp" />

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

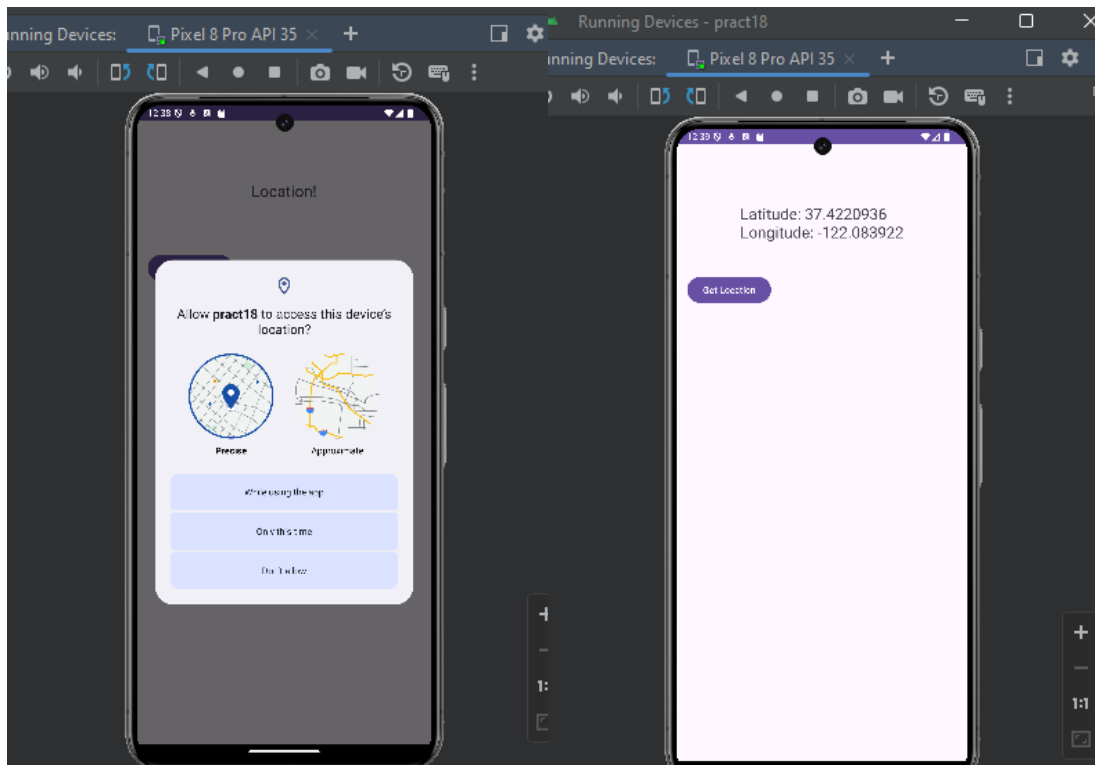
```
android:layout_width="wrap_content"  
android:layout_height="wrap_content"  
android:layout_alignParentStart="true"  
android:layout_alignParentTop="true"  
android:layout_marginStart="16dp"  
android:layout_marginTop="200dp"  
android:text="Get Location" />
```

</RelativeLayout>

AndroidManifest.xml

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
```

Output:-



Practical 19:- Create an application to demonstrate volley JSON.

MainActivity.java

```
package com.example.practical19;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.io.BufferedReader;
import java.io.InputStream;
import java.io.InputStreamReader;

public class MainActivity extends AppCompatActivity {

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

        txtView = findViewById(R.id.textView);
        Button button = findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                readJsonFromFile();
            }
        });

        private void readJsonFromFile() {
            String jsonData = loadJSONFromAsset();
            if (jsonData != null) {
                parseJsonResponse(jsonData);
            } else {
                Log.e("JSON Error", "Failed to load JSON data");
            }
        }

        private String loadJSONFromAsset() {
            String json = null;
            try {
                InputStream is = getResources().openRawResource(R.raw.data); // Replace 'data' with your JSON file name
                BufferedReader reader = new BufferedReader(new InputStreamReader(is));
                StringBuilder sb = new StringBuilder();
                String line;
                while ((line = reader.readLine()) != null) {
                    sb.append(line).append("\n");
                }
            }
        }
    }
}
```

