

RAJAGIRI COLLEGE OF SOCIAL SCIENCES

(Autonomous)

KALAMASSERY - KOCHI - 683104



MASTER OF COMPUTER APPLICATIONS

ANDROID (LAB ASSIGNMENT)
MCA307

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ROLL NO: 51

1. Create an app that illustrates the following layouts of the android studio.

- Constraint Layout
- Linear Layout
- Relative Layout
- Frame Layout
- Table Layout

MainActivity.java

```
package com.example.layoutdemo;

import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.widget.Button;
import android.widget.FrameLayout;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;

public class MainActivity extends AppCompatActivity {

    private FrameLayout frameLayout;
    private Button changeLayoutButton;
    private int currentLayoutIndex = 0;
    private int[] layouts = {
        R.layout.layout_constraint,
        R.layout.layout_linear,
        R.layout.layout_relative,
        R.layout.layout_frame,
        R.layout.layout_table
    };

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

        // Initialize views
        frameLayout = findViewById(R.id.frameLayout);
        changeLayoutButton = findViewById(R.id.changeLayoutButton);

        // Set initial layout
        showLayout(layouts[currentLayoutIndex]);

        // Button click listener to cycle through layouts
        changeLayoutButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                currentLayoutIndex = (currentLayoutIndex + 1) %
layouts.length;
                showLayout(layouts[currentLayoutIndex]);
            }
        });
    }
}
```

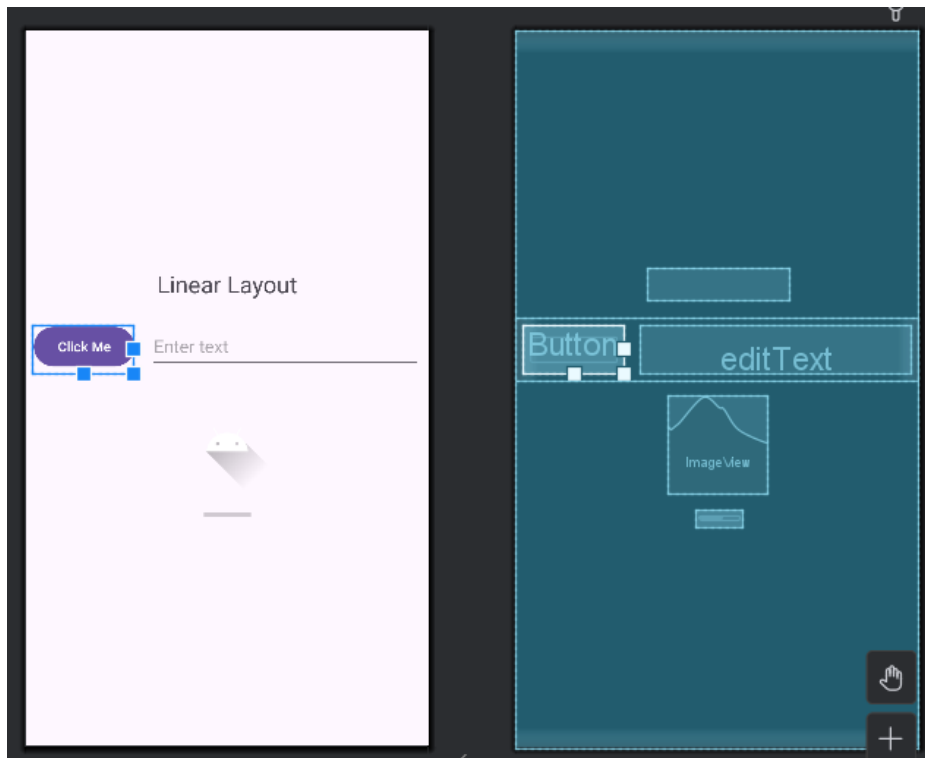
```
private void showLayout(int layoutResID) {  
    frameLayout.removeAllViews();  
    View view = LayoutInflater.from(this).inflate(layoutResID,  
frameLayout, false);  
    frameLayout.addView(view);  
}  
}
```

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">  
  
    <FrameLayout  
        android:id="@+id/frameLayout"  
        android:layout_width="match_parent"  
        android:layout_height="match_parent"  
        android:layout_above="@+id/changeLayoutButton" />  
  
    <Button  
        android:id="@+id/changeLayoutButton"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:layout_alignParentBottom="true"  
        android:layout_centerHorizontal="true"  
        android:text="Change Layout" />  
  
</RelativeLayout>
```

Layout_linera.xml

```
<LinearLayout  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:orientation="horizontal"  
    android:gravity="center"  
    android:layout_marginTop="16dp">  
  
    <Button  
        android:id="@+id/button"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Click Me"  
        android:layout_margin="8dp" />  
  
    <EditText  
        android:id="@+id/editText"  
        android:layout_width="0dp"  
        android:layout_height="wrap_content"  
        android:layout_margin="8dp"  
        android:layout_weight="1"  
        android:hint="Enter text"  
        android:minHeight="48dp" />  
</LinearLayout>
```



Layout_constraint.xml

```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Constraint Layout"
    android:textSize="24sp"
    android:layout_marginTop="16dp"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Click Me"
    app:layout_constraintTop_toBottomOf="@id/textView"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    android:layout_marginTop="16dp" />

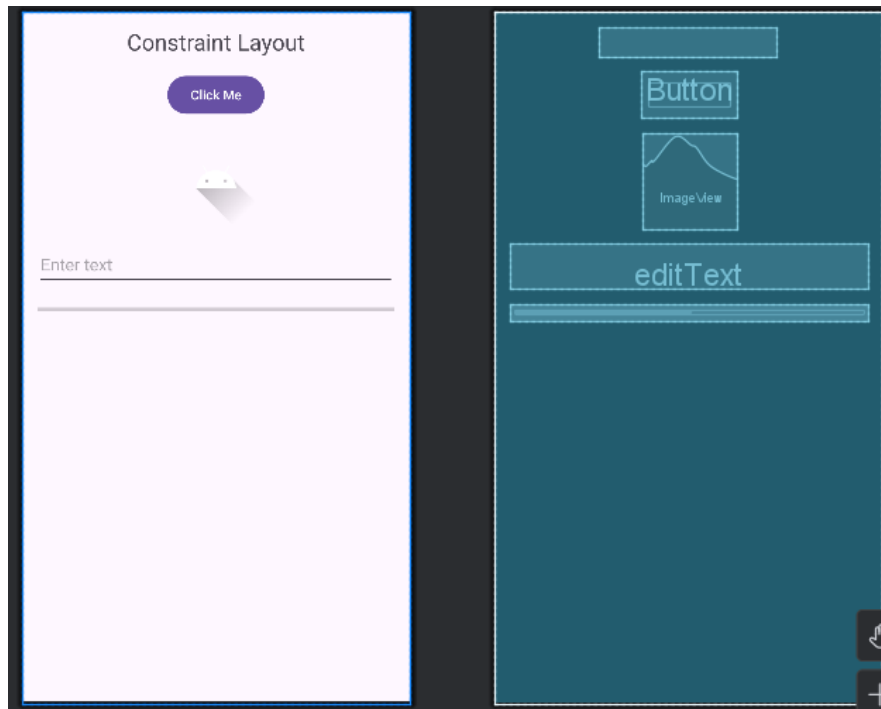
<ImageView
    android:id="@+id/imageView"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:src="@drawable/ic_launcher_foreground"
    app:layout_constraintTop_toBottomOf="@id/button"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    android:layout_marginTop="16dp" />

