Understanding different layouts in android

Experiment Outcomes

M2.03 Implement programs using Linear, Relative, Table, Absolute, Frame layouts

Aim:

To create an android application with multiple screens. Each screen should use different layout like LinearLayout, RelativeLayout, FrameLayout, absoluteLayout and TableLayout

Objective:

Create an android application to understand the different layouts in android.

- **LinearLayout** is a layout manager in Android Studio that arranges child views either vertically or horizontally.
- **Relative Layout** is a layout manager in Android Studio that allows you to position UI elements relative to each other. It is one of the most commonly used layout managers in Android app development. With Relative Layout, you can specify the position of a UI element relative to other elements in the same layout.

In a Relative Layout, the position of each UI element is defined in relation to its siblings. You can use attributes such as layout_above, layout_below, layout_toLeftOf, and layout_toRightOf to position a UI element relative to its siblings. For example, if you want to position a button below a text view, you can set the "layout_below" attribute of the button to the ID of the text view.

Relative Layout is useful for creating complex UI layouts that have multiple UI elements that need to be positioned relative to each other. It allows you to create dynamic layouts that adjust to different screen sizes and orientations.

- AbsoluteLayout is a layout manager in Android Studio that allows you to specify the exact position of child views using absolute coordinates. This layout is not recommended for use in modern Android development, as it does not handle different screen sizes and resolutions well. Instead, RelativeLayout and ConstraintLayout should be used to create more flexible and responsive layouts.
- **TableLayout** is a layout manager in Android Studio that arranges child views in a table format. Each row in the table is represented by a TableRow object, and each cell in the row is represented by a child view of the TableRow object.
- **FrameLayout** is a layout manager in Android Studio that allows child views to be stacked on top of each other. Each child view is placed in a frame, and the frames are stacked in a Z-axis order. The last added child view will be at the top of the stack and the first added child view will be at the bottom.

Source Code

Activitymain.xml

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TextView android:id="@+id/textView2"
        android:layout width="match parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center horizontal"
        android:background="@color/black"
        android:textAlignment="center"
        android:paddingBottom="15dp"
        android:paddingLeft="15dp"
        android:paddingTop="15dp"
        android:text="Layout Example"
        android:textColor="#ffffff"
```

```
android:textSize="30sp"
        />
 <Button
        android:id="@+id/btn linear"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text="Linear Layout"
        android:layout marginTop="100dp"
        android:layout marginLeft="30dp"
        android:layout marginRight="30dp"/>
    <Button
        android:id="@+id/btn Relative"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text="Relative Layout"
        android:layout marginLeft="30dp"
        android:layout marginRight="30dp"/>
    <Button
        android:id="@+id/btn table"
        android:layout width="match parent"
        android:layout height="wrap_content"
        android:text="Table Layout"
        android:layout marginLeft="30dp"
        android:layout marginRight="30dp"/>
    <Button
        android:id="@+id/btn frame"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Frame Layout"
        android:layout_marginLeft="30dp"
        android:layout marginRight="30dp"/>
    <Button
        android:id="@+id/btn abs"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text="Absolute Layout"
        android:layout marginLeft="30dp"
        android:layout marginRight="30dp"/>
</LinearLayout>
Mainactivity.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    Button mBtnLinear, mBtnAbsolute, mBtnRelative, mBtnTable, mBtnFrame;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        mBtnLinear=findViewById(R.id.btn linear);
        mBtnAbsolute=findViewById(R.id.btn abs);
        mBtnRelative=findViewById(R.id.btn Relative);
        mBtnTable=findViewById(R.id.btn_table);
       mBtnFrame=findViewById(R.id.btn frame);
        mBtnLinear.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int1=new Intent(MainActivity.this, MainActivity2.class);
                startActivity(int1);
```

}

```
});
 mBtnRelative.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int2=new Intent(MainActivity.this, MainActivity3.class);
                startActivity(int2);
        });
        mBtnTable.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int2=new Intent(MainActivity.this, MainActivity4.class);
                startActivity(int2);
        });
        mBtnFrame.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int4=new Intent(MainActivity.this, MainActivity5.class);
                startActivity(int4);
            }
        });
        mBtnAbsolute.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int6=new Intent(MainActivity.this, MainActivity6.class);
                startActivity(int6);
            }
        });
    }
Activitymain2.xml (LinearLayout)
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"</pre>
    android:layout width="match parent"
    android:layout height="match parent"
    android:orientation="vertical">
    <ImageButton</pre>
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:src="@drawable/login"
        android:layout gravity="center"
        android:id="@+id/pic1"/>
    <EditText
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:textSize="25dp"
        android:layout gravity="center"
        android:hint="Enter User Name
        android:password="true"
        android:id="@+id/uid"/>
    <EditText
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:hint="Enter Password
        android:layout gravity="center"
        android:password="true"
        android:textSize="25dp"
        android:id="@+id/pwd"/>
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout gravity="center"
        android:orientation="horizontal">
```