```
json = sb.toString();
reader.close();
    } catch (Exception e) {
Log.e("JSON Read Error", "Error reading JSON file", e);
    }
    return json; }

private void parseJsonResponse(String jsonData) {
    try {
JSONObject response = new JSONObject(jsonData);
JSONArray jsonArray = response.getJSONArray("employees");
        StringBuilder stringBuilder = new StringBuilder();

        for (int i = 0; i<jsonArray.length(); i++) {
JSONObject emp = jsonArray.getJSONObject(i);
            String firstName = emp.getString("firstname");
            int salary = emp.getInt("salary");
            String designation = emp.getString("designation");

stringBuilder.append("FirstName: ").append(firstName)
                .append(", Salary: ").append(salary)
                .append(", Designation: ").append(designation)
                .append("\n\n");
        }
txtView.setText(stringBuilder.toString());
    } catch (JSONException e) {
Log.e("JSON Parsing Error", "Error parsing JSON", e);}}}

```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.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:padding="16dp"
tools:context=".MainActivity">

<ScrollView
android:layout_width="0dp"
android:layout_height="0dp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent">

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

```

```
<TextView
android:id="@+id/textView"
android:layout_width="match_parent"
android:layout_height="182dp"
android:textSize="20sp" />
</LinearLayout>
</ScrollView>
<Button
android:id="@+id/button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="PARSE"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.824"
app:layout_constraintHorizontal_bias="0.5" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:-



Practical 20:- Create an application to display the database created in JSON server.

MainActivity.java

```
package com.example.practical20;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private Button clickButton;
    private TextViewdataTextView;

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

        // Initialize UI elements
        clickButton = findViewById(R.id.button);
        dataTextView = findViewById(R.id.fetcheddata);

        // Set up click listener
        clickButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Pass both Context and TextView to the FetchedData constructor
                new FetchedData(MainActivity.this, dataTextView).execute();
            }
        });
    }
}
```

FetchedData

```
package com.example.practical20;
import android.content.Context;
import android.os.AsyncTask;
import android.util.Log;
import android.widget.TextView;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.io.BufferedReader;
import java.io.InputStream;
```

```
import java.io.InputStreamReader;

public class FetchedData extends AsyncTask<Void, Void, String> {
    private TextView dataTextView;
    private Context context;

    public FetchedData(Context context, TextView textView) {
        this.context = context;
        this.dataTextView = textView;
    }

    @Override
    protected String doInBackground(Void... voids) {
        String jsonData = loadJSONFromAsset();
        if (jsonData != null) {
            return parseJsonData(jsonData);
        } else {
            return null;
        }
    }

    private String loadJSONFromAsset() {
        String json = null;
        try {
            InputStream is = context.getResources().openRawResource(R.raw.data); // Use your JSON file name
            BufferedReader reader = new BufferedReader(new InputStreamReader(is));
            StringBuilder sb = new StringBuilder();
            String line;
            while ((line = reader.readLine()) != null) {
                sb.append(line).append("\n");
            }
            json = sb.toString();
            reader.close();
        } catch (Exception e) {
            Log.e("FetchedData", "Error reading JSON: " + e.getMessage());
        }
        return json;
    }

    private String parseJsonData(String jsonData) {
        StringBuilder parsedData = new StringBuilder();

        try {
            JSONArray jsonArray = new JSONArray(jsonData);
            for (int i = 0; i < jsonArray.length(); i++) {
                JSONObject jsonObject = jsonArray.getJSONObject(i);
                String singleParsed = "Name: " + jsonObject.getString("name") + "\n" +
                    "Password: " + jsonObject.getString("password") + "\n" +
                    "Contact: " + jsonObject.getString("contact") + "\n" +
                    "Country: " + jsonObject.getString("country") + "\n\n";
                parsedData.append(singleParsed);
            }
            Log.d("FetchedData", "Parsed data: " + parsedData.toString());
        }
    }
}
```

```
        } catch (JSONException e) {
Log.e("FetchedData", "JSONException: " + e.getMessage());
        }

        return parsedData.toString();
    }

    @Override
    protected void onPostExecute(String result) {
super.onPostExecute(result);
Log.d("FetchedData", "Result in onPostExecute: " + result);
        if (result != null && !result.isEmpty()) {
dataTextView.setText(result);
        } else {
dataTextView.setText("Failed to fetch data or no data available.");
        }
    }
}
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click"
        android:layout_marginBottom="10dp" />

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_below="@id/button">

        <TextView
            android:id="@+id/fetcheddata"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:padding="5dp"
            android:textSize="25sp"
            android:hint="Fetching"
            android:visibility="visible" />

    </ScrollView>

</RelativeLayout>
```

Output:-