<EditText
    android:id="@+id/editText"
```

```

android:layout_width="0dp"
android:layout_height="wrap_content"
android:layout_marginStart="16dp"
android:layout_marginTop="16dp"
android:layout_marginEnd="16dp"
android:hint="Enter text"
android:minHeight="48dp"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@id/imageView" />

```



Layout frame.xml

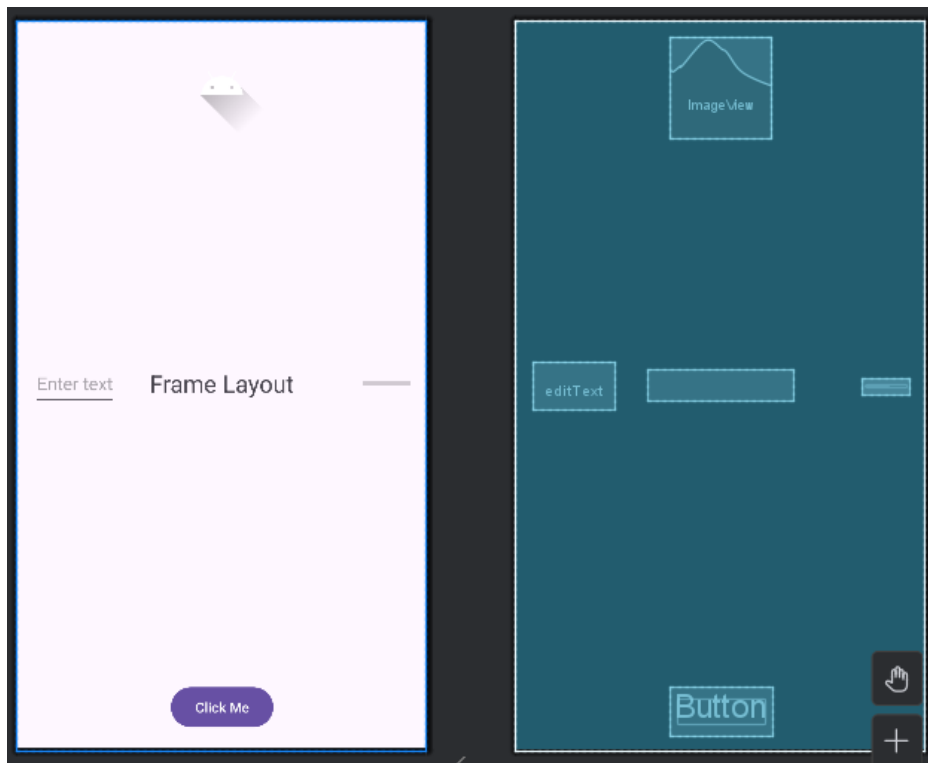
```

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Frame Layout"
    android:textSize="24sp"
    android:layout_gravity="center" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Click Me"
    android:layout_gravity="bottom|center_horizontal"
    android:layout_marginBottom="16dp" />

<ImageView
    android:id="@+id/imageView"
    android:layout_width="100dp"
    android:layout_height="100dp"
    android:src="@drawable/ic_launcher_foreground"
    android:layout_gravity="top|center_horizontal"
    android:layout_marginTop="16dp" />

```



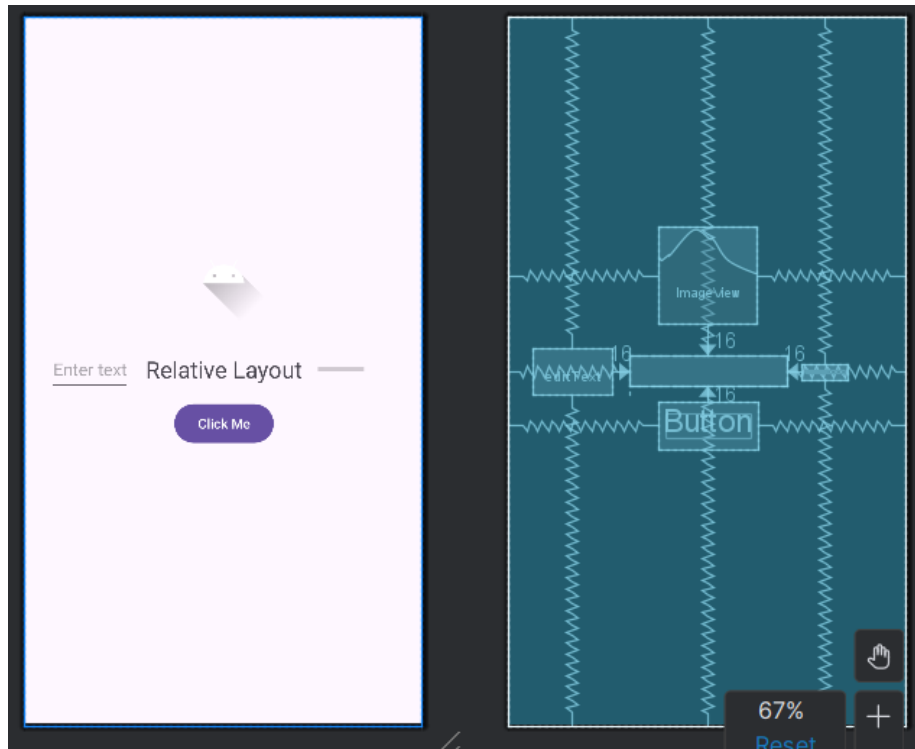
Layout_relative.xml

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Relative Layout"
        android:textSize="24sp"
        android:layout_centerInParent="true"
        android:layout_marginTop="16dp" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click Me"
        android:layout_below="@id/textView"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:src="@drawable/ic_launcher_foreground"
        android:layout_above="@id/textView"
        android:layout_centerHorizontal="true"
        android:layout_marginBottom="16dp" />
```



Layout_table.xml

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

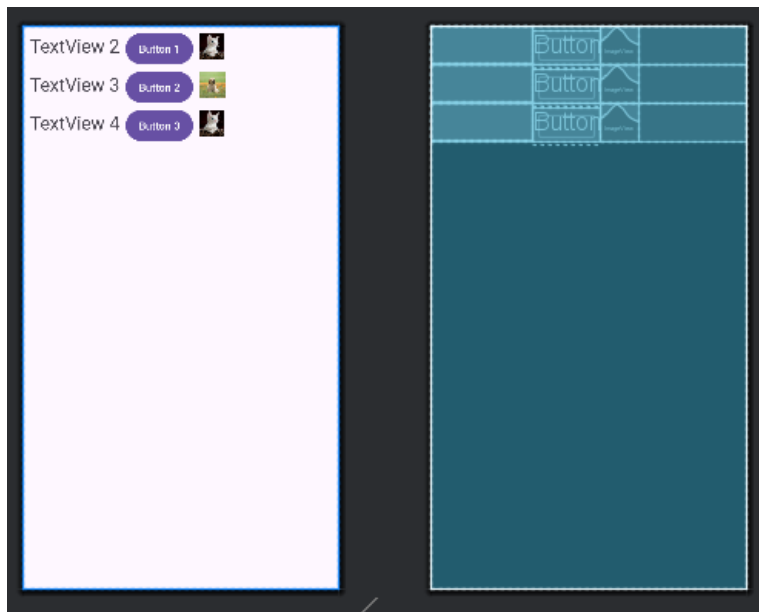
    <TableRow
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <TextView
            android:id="@+id/textView2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="TextView 2"
            android:textSize="24sp"
            android:padding="8dp" />