```
<Button
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:id="@+id/btn"
            android:textSize="25dp"
            android:layout marginRight="10dp"
            android:layout gravity="center"
            android:text="Submit"/>
        <Button
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:id="@+id/btn2"
            android:textSize="25dp"
            android:layout gravity="center"
            android:text="Home"/>
    </LinearLayout>
</LinearLayout>
Mainactivity2.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity2 extends AppCompatActivity {
    EditText uid, pwd;
    Button lgn, sp;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main2);
        uid=findViewById(R.id.uid);
        pwd=findViewById(R.id.pwd);
        lgn=findViewById(R.id.btn);
        sp=findViewById(R.id.btn2);
        lgn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if(uid.getText().toString().equals("ssm") &&
pwd.getText().toString().equals("123")) {
                    Toast.makeText(getApplicationContext(), "Success....",
Toast.LENGTH SHORT).show();
                }else {
                    Toast.makeText(getApplicationContext(), "Wrong Credentials",
Toast.LENGTH SHORT).show();
                }
            }
        });
        sp.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent inten=new Intent(MainActivity2.this, MainActivity.class);
                startActivity(inten);
            }
        });
    }
```

import android.widget.Toast;

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"</pre>
      android:layout width="match parent"
     android:layout height="match parent">
      <ImageView</pre>
         android:id="@+id/imageView"
          android:layout width="wrap content"
          android:layout height="wrap content"
          android:layout marginTop="50dp"
          android:src="@drawable/login"
          android:layout centerHorizontal="true" />
      <EditText
         android:id="@+id/usernameEditText"
          android:layout_width="match_parent"
          android:layout height="wrap content"
          android:hint="Username"
          android:inputType="text"
          android:layout marginTop="50dp"
          android:layout marginLeft="40dp"
          android:layout marginRight="40dp"
          android:layout below="@+id/imageView" />
      <EditText
          android:id="@+id/passwordEditText"
          android:layout_width="match_parent"
          android:layout height="wrap content"
          android:hint="Password"
          android:inputType="textPassword"
          android:layout_marginTop="20dp"
          android:layout_marginLeft="40dp"
          android:layout_marginRight="40dp"
         android:layout below="@+id/usernameEditText" />
     <Button
         android:id="@+id/loginButton"
          android:layout width="match parent"
         android:layout height="wrap content"
         android:text="Login"
         android:layout marginTop="20dp"
         android:layout_marginLeft="40dp"
          android:layout_marginRight="40dp"
         android:layout below="@+id/passwordEditText" />
     <Button
         android:id="@+id/HomeButton"
          android:layout width="match parent"
          android:layout height="wrap content"
          android:text="Home"
          android:layout marginTop="20dp"
          android:layout marginLeft="40dp"
          android:layout marginRight="40dp"
          android:layout below="@+id/loginButton" />
 </RelativeLayout>
 Mainactivity3.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
```

```
public class MainActivity3 extends AppCompatActivity {
    EditText uid, pwd;
    Button lgn, sp;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main3);
        uid=findViewById(R.id.usernameEditText);
        pwd=findViewById(R.id.passwordEditText);
        lgn=findViewById(R.id.loginButton);
        sp=findViewById(R.id.HomeButton);
        lgn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (uid.getText().toString().equals("ssm") &&
pwd.getText().toString().equals("123")) {
                    Toast.makeText(getApplicationContext(), "Success....",
Toast.LENGTH SHORT).show();
                }else {
                    Toast.makeText(getApplicationContext(), "Wrong Credentials",
Toast.LENGTH SHORT).show();
                }
        });
        sp.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent inten=new Intent(MainActivity3.this, MainActivity.class);
                startActivity(inten);
            }
        });
    }
```

