

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 intl=new Intent(MainActivity.this,MainActivity2.class);
                startActivity(intl);

            }
        }
    }
}

```

```

    });

    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"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <ImageButton
        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);
            }
        });
    }
}

```

Activitymain3.xml (RelativeLayout)

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <ImageView
        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;
import android.widget.Toast;
```

```

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);
            }
        });
    }
}

```

Activitmain4.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" />
    </TableRow>

```

```

        <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() {
            @Override
            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"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <ImageView
        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"
    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