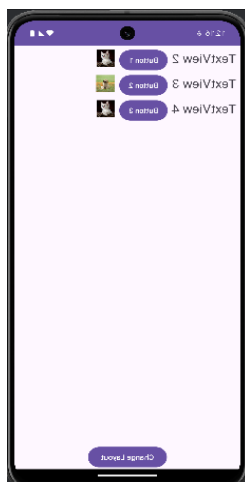
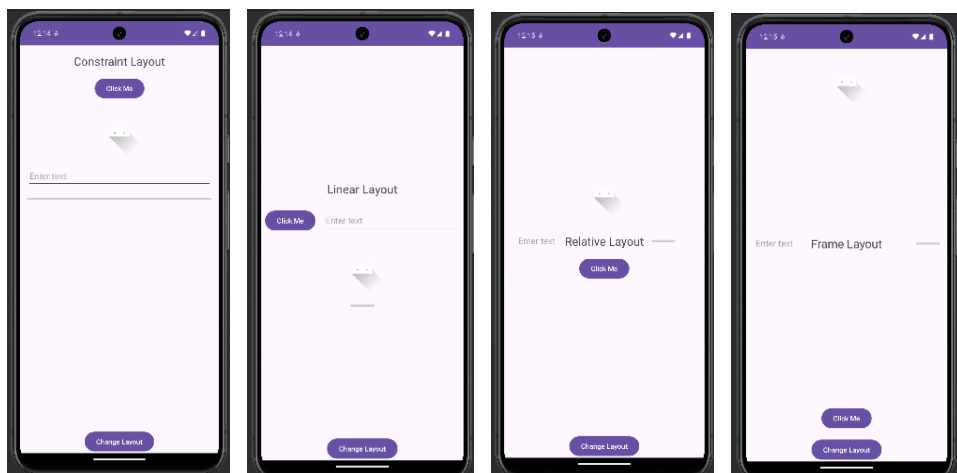
        <Button
            android:id="@+id/button1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Button 1"
            android:padding="8dp" />

        <ImageView
            android:id="@+id/imageView1"
            android:layout_width="50dp"
            android:layout_height="50dp"
            android:src="@drawable/cat"
            android:scaleType="fitCenter"
            android:padding="8dp" />

    </TableRow>
```



OUTPUT:



2. Create an app that demonstrates Tab Layout and Grid View

MainActivity.java

```
package com.example.tablayout;

import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
import androidx.viewpager2.widget.ViewPager2;

import com.google.android.material.tabs.TabLayout;

public class MainActivity extends AppCompatActivity {
    TabLayout tabLayout;
    ViewPager2 viewPager2;
    ViewPagerAdapter viewPagerAdapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        tabLayout=findViewById(R.id.tabLayout);
        viewPager2=findViewById(R.id.viewpager);
        viewPagerAdapter=new ViewPagerAdapter(this);
        viewPager2.setAdapter(viewPagerAdapter);
        tabLayout.addOnTabSelectedListener(new
TabLayout.OnTabSelectedListener() {
            @Override
            public void onTabSelected(TabLayout.Tab tab) {
                viewPager2.setCurrentItem(tab.getPosition());
            }

            @Override
            public void onTabUnselected(TabLayout.Tab tab) {

            }

            @Override
            public void onTabReselected(TabLayout.Tab tab) {

            }
        });
        viewPager2.registerOnPageChangeCallback(new
ViewPager2.OnPageChangeCallback() {
            @Override
            public void onPageSelected(int position) {
                super.onPageSelected(position);
                tabLayout.getTabAt(position).select();
            }
        });
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main),
(v, insets) -> {
            Insets systemBars =
```

```

insets.getInsets(WindowInsetsCompat.Type.systemBars());
        v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
        return insets;
    });
}
}

```

activity_main.xml

```

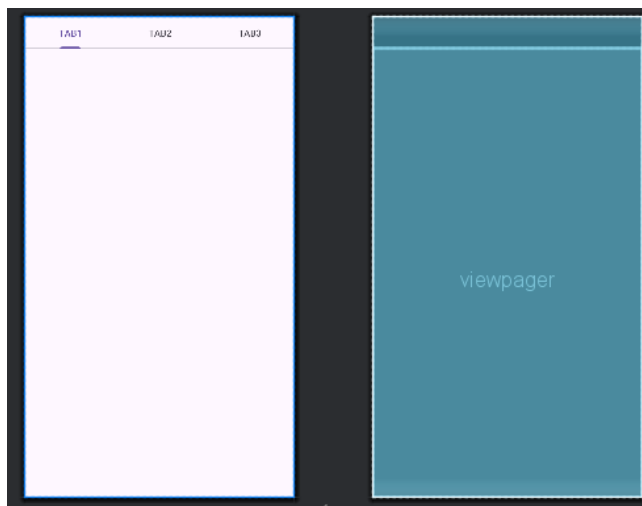
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <com.google.android.material.tabs.TabLayout
        android:id="@+id/tabLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <com.google.android.material.tabs.TabItem
            android:text = "TAB1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"/>

        <com.google.android.material.tabs.TabItem
            android:text = "TAB2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"/>

        <com.google.android.material.tabs.TabItem
            android:text = "TAB3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"/>
    </com.google.android.material.tabs.TabLayout>
    <androidx.viewpager2.widget.ViewPager2
        android:id="@+id/viewpager"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>

```

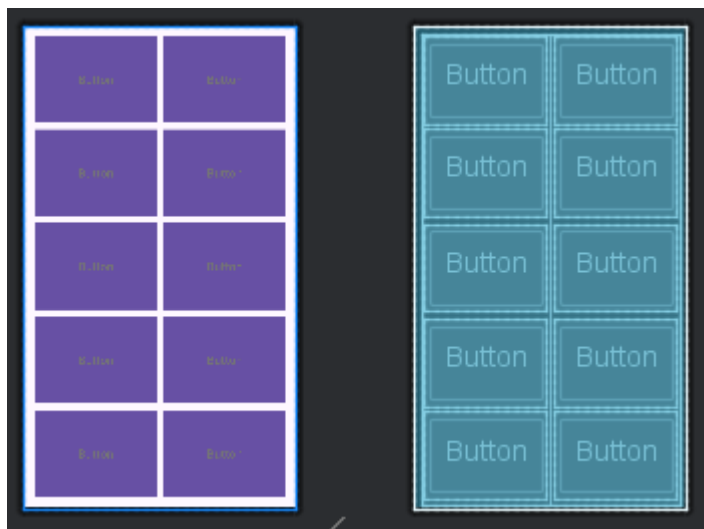


Fragment_tab1.xml

```
<GridLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_margin="10sp"
    android:rowCount="5"
    android:columnCount="2">

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_rowWeight="1"
        android:layout_columnWeight="1"
        android:layout_gravity="fill"
        android:layout_margin="5sp"
        android:background="#FFDFDF"
        android:text="Button"
        android:textColor="#757575"
        android:textSize="18sp" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#FFFF"
        android:layout_gravity="fill"
        android:textSize="18sp"
        android:text="Button"
        android:layout_rowWeight="1"
        android:layout_columnWeight="1"
        android:layout_margin="5sp"
        android:textColor="#757575" />
```



Fragment_tab2.xml