Activitymain4.xml (TableLayout)

```
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout width="match parent"
   android:layout height="match parent">
    <TableRow>
        <TextView
            android:text="Name"
            android:textSize="18sp"
            android:padding="10dp"
            android:textStyle="bold"
            android:background="@color/teal 200" />
        <TextView
            android:text="Mark"
            android:textSize="18sp"
            android:padding="10dp"
            android:textStyle="bold"
            android:background="@color/teal 200" />
        <TextView
            android:text="Result"
            android:textSize="18sp"
            android:padding="10dp"
            android:textStyle="bold"
            android:background="@color/teal 200" />
    </TableRow>
    <TableRow>
        <TextView
            android:text="John"
            android:padding="10dp" />
        <TextView
            android:text="30"
            android:padding="10dp" />
```

```
<TextView
              android:text="Failed"
              android:padding="10dp" />
      </TableRow>
      <TableRow>
          <TextView
              android:text="Vishnu"
              android:padding="10dp" />
          <TextView
              android:text="60"
              android:padding="10dp" />
          <TextView
              android:text="Passed"
              android:padding="10dp" />
      </TableRow>
      <TableRow>
          <TextView
              android:text="Anshid"
              android:padding="10dp" />
          <TextView
              android:text="800"
              android:padding="10dp" />
          <TextView
              android:text="Passed"
              android:padding="10dp" />
      </TableRow>
      <TableRow>
          <Button
              android:id="@+id/HmButton"
              android:layout width="match parent"
              android:layout height="wrap content"
              android:text="Home"
             />
      </TableRow>
 </TableLayout>
 Mainactivity4.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity4 extends AppCompatActivity {
Button btn1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main4);
       btn1=findViewById(R.id.HmButton);
        btn1.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view) {
                Intent int1=new Intent(MainActivity4.this, MainActivity.class);
                startActivity(int1);
            }
        });
    }
```

```
Activitymain5.xml(FrameLayout)
 <FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"</pre>
   android:layout width="match parent"
   android:layout height="match parent">
   <ImageView</pre>
      android:id="@+id/imageView"
      android:layout width="match parent"
      android:layout height="match parent"
      android:src="@drawable/ssm"
      android:scaleType="fitCenter" />
 <TextView
      android:layout width="wrap content"
      android:layout height="wrap content"
      android:text="Hello, SSM!"
      android:textSize="24sp"
     android:textColorHighlight="#EA0202"
      android:textColor="#EA0606"
      android:layout gravity="center" />
 <Button
      android:id="@+id/HmBt"
      android:layout width="match parent"
      android:layout height="wrap content"
      android:textSize="30dp"
      android:text="Home"
      android:layout gravity="bottom"
      />
 </FrameLayout>
 Mainactivity5.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity5 extends AppCompatActivity {
    Button b1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main5);
        b1=findViewById(R.id.HmBt);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                 Intent int1=new Intent(MainActivity5.this, MainActivity.class);
                startActivity(int1);
        });
    }
 Activitymain6.xml AbsoluteLayout
 <?xml version="1.0" encoding="utf-8"?>
 <AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"</pre>
      android:layout width="match parent"
      android:layout height="match parent">
      <EditText
          android:id="@+id/editTextEmail"
```

```
android:layout width="200dp"
          android:layout height="wrap content"
          android:layout x="80dp"
          android:layout_y="200dp"
          android:hint="Email"
         android:inputType="textEmailAddress" />
      <EditText
          android:id="@+id/editTextPassword"
          android:layout width="200dp"
         android:layout height="wrap content"
         android:layout x="80dp"
          android:layout y="280dp"
          android:hint="Password"
         android:inputType="textPassword" />
      <Button
          android:id="@+id/buttonLogin"
          android:layout_width="wrap_content"
          android:layout_height="wrap content"
          android:layout_x="80dp"
          android:layout_y="360dp"
         android:text="Login" />
      <Button
          android:id="@+id/buttonhm"
          android:layout_width="wrap content"
          android:layout_height="wrap content"
          android:layout_x="180dp"
          android:layout_y="360dp"
          android:text="Home" />
 </AbsoluteLayout>
 Mainactivity6.java
package com.example.layout;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity6 extends AppCompatActivity {
   Button btn1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main6);
       btn1 = findViewById(R.id.buttonhm);
       btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent int6 = new Intent(MainActivity6.this, MainActivity.class);
                startActivity(int6);
            }
       });
   }
}
Result:
```

Develop an android application to understand the different types of layouts