```
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".Tab2">

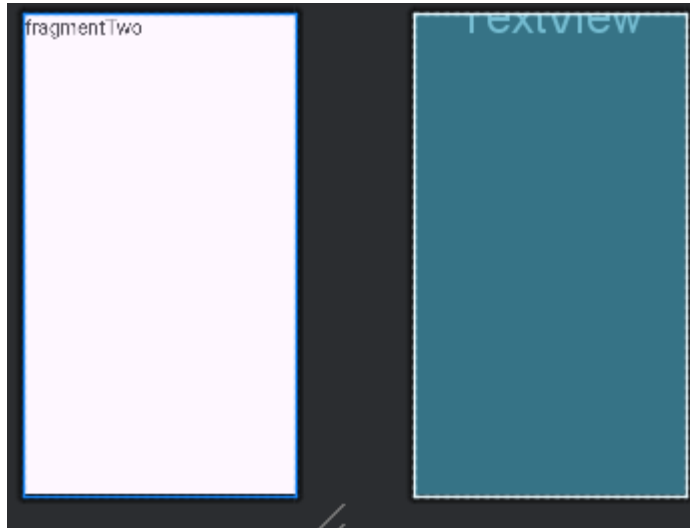
    <!-- TODO: Update blank fragment layout -->
```

```

<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:textSize="30sp"
    android:text="fragmentTwo" />

</FrameLayout>

```



Fragment_tab3.xml

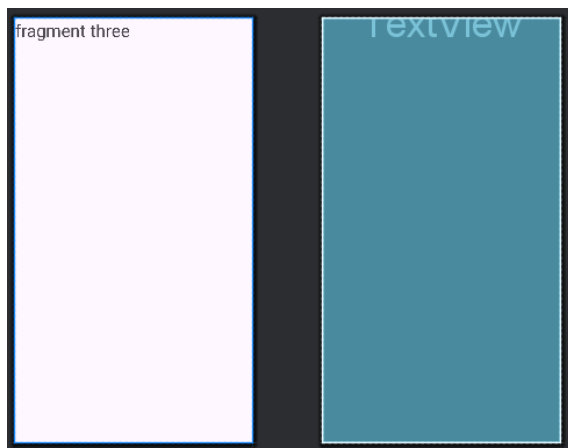
```

<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".Tab3">

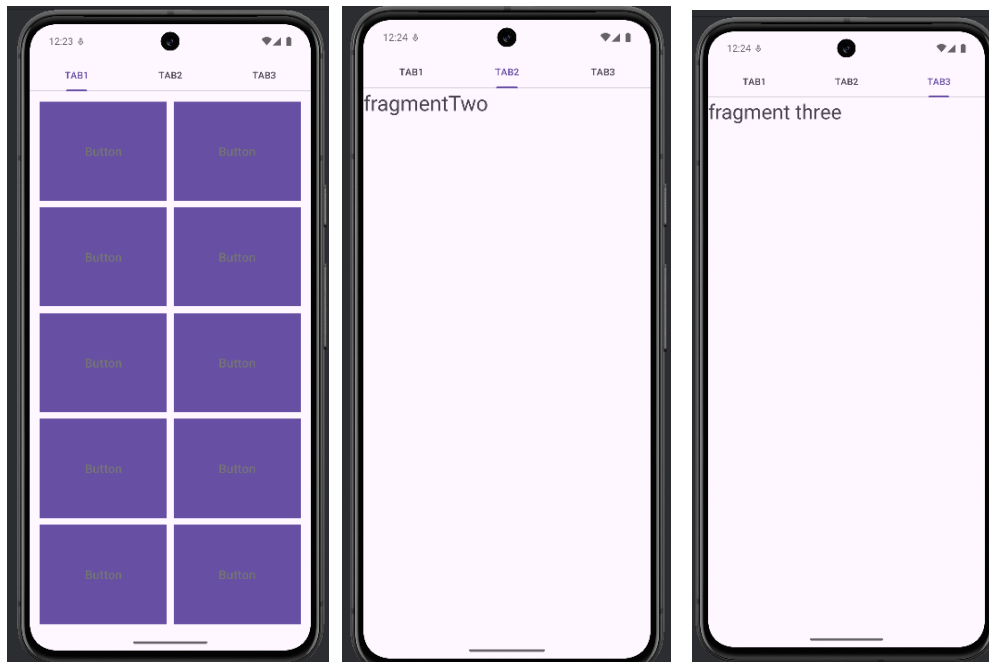
    <!-- TODO: Update blank fragment layout -->
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:textSize="30sp"
        android:text="fragment three" />

</FrameLayout>

```



OUTPUT:



3. Develop a calculator app using appropriate layouts.

MainActivity.java

```
package com.example.simplecalculator;

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 {

    TextView text;
    Button btn;

    double operand1, operand2, add = 0, subtract = 0, multiply = 0, divide
= 0, result = 0;

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

    public void digit(View view) {

        text = (TextView) findViewById(R.id.view);
        String currentText = text.getText().toString();

        btn = (Button) view;
        String btnValue = btn.getText().toString();

        if (currentText != "" && currentText.length() < 12)
```

```

        {
            if (Double.parseDouble(currentText) != 0)
            {
                text.setText(currentText + btnValue);
            }
            else
            {
                text.setText(btnValue);
            }
        }
    }
    else if(currentText.length() != 12)
    {
        text.setText(btnValue);
    }
}

public void clear(View view) {
    operand1 = operand2 = add = subtract = multiply = divide = 0;
    text = (TextView)findViewById(R.id.view);
    text.setText("");
}

public void operator(View view)
{
    text = (TextView)findViewById(R.id.view);
    String currentText = text.getText().toString();

    if (currentText != "")
    {
        if (view.getId() == R.id.add)
        {
            if (add == 0)
            {
                operand1 = Double.parseDouble(currentText);
                text.setText("");
                add = 1;
            }
        }

        if (view.getId() == R.id.subtract)
        {
            if (subtract == 0)
            {
                operand1 = Double.parseDouble(currentText);
                text.setText("");
                subtract = 1;
            }
        }

        if (view.getId() == R.id.multiply)
        {
            if (multiply == 0)
            {
                operand1 = Double.parseDouble(currentText);
                text.setText("");
                multiply = 1;
            }
        }
    }
}

```

```

    }

    }

    if (view.getId() == R.id.divide)
    {
        if (divide == 0)
        {
            operand1 = Double.parseDouble(currentText);
            text.setText("");
            divide = 1;
        }
    }
}

if (view.getId() == R.id.equals && currentText != "")
{
    if (add == 1)
    {
        operand2 = Double.parseDouble(currentText);
        result = operand1 + operand2;
        text.setText(result <= 999999999999.0 ?
String.format("%.2f", result) : "Error");
    }
    else if (subtract == 1)
    {
        operand2 = Double.parseDouble(currentText);
        result = operand1 - operand2;
        text.setText(result <= 999999999999.0 ?
String.format("%.2f", result) : "Error");
    }
    else if (multiply == 1)
    {
        operand2 = Double.parseDouble(currentText);
        result = operand1 * operand2;
        text.setText(result <= 999999999999.0 ?
String.format("%.2f", result) : "Error");
    }
    else if (divide == 1)
    {
        operand2 = Double.parseDouble(currentText);
        result = operand1 / operand2;
        text.setText(result <= 999999999999.0 ?
String.format("%.2f", result) : "Error");
    }
    operand1 = operand2 = add = subtract = multiply = divide = 0;
}
}
}

```

Activity_main.xml

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

    <TextView
        android:id="@+id/view"
        android:layout_width="match_parent"
        android:layout_height="195dp"
        android:gravity="right|center"
        android:hint="0"
        android:textSize="35dp" />

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

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
        >

            <Button
                android:onClick="clear"
                android:id="@+id/clear"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:text="C"
                android:textSize="30dp"
                android:textStyle="bold"
                android:background="#181a14"
                android:textColor="#fff"
                android:layout_weight="1"
                android:layout_margin="1dp"
            />

            <Button
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:text="+/-"
                android:textSize="30dp"
                android:textStyle="bold"
                android:background="#181a14"
                android:textColor="#fff"
                android:layout_weight="1"
                android:layout_margin="1dp"
            />

            <Button
                android:id="@+id/percent"
                android:layout_width="wrap_content"
                android:layout_height="match_parent"
                android:text="%"
            />

        </LinearLayout>

    </LinearLayout>

</LinearLayout>
```



```

        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:onClick="operator"
        android:id="@+id/divide"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="÷"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#a79300"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="1"
>

    <Button
        android:onClick="digit"
        android:id="@+id/seven"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="7"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:onClick="digit"
        android:id="@+id/eight"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="8"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button

```

```
        android:onClick="digit"
        android:id="@+id/nine"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="9"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />
```

```
<Button
    android:onClick="operator"
    android:id="@+id/multiply"
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:text="x"
    android:textSize="30dp"
    android:textStyle="bold"
    android:background="#a79300"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_margin="1dp"
/>
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="1"
>
```

```
<Button
    android:onClick="digit"
    android:id="@+id/four"
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:text="4"
    android:textSize="30dp"
    android:textStyle="bold"
    android:background="#181a14"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_margin="1dp"
/>
```

```
<Button
    android:onClick="digit"
    android:id="@+id/five"
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:text="5"
    android:textSize="30dp"
    android:textStyle="bold"
    android:background="#181a14"
    android:textColor="#fff"
    android:layout_weight="1"
    android:layout_margin="1dp"
```

```
        />

        <Button
            android:onClick="digit"
            android:id="@+id/six"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:text="6"
            android:textSize="30dp"
            android:textStyle="bold"
            android:background="#181a14"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_margin="1dp"

        />

        <Button
            android:onClick="operator"
            android:id="@+id/subtract"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:text="-"
            android:textSize="30dp"
            android:textStyle="bold"
            android:background="#a79300"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_margin="1dp"
        />

    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
    >

        <Button
            android:onClick="digit"
            android:id="@+id/one"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:text="1"
            android:textSize="30dp"
            android:textStyle="bold"
            android:background="#181a14"
            android:textColor="#fff"
            android:layout_weight="1"
            android:layout_margin="1dp"
        />

        <Button
            android:onClick="digit"
            android:id="@+id/two"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:text="2"
            android:textSize="30dp"
            android:textStyle="bold"
```

```

        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:onClick="digit"
        android:id="@+id/three"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="3"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:onClick="operator"
        android:id="@+id/add"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="+"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#a79300"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="1"
>

    <Button
        android:onClick="digit"
        android:id="@+id/zero"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="0"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:id="@+id/point"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="."

```

```

        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

    <Button
        android:id="@+id/del"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="del"
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#181a14"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

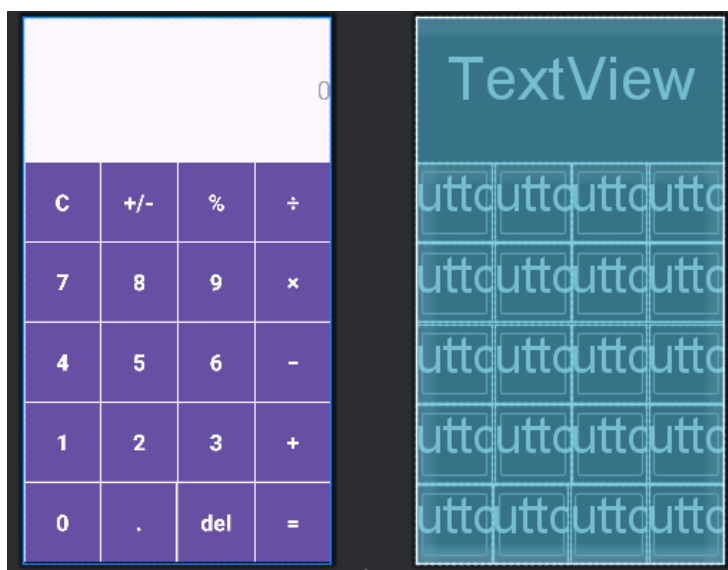
    <Button
        android:onClick="operator"
        android:id="@+id/equals"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:text="="
        android:textSize="30dp"
        android:textStyle="bold"
        android:background="#236e22"
        android:textColor="#fff"
        android:layout_weight="1"
        android:layout_margin="1dp"
    />

</LinearLayout>

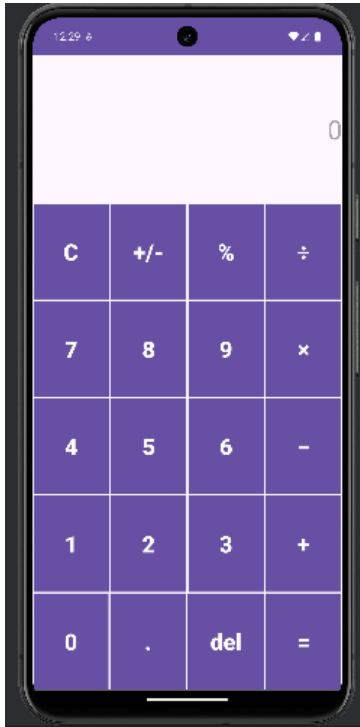
</LinearLayout>

</LinearLayout>

```



OUTPUT:



4. Create an android application that displays a contact list using List View.

MainActivity.java

```
package com.example.contactlistview;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

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

        // Create a list of contacts
        String[] contacts = {"John Doe", "Jane Smith", "Robert Johnson",
"Emily Davis", "Michael Brown"};

        // Find the ListView in the layout
        ListView contactListView = findViewById(R.id.contactListView);

        // Create an ArrayAdapter to bind the contacts array to the
        ListView
        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
            android.R.layout.simple_list_item_1, contacts);

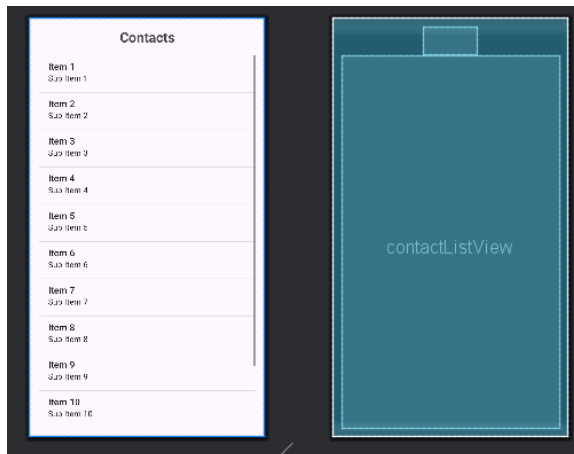
        // Set the adapter on the ListView
        contactListView.setAdapter(adapter);
    }
}
```

activity_mani.xml

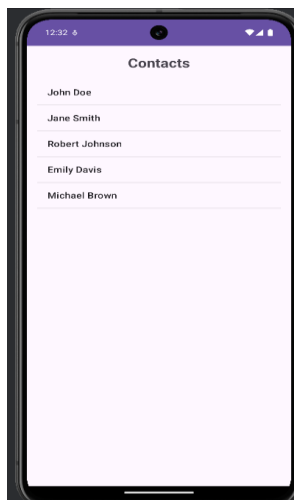
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp">

    <!-- Heading TextView -->
    <TextView
        android:id="@+id/headingTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Contacts"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_gravity="center"
        android:paddingBottom="16dp"/>

    <!-- ListView for contacts -->
    <ListView
        android:id="@+id/contactListView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>
</LinearLayout>
```



OUTPUT:



5. Design the user interface of an online food delivery app using Custom List View that displays different items available for the day along with its details.

MainActivity.java

```
package com.example.fooddelivery;
import android.os.Bundle;
import android.widget.ListView;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;
import java.util.List;

public class MainActivity extends AppCompatActivity {

    private ListView foodListView;
    private FoodItemAdapter foodItemAdapter;
    private List<FoodItem> foodItemList;

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

        foodListView = findViewById(R.id.food_list_view);

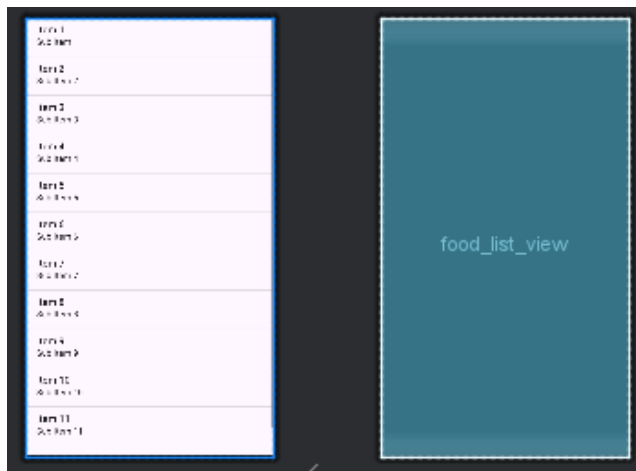
        foodItemList = new ArrayList<>();
        foodItemList.add(new FoodItem("Pizza", "Delicious cheese pizza with fresh toppings", 9.99, R.drawable.pizza));
        foodItemList.add(new FoodItem("Burger", "Juicy beef burger with lettuce, tomato, and cheese", 7.99, R.drawable.burger));
        foodItemList.add(new FoodItem("Sushi", "Fresh sushi with salmon and avocado", 12.99, R.drawable.sushi));
        foodItemList.add(new FoodItem("Pasta", "Creamy Alfredo pasta with chicken", 10.99, R.drawable.pasta));
        foodItemList.add(new FoodItem("Salad", "Healthy green salad with a variety of vegetables", 6.99, R.drawable.salad));

        foodItemAdapter = new FoodItemAdapter(this, foodItemList);
        foodListView.setAdapter(foodItemAdapter);
    }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ListView
        android:id="@+id/food_list_view"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>
</LinearLayout>
```

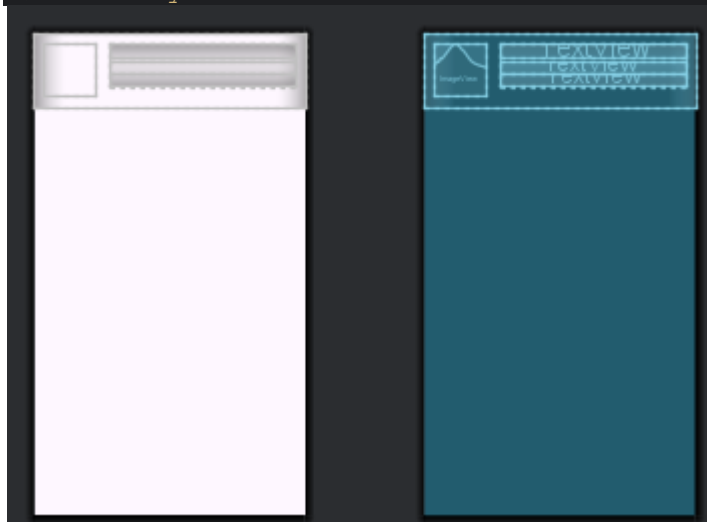
List_item_food.xml

```
<LinearLayout
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:orientation="vertical">

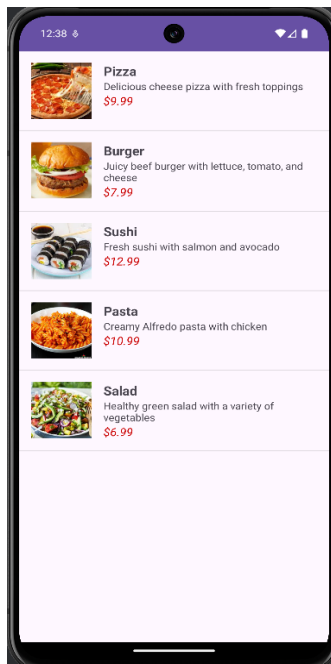
    <TextView
        android:id="@+id/food_name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/food_description"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="14sp" />

    <TextView
        android:id="@+id/food_price"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="16sp"
        android:textStyle="italic"
        android:textColor="@android:color/holo_red_dark" />
</LinearLayout>
```



OUTPUT:



6. Create suitable apps to demonstrate following menus in android

• Options Menu

MainActivity.java

```
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);

    }

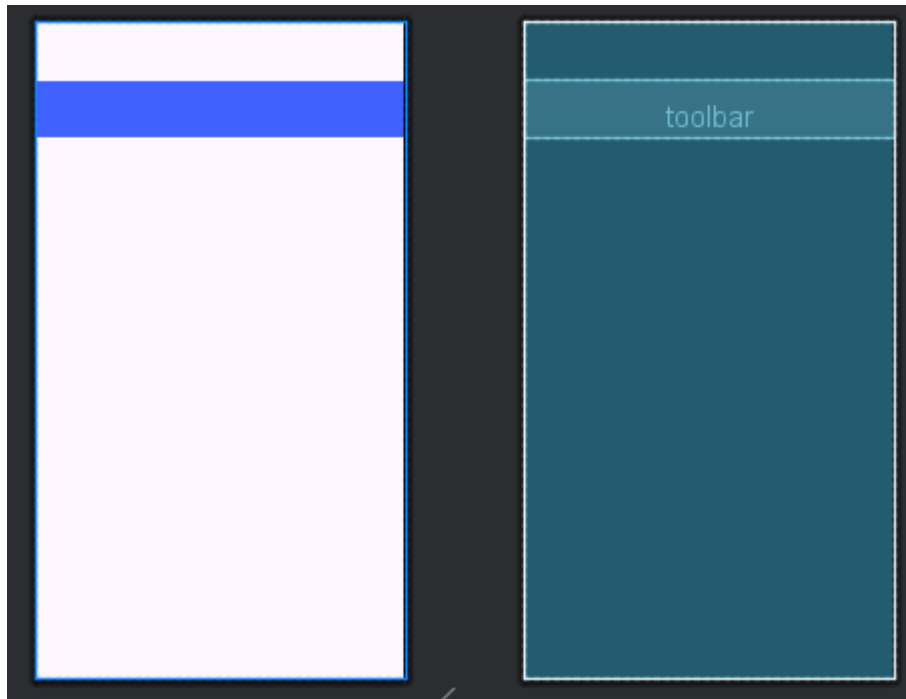
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = new MenuInflater(this);
        inflater.inflate(R.menu.option_menu, menu);
        return true;
    }

}
```

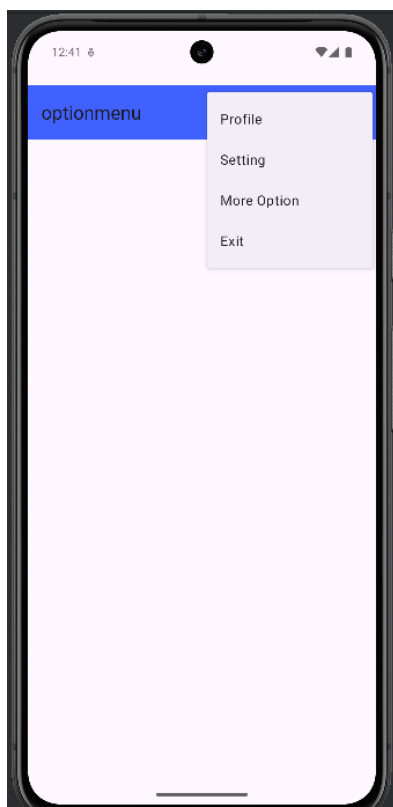
activit_main.xml

```
<androidx.appcompat.widget.Toolbar
    android:id="@+id/toolbar"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="64dp"
    android:background="#4161FF"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
```

```
app:layout_constraintStart_toStartOf="parent"  
app:layout_constraintTop_toTopOf="parent" />  
</androidx.constraintlayout.widget.ConstraintLayout>
```



OUTPUT:



● Context Menu

MainActivity.java

```
public class MainActivity extends AppCompatActivity {

    ListView listView;
    String[] items = {"Item 1", "Item 2", "Item 3", "Item 4"};

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

        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main),
(v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right,
systemBars.bottom);
            return insets;
        });

        listView = findViewById(R.id.listView);
        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
android.R.layout.simple_list_item_1, items);
        listView.setAdapter(adapter);

        // Register the ListView for the context menu
        registerForContextMenu(listView);
    }

    @Override
    public void onCreateContextMenu(ContextMenu menu, View v,
ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        getMenuInflater().inflate(R.menu.context_menu, menu);
    }

    @Override
    public boolean onContextItemSelected(@NonNull MenuItem item) {
        AdapterView.AdapterContextMenuInfo info =
(AdapterView.AdapterContextMenuInfo) item.getContextMenuInfo();

        // Check which item was selected based on its ID
        if (item.getItemId() == R.id.edit) {
            Toast.makeText(this, "Edit item: " + items[info.position],
Toast.LENGTH_SHORT).show();
            return true;
        } else if (item.getItemId() == R.id.delete) {
            Toast.makeText(this, "Delete item: " + items[info.position],
Toast.LENGTH_SHORT).show();
            return true;
        }

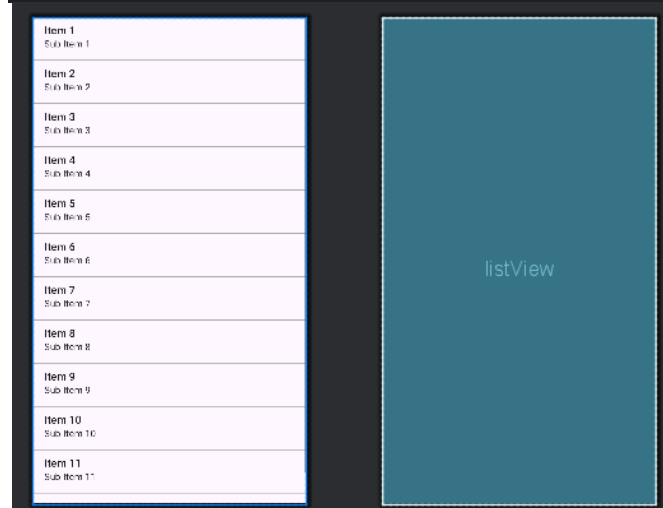
        return super.onContextItemSelected(item);
    }
}
```

activity_main.xml

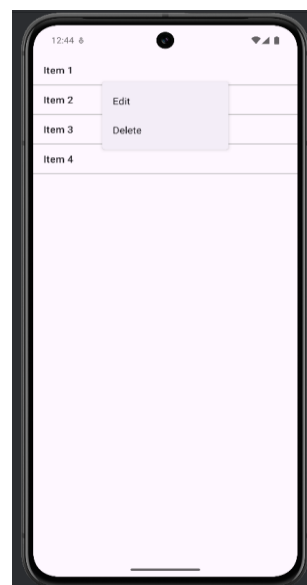
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"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

    <ListView
        android:id="@+id/listView"
        android:layout_width="0dp"
        android:layout_height="0dp"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        android:divider="@android:color/darker_gray"
        android:dividerHeight="1dp"/>

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



OUTPUT:



• Pop Up Menu

MainActivity.java

```
private void showPopupMenu(View view) {
    PopupMenu popupMenu = new PopupMenu(this, view);
    popupMenu.getMenuInflater().inflate(R.menu.popup_menu,
    popupMenu.getMenu());
    popupMenu.setOnMenuItemClickListener(new
    PopupMenu.OnMenuItemClickListener() {
        @Override
        public boolean onMenuItemClick(MenuItem item) {
            return handleMenuItemClick(item);
        }
    });
    popupMenu.show();
}

// Method to handle menu item clicks
private boolean handleMenuItemClick(MenuItem item) {
    int itemId = item.getItemId();

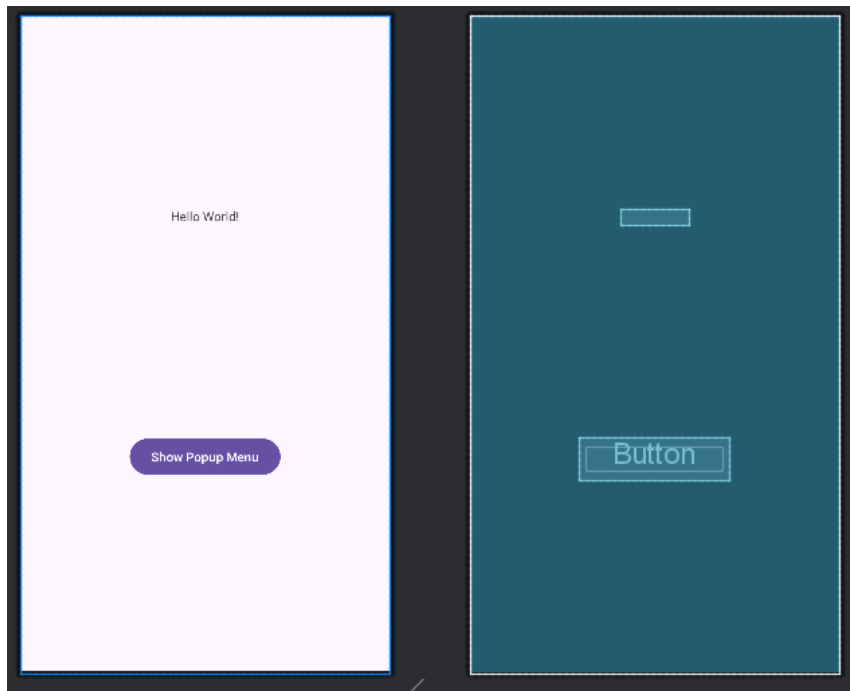
    if (itemId == R.id.action_edit) {
        Toast.makeText(MainActivity.this, "Edit selected",
        Toast.LENGTH_SHORT).show();
        return true;
    } else if (itemId == R.id.action_delete) {
        Toast.makeText(MainActivity.this, "Delete selected",
        Toast.LENGTH_SHORT).show();
        return true;
    } else if (itemId == R.id.action_share) {
        Toast.makeText(MainActivity.this, "Share selected",
        Toast.LENGTH_SHORT).show();
        return true;
    } else {
        return false;
    }
}
```

activity_main.xml

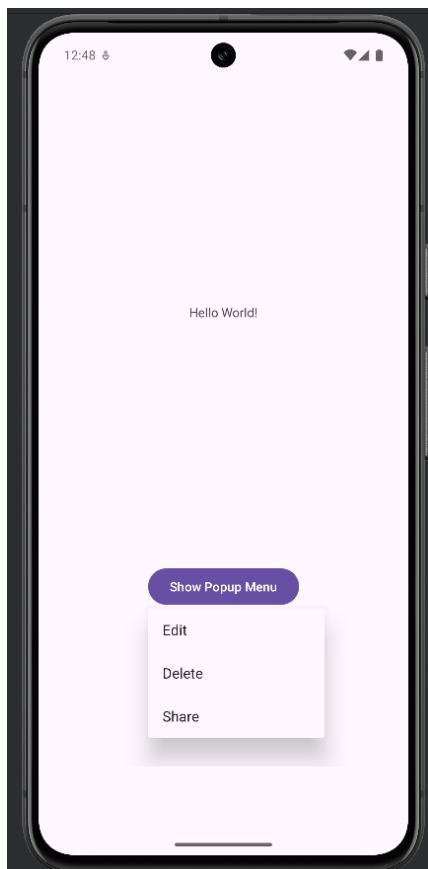
```
<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toTopOf="@+id/button_show_menu"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/button_show_menu"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Show Popup Menu"
    app:layout_constraintTop_toBottomOf="@id/textView"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
```

```
app:layout_constraintBottom_toBottomOf="parent"  
android:layout_marginTop="20dp"/>
```



OUTPUT:



7. Create suitable apps to demonstrate the following

- Action Bar
- Action Bar & Tabs
- View Pager
- Action Bar & View Pager

MainActivity.java

```
public class MainActivity extends AppCompatActivity {

    private Toolbar toolbar;
    private TabLayout tabLayout;
    private ViewPager viewPager;
    private ViewPagerAdapter adapter;

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

        toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);

        tabLayout = findViewById(R.id.tab_layout);
        viewPager = findViewById(R.id.view_pager);

        adapter = new ViewPagerAdapter(getSupportFragmentManager());
        viewPager.setAdapter(adapter);

        tabLayout.setupWithViewPager(viewPager);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.menu_main, menu);
        return true;
    }
}
```

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"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr/actionBarSize"
        android:background="?attr/colorPrimary"
        android:elevation="4dp"
        android:theme="@style/ThemeOverlay.AppCompat.ActionBar"
        android:popupTheme="@style/ThemeOverlay.AppCompat.Light" />
```



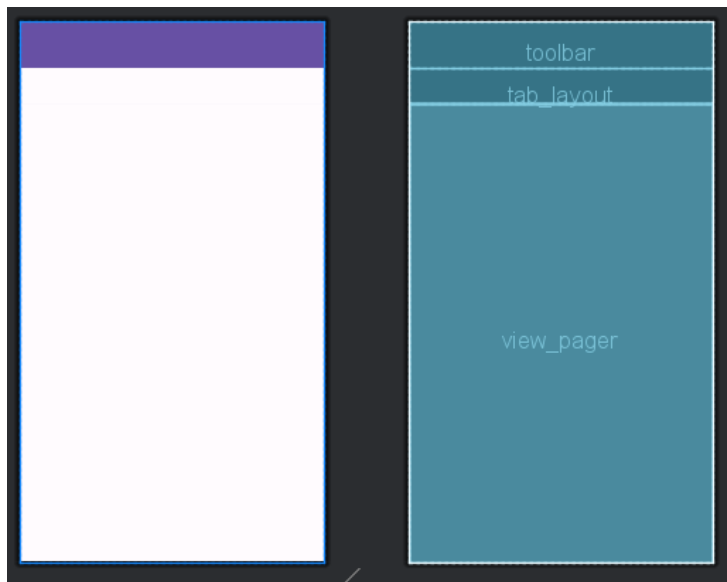
```

<com.google.android.material.tabs.TabLayout
    android:id="@+id/tab_layout"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/toolbar"
    app:tabMode="fixed"
    app:tabGravity="fill"
    app:tabIndicatorColor="@android:color/white"
    app:tabSelectedTextColor="@android:color/white" />

<androidx.viewpager.widget.ViewPager
    android:id="@+id/view_pager"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_below="@id/tab_layout" />

</RelativeLayout>

```



Fragment_tab.xml

```

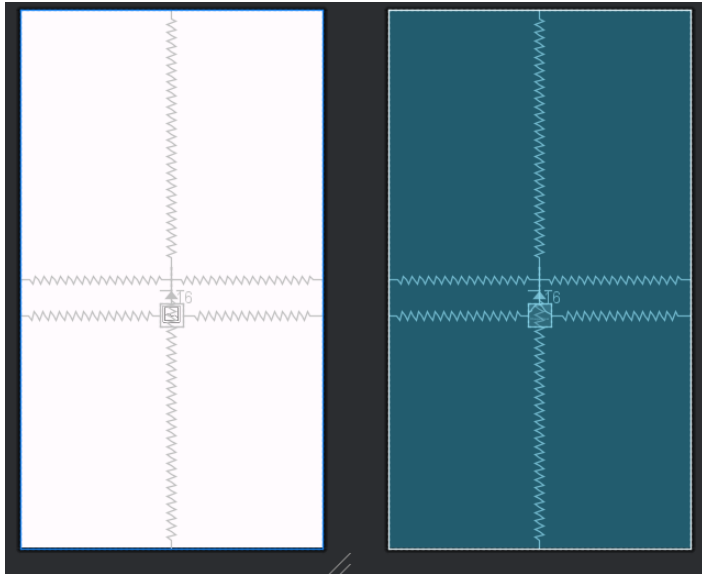
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp">

    <TextView
        android:id="@+id/tab_text"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:textSize="24sp"
        android:textColor="@android:color/black" />

    <ImageView
        android:id="@+id/tab_image"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/tab_text"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"

```

```
        android:src="@android:drawable/ic_menu_gallery" />
    </RelativeLayout>
```



OUTPUT:

