PRACTICAL FILE

MOBILE APPLICATION DEVELOPMENT
DEIT-14711

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Contents

Task 1 Create a first App on Android

activity_task1.xml file

```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=".Task1">


    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Amrit Pal Singh"
        android:textSize="28sp"
        android:gravity="center"
        android:layout_centerInParent="true"/>

</RelativeLayout>
```

Task1.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class Task1 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task1);
    }
}
```

OUTPUT SCREEN

Task 2 Create icon of an app, change the label background

activity_task2.xml

```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"
    android:background="@color/orange"
    tools:context=".Task2">


    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Amrit Pal Singh"
        android:textSize="28sp"
        android:textColor="@color/white"
        android:gravity="center"
        android:layout_centerInParent="true"/>

</RelativeLayout>
```

colors.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="white">#FFFFFFFF</color>
    <color name="orange">#FA9160</color>
</resources>
```

themes.xml

```xml
<resources xmlns:tools="http://schemas.android.com/tools">

    <style name="ThemeOverlay.AppCompat.Dark" parent="Theme.MADTasks">
        <item name="colorPrimary">@color/pinkred</item>
        <item name="colorPrimaryVariant">@color/red</item>
        <item name="colorOnPrimary">@color/white</item>

        <item name="colorSecondary">@color/teal_200</item>
        <item name="colorSecondaryVariant">@color/teal_700</item>
        <item name="colorOnSecondary">@color/black</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor"
tools:targetApi="l">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
    </style>
</resources>
```

android_manifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.amrit.mad">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher_two"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_two_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.MADTasks">
        <activity
            android:name=".Task2"
            android:theme="@style/ThemeOverlay.AppCompat.Dark" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

Task2.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class Task2 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task2);
        getSupportActionBar().setTitle("Task 2");
    }
}
```
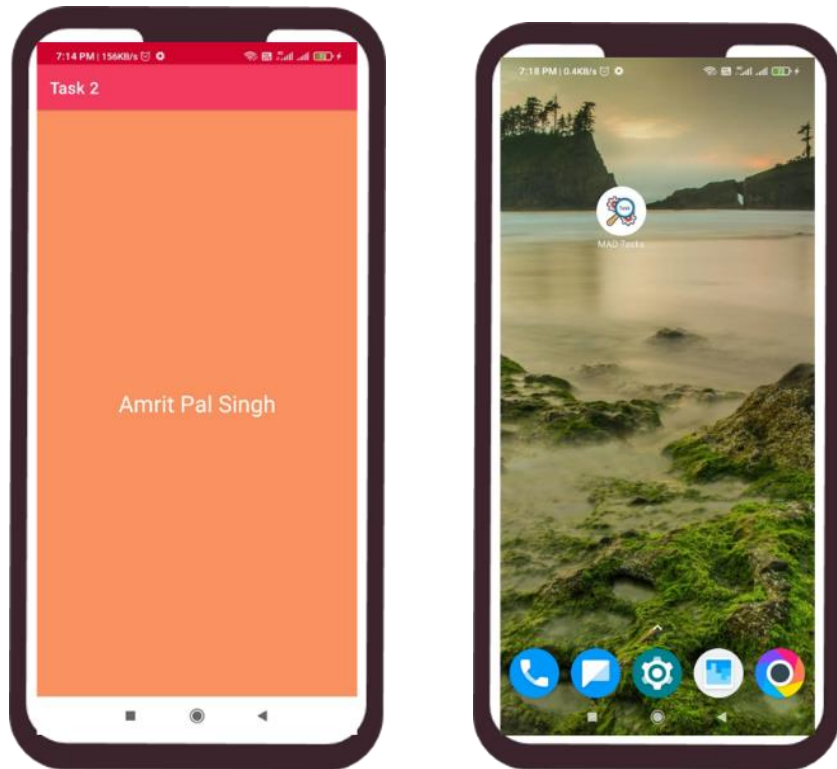
OUTPUT SCREENS

Task 3 Create the menu, button, and ScrollView in an application

Task3.java

```java
package com.amrit.mad;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;

public class Task3 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task3);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
    }

    @Override
    public boolean onSupportNavigateUp() {
        onBackPressed();
        return super.onSupportNavigateUp();
    }

    @Override
    public boolean onPrepareOptionsMenu(Menu menu) {
        menu.findItem(R.id.item_ui).setVisible(false);
        return super.onPrepareOptionsMenu(menu);
    }

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

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        int id = item.getItemId();
        switch (id){
            case R.id.item_home:
                Intent intent = new Intent(getApplicationContext(),Task9.class);
                startActivity(intent);
                break;
            case R.id.item_calculator:
                Intent intent1 = new Intent(getApplicationContext(),Task8.class);
                startActivity(intent1);
                break;
            case R.id.item_form:
                Intent intent2 = new Intent(getApplicationContext(),Task6.class);
                startActivity(intent2);
                break;
```

```java
                case R.id.item_signout:
                    break;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

activity_task3.xml

```xml
<?xml version="1.0" encoding="utf-8"?>

<ScrollView xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:scrollbars="vertical"
    android:scrollIndicators="end"
    tools:context=".Task3">


<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical"
        android:padding="16dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/txtUI"
            android:layout_width="match_parent"
            android:text="@string/UI"
            android:textSize="16sp"
            android:textColor="@color/black"
            android:fontFamily="sans-serif"
            android:layout_height="wrap_content"/>

        <ImageView
            android:id="@+id/imageView"
            android:layout_width="match_parent"
            android:layout_height="200dp"
            android:layout_marginTop="10dp"
            android:src="@drawable/viewgroup"/>

        <TextView
            android:id="@+id/txtUI2"
            android:layout_width="match_parent"
            android:text="@string/UI2"
            android:textSize="16sp"
```

```xml
                android:textColor="@color/black"
                android:fontFamily="sans-serif"
                android:layout_height="wrap_content"/>

    </LinearLayout>


</androidx.constraintlayout.widget.ConstraintLayout>
</ScrollView>
```
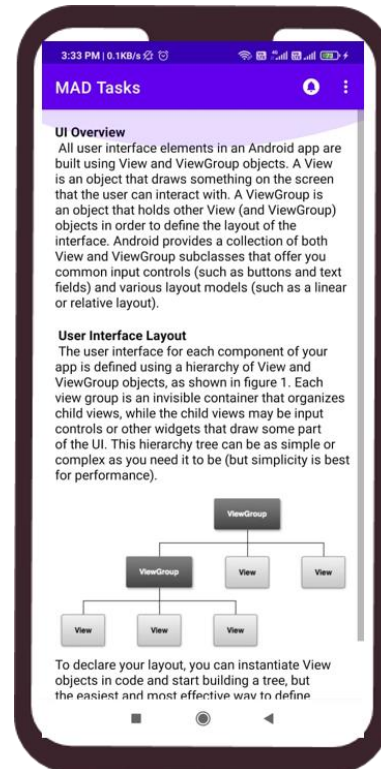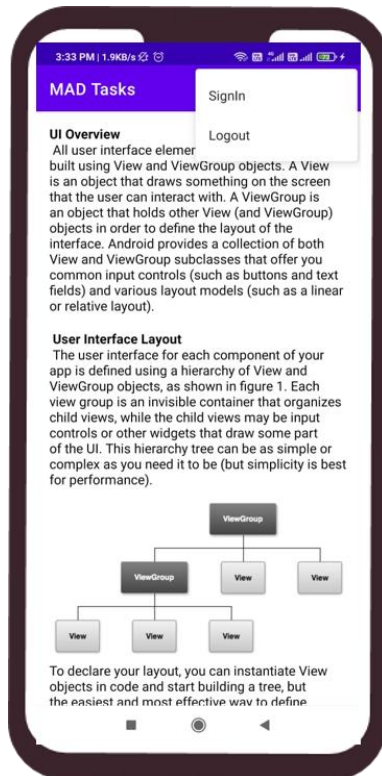
strings.xml

```xml
<resources>

<string name="UI"><b>UI Overview</b>\n
        All user interface elements in an Android app are built using View and
ViewGroup objects. A View is
        an object that draws something on the screen that the user can interact
with. A ViewGroup
        is an object that holds other View (and ViewGroup) objects in order to
define the layout
        of the interface.

Android provides a collection of both View and ViewGroup subclasses that offer you
common input
        controls (such as buttons and text fields) and various layout models (such
as a linear
        or relative layout).
        \n\n

  <b>User Interface Layout</b>\n
        The user interface for each component of your app is defined using a
hierarchy of View and
        ViewGroup objects, as shown in figure 1. Each view group is an invisible
container
        that organizes child views, while the child views may be input controls or
other
        widgets that draw some part of the UI. This hierarchy tree can be as
simple or
        complex as you need it to be (but simplicity is best for performance).
    </string>
    <string name="UI2">
        To declare your layout, you can instantiate View objects in code and start
building a tree,
        but the easiest and most effective way to define your layout is with an
XML file. XML offers
        a human-readable structure for the layout, similar to HTML.
    </string>
</resources>
```

OUTPUT SCREENS

Task 4 Create the form using UI components i.e checkbox, radio button, textview etc.

activity_task4.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<ScrollView  xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/add_class_ScrollView"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    tools:context=".Task4">

    <RelativeLayout
        android:id="@+id/add_RL1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <com.google.android.material.imageview.ShapeableImageView
            android:id="@+id/imgMeet"
            android:layout_width="match_parent"
            android:layout_height="180dp"
            android:layout_margin="4dp"
            android:scaleType="fitCenter"
            android:background="@color/green"
            app:srcCompat="@drawable/video_conference" />


        <androidx.appcompat.widget.AppCompatImageButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            app:srcCompat="@drawable/ic_baseline_edit_24"
            android:contentDescription="Edit"
            android:background="@color/green"
            android:layout_alignParentEnd="true"
            android:layout_marginEnd="20dp"
            android:layout_marginTop="150dp"
            app:tint="@color/white"/>

        <LinearLayout
            android:id="@+id/LL_add_class"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="10dp"
            android:paddingStart="14dp"
            android:paddingEnd="14dp"
            android:layout_below="@+id/imgMeet"
            android:orientation="vertical">
            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="12dp"
                android:orientation="horizontal">

                <TextView
                    android:layout_width="0dp"
                    android:layout_height="wrap_content"
```

```xml
                    android:layout_weight="1"
                    android:text="Class Title"
                    android:textSize="16sp"
                    android:textColor="@color/black"/>

                <com.google.android.material.textfield.TextInputLayout
                    android:layout_width="0dp"
                    android:layout_height="wrap_content"

    style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox"
                    android:layout_weight="2">

    <com.google.android.material.textfield.MaterialAutoCompleteTextView
                        android:id="@+id/txtClassTitle"
                        android:layout_width="match_parent"
                        android:layout_height="42dp"
                        android:hint="Title"
                        android:paddingStart="12dp"
                        android:paddingEnd="4dp"/>
                </com.google.android.material.textfield.TextInputLayout>


            </LinearLayout>
            <LinearLayout
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="4dp"
                android:orientation="horizontal">

                <TextView
                    android:layout_width="0dp"
                    android:layout_height="wrap_content"
                    android:layout_weight="1"
                    android:text="Meeting Type"
                    android:textSize="16sp"
                    android:textColor="@color/black"/>

                <com.google.android.material.textfield.TextInputLayout
                    android:layout_width="0dp"
                    android:layout_height="wrap_content"
                    android:hint="Type"

    style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox.ExposedDropdow
    nMenu"
                    android:layout_weight="2">

    <com.google.android.material.textfield.MaterialAutoCompleteTextView
                        android:id="@+id/select_access_type"
                        android:layout_width="match_parent"
                        android:layout_height="wrap_content"
                        android:gravity="center_vertical"
                        android:inputType="none"/>
                </com.google.android.material.textfield.TextInputLayout>

            </LinearLayout>

            <LinearLayout
                android:layout_width="match_parent"
```

```xml
    android:layout_height="wrap_content"
    android:layout_marginTop="4dp"
    android:orientation="horizontal">

    <TextView
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Date"
        android:textSize="16sp"
        android:textColor="@color/black"/>

    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="0dp"
        android:layout_height="wrap_content"

app:startIconDrawable="@drawable/ic_baseline_calendar_today_24"

style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox"
        android:layout_weight="2">

<com.google.android.material.textfield.MaterialAutoCompleteTextView
            android:id="@+id/txt_Date"
            android:layout_width="match_parent"
            android:layout_height="42dp"
            android:hint="Select Date"
            android:inputType="none"
            android:paddingStart="12dp"
            android:paddingEnd="4dp"/>
    </com.google.android.material.textfield.TextInputLayout>

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="4dp"
    android:orientation="horizontal">

    <TextView
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Language"
        android:layout_gravity="center_vertical"
        android:textSize="16sp"
        android:textColor="@color/black"/>

    <RadioGroup
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_weight="2">
        <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="English"/>
        <RadioButton
```

```xml
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Others"/>

        </RadioGroup>


    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="4dp"
        android:orientation="vertical">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Choose Preferences"
            android:textSize="16sp"
            android:textColor="@color/black"/>

        <CheckBox
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Add to calendar"/>

        <CheckBox
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Remind me before 5 min"/>
        <CheckBox
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Send invite links"/>
        <CheckBox
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Record automatically"/>
    </LinearLayout>


</LinearLayout>

<com.google.android.material.button.MaterialButton
    android:id="@+id/btnPreview"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Go!"
    app:cornerRadius="18dp"
    app:backgroundTint="@color/green"
    android:drawableEnd="@drawable/ic_baseline_video_call_24"
    android:drawableTint="@color/white"
    android:layout_marginTop="15dp"
    android:layout_centerInParent="true"
    android:paddingStart="60dp"
    android:paddingEnd="60dp"
```

```xml
                    android:layout_below="@+id/LL_add_class"/>

    </RelativeLayout>
</ScrollView>
```

Task4.java

```java
package com.amrit.mad;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

import android.app.DatePickerDialog;
import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.ArrayAdapter;
import android.widget.DatePicker;

import com.google.android.material.textfield.MaterialAutoCompleteTextView;

import java.util.Calendar;
import java.util.Locale;

public class Task4 extends AppCompatActivity {
    MaterialAutoCompleteTextView txtDate,select_access_type;
    DatePickerDialog datePickerDialog;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task4);
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);
        initViews();
        select_access_type.setAdapter(new ArrayAdapter<>(Task6.this,
android.R.layout.simple_list_item_1,
getResources().getStringArray(R.array.access_type)));
        txtDate.setOnFocusChangeListener((v, hasFocus) -> {
            if(hasFocus){
                final Calendar c = Calendar.getInstance();
                int year = c.get(Calendar.YEAR);
                int month = c.get(Calendar.MONTH);
                int day = c.get(Calendar.DAY_OF_MONTH);
                datePickerDialog = new DatePickerDialog(Task4.this, new
DatePickerDialog.OnDateSetListener() {
                    @Override
                    public void onDateSet(DatePicker view, int year, int month,
int dayOfMonth) {
                        txtDate.setText(String.format(Locale.ENGLISH,"%02d-%02d-
%02d",dayOfMonth,month,year));
                    }
                },year,month,day);
                datePickerDialog.show();
                txtDate.clearFocus();
            }
        });
```

```java
    }

    private void initViews() {
        select_access_type = findViewById(R.id.select_access_type);
        txtDate = findViewById(R.id.txt_Date);
    }

    @Override
    public boolean onSupportNavigateUp() {
        onBackPressed();
        return super.onSupportNavigateUp();
    }

    @Override
    public boolean onPrepareOptionsMenu(Menu menu) {
        menu.findItem(R.id.item_form).setVisible(false);
        return super.onPrepareOptionsMenu(menu);
    }

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

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        int id = item.getItemId();
        switch (id){
            case R.id.item_home:
                Intent intent = new Intent(getApplicationContext(),Task5.class);
                startActivity(intent);
                break;
            case R.id.item_calculator:
                Intent intent1 = new Intent(getApplicationContext(),Task6.class);
                startActivity(intent1);
                break;
            case R.id.item_ui:
                Intent intent2 = new Intent(getApplicationContext(),Task7.class);
                startActivity(intent2);
                break;
            case R.id.item_signout:
                break;
        }
        return super.onOptionsItemSelected(item);
    }
}
```
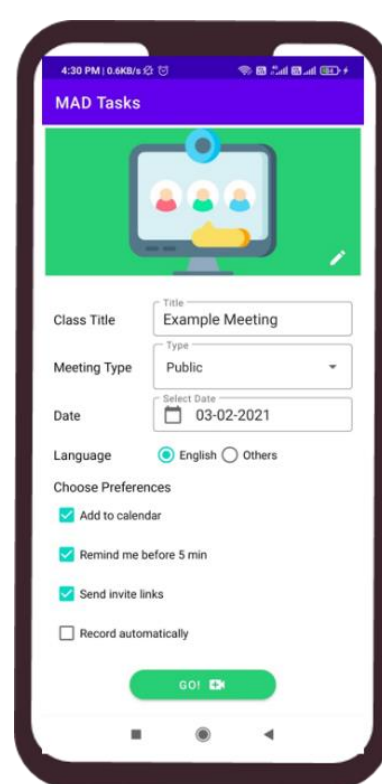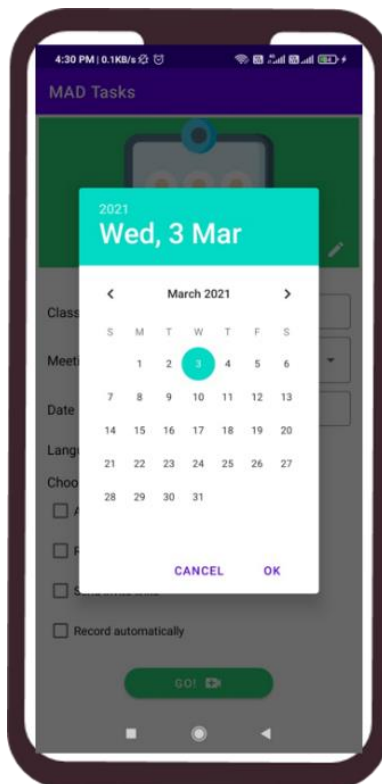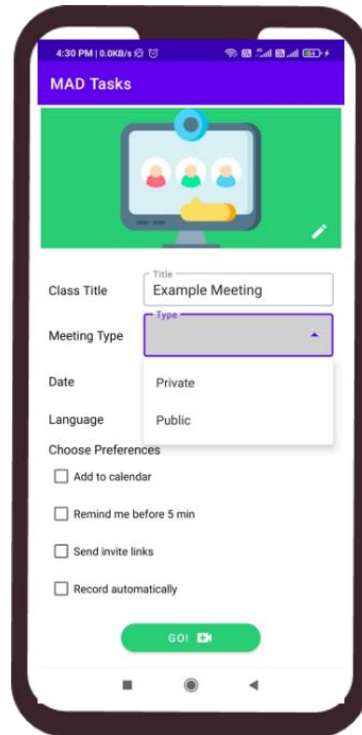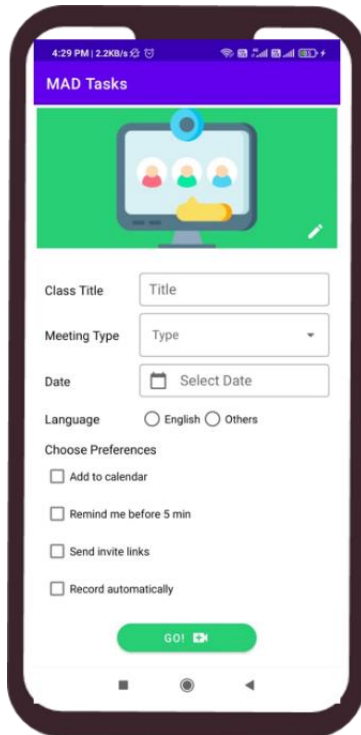
OUTPUT SCREENS

Task 5 Design a form using all layouts

activity_task5_l_l.xml

```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"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".Task5_LL_1">

    <com.google.android.material.button.MaterialButton
        android:id="@+id/LL_btn1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Layout 1"
        android:textSize="24sp"
        app:cornerRadius="8dp"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="40dp"
        android:paddingTop="8dp"
        app:icon="@drawable/ic_baseline_home_24"
        app:iconSize="38dp"
        app:iconGravity="start"
        app:iconTint="@color/green"
        android:paddingBottom="8dp"/>

    <com.google.android.material.button.MaterialButton
        android:id="@+id/LL_btn2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Layout 2"
        android:textSize="24sp"
        app:cornerRadius="8dp"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="40dp"
        android:paddingTop="8dp"
        app:icon="@drawable/ic_baseline_language_24"
        app:iconSize="38dp"
        app:iconGravity="start"
        app:iconTint="@color/green"
        android:paddingBottom="8dp"/>

    <com.google.android.material.button.MaterialButton
        android:id="@+id/LL_btn3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Layout 3"
        android:textSize="24sp"
        app:cornerRadius="8dp"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="40dp"
        android:paddingTop="8dp"
        app:icon="@drawable/ic_baseline_add_shopping_cart_24"
```

```xml
            app:iconSize="38dp"
            app:iconGravity="start"
            app:iconTint="@color/green"
            android:paddingBottom="8dp"/>

    <com.google.android.material.button.MaterialButton
            android:id="@+id/LL_btn4"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Layout 4"
            android:textSize="24sp"
            app:cornerRadius="8dp"
            android:layout_marginStart="40dp"
            android:layout_marginEnd="40dp"
            android:paddingTop="8dp"
            app:icon="@drawable/ic_baseline_phone_android_24"
            app:iconSize="38dp"
            app:iconGravity="start"
            app:iconTint="@color/green"
            android:paddingBottom="8dp"/>

</LinearLayout>
```

Task5_LL_1.java

```java
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Color;
import android.graphics.drawable.ColorDrawable;
import android.os.Bundle;

import com.google.android.material.button.MaterialButton;

public class Task5_LL_1 extends AppCompatActivity {

    MaterialButton btn1,btn2,btn3,btn4;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task5_l_l_1);
        btn1 = findViewById(R.id.LL_btn1);
        btn2 = findViewById(R.id.LL_btn2);
        btn3 = findViewById(R.id.LL_btn3);
        btn4 = findViewById(R.id.LL_btn4);

        ColorDrawable colorDrawable
                = new ColorDrawable(Color.parseColor("#29CF74"));

        // Set BackgroundDrawable
        getSupportActionBar().setBackgroundDrawable(colorDrawable);

        btn1.setOnClickListener(v -> {
            Intent intent = new Intent(Task5_LL_1.this,Task5_LL_2.class);
            startActivity(intent);
        });
        btn2.setOnClickListener(v -> {
```
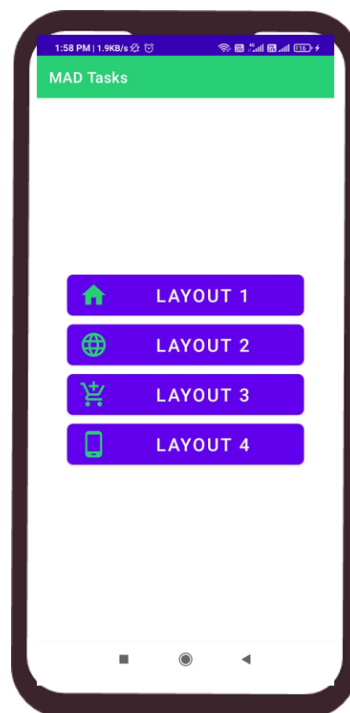
```
            Intent intent = new Intent(Task5_LL_1.this,Task5_CL.class);
            startActivity(intent);
        });
        btn3.setOnClickListener(v -> {
            Intent intent = new Intent(Task5_LL_1.this,Task5_FL.class);
            startActivity(intent);
        });
        btn4.setOnClickListener(v -> {
            Intent intent = new Intent(Task5_LL_1.this,Task5_RL.class);
            startActivity(intent);
        });
    }
}
```

OUTPUT SCREEN

activity_task5_l_l_2.xml

```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"
    android:orientation="vertical"
    tools:context=".Task5_LL_2">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Subscribe for Coderefer.com"
```

```xml
        android:textSize="20sp"
        android:textColor="@color/red"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:layout_marginTop="50dp"
        android:gravity="center"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="Enter your Name"
        android:textColor="@color/black"
        android:textSize="16sp"
        android:layout_marginStart="20dp"/>

    <EditText
        android:layout_width="match_parent"
        android:layout_height="34dp"
        android:layout_marginTop="10dp"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:background="@drawable/edit_text_border"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="Enter your Email"
        android:textColor="@color/black"
        android:textSize="16sp"
        android:layout_marginStart="20dp"/>

    <EditText
        android:layout_width="match_parent"
        android:layout_height="34dp"
        android:layout_marginTop="10dp"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:background="@drawable/edit_text_border"/>


    <com.google.android.material.button.MaterialButton
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginEnd="20dp"
        android:layout_marginTop="30dp"
        android:text="Subscribe"
        android:textStyle="bold"
        android:backgroundTint="@color/yellow"
        android:textColor="@color/black"/>

</LinearLayout>
```

Task5_LL_2.java
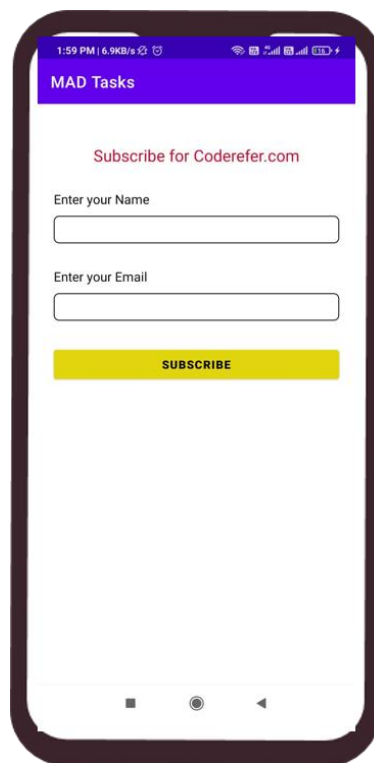
```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Task5_LL_2 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task5_l_l_2);
    }
}
```

OUTPUT SCREEN

activity_task5_r_l.xml

```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"
    android:background="@color/orange"
    tools:context=".Task5_RL">

    <EditText
        android:id="@+id/etxt1"
        android:layout_width="180dp"
```

```xml
        android:layout_height="40dp"
        android:paddingStart="8dp"
        android:paddingEnd="1dp"
        android:hint="Name"
        android:layout_marginStart="10dp"
        android:background="@color/white"
        android:layout_marginTop="20dp"/>

    <EditText
        android:id="@+id/etxt2"
        android:layout_width="180dp"
        android:layout_height="40dp"
        android:layout_marginTop="20dp"
        android:layout_marginEnd="10dp"
        android:paddingStart="8dp"
        android:paddingEnd="1dp"
        android:background="@color/white"
        android:layout_alignParentEnd="true"
        android:hint="Address" />

    <EditText
        android:id="@+id/etxt3"
        android:layout_width="match_parent"
        android:layout_height="40dp"
        android:paddingStart="8dp"
        android:paddingEnd="1dp"
        android:layout_below="@id/etxt1"
        android:layout_marginTop="20dp"
        android:layout_marginStart="10dp"
        android:layout_marginEnd="10dp"
        android:background="@color/white"
        android:layout_alignParentEnd="true"
        android:hint="Subject" />

    <EditText
        android:id="@+id/etxt4"
        android:layout_width="match_parent"
        android:layout_height="240dp"
        android:paddingStart="8dp"
        android:paddingEnd="1dp"
        android:layout_below="@id/etxt3"
        android:layout_marginTop="20dp"
        android:layout_marginStart="10dp"
        android:layout_marginEnd="10dp"
        android:background="@color/white"
        android:layout_alignParentEnd="true"
        android:gravity="top"
        android:paddingTop="10dp"
        android:hint="Message" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        android:layout_marginTop="20dp"
        android:layout_centerInParent="true"
        android:backgroundTint="@color/end"
        android:layout_below="@+id/etxt4"/>
```

```
</RelativeLayout>
```

Task5_RL.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class Task5_RL extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task5_r_l);
        getSupportActionBar().setTitle("Relative Layout Example");
    }
}
```
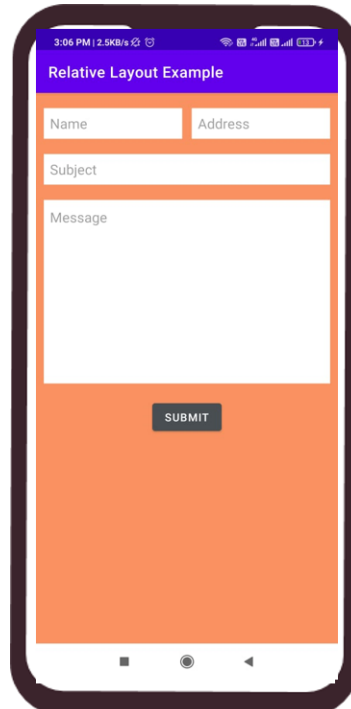
OUTPUT SCREEN

activity_f_l.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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:animateLayoutChanges="true"
    tools:context=".Task5_FL">

    <FrameLayout
        android:id="@+id/layoutOne"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:background="@color/green">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="ONE"
            android:layout_marginTop="20dp"
            android:layout_gravity="top|center"
            android:textSize="40sp"
            android:textColor="@color/white"/>

        <Button
            android:id="@+id/FL_btn1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:text="Frame Layout 1"/>
    </FrameLayout>

    <FrameLayout
        android:id="@+id/layoutTwo"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:background="@color/red">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="TWO"
            android:layout_marginTop="20dp"
            android:layout_gravity="top|center"
            android:textSize="40sp"
            android:textColor="@color/white"/>

        <Button
            android:id="@+id/FL_btn2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:text="Frame Layout 2"/>
    </FrameLayout>

    <FrameLayout
```

```xml
        android:id="@+id/layoutThree"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:background="@color/orange">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="THREE"
            android:layout_marginTop="20dp"
            android:layout_gravity="top|center"
            android:textSize="40sp"
            android:textColor="@color/white"/>

        <Button
            android:id="@+id/FL_btn3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:text="Frame Layout 3"/>
    </FrameLayout>
</FrameLayout>
```

Task5_FLjava

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.FrameLayout;

public class Task5_FL extends AppCompatActivity {

    FrameLayout fl1,fl2,fl3;
    Button btn1,btn2,btn3;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task5_f_L);

        fl1 = findViewById(R.id.layoutOne);
        fl2 = findViewById(R.id.layoutTwo);
        fl3 = findViewById(R.id.layoutThree);

        btn1 = findViewById(R.id.FL_btn1);
        btn2 = findViewById(R.id.FL_btn2);
        btn3 = findViewById(R.id.FL_btn3);

        fl2.setVisibility(View.GONE);
        fl3.setVisibility(View.GONE);

        btn1.setOnClickListener(v -> {
            fl2.setVisibility(View.VISIBLE);
```
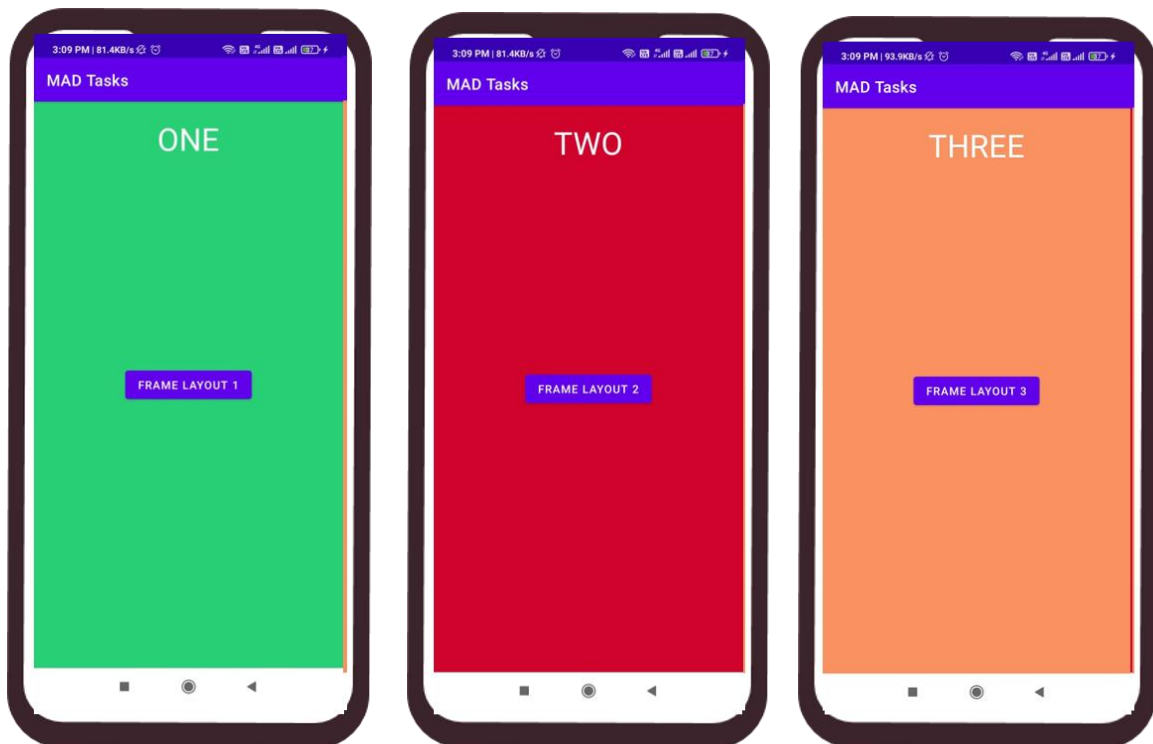
```java
            fl1.setVisibility(View.GONE);
        });

        btn2.setOnClickListener(v -> {
            fl3.setVisibility(View.VISIBLE);
            fl2.setVisibility(View.GONE);
        });

        btn3.setOnClickListener(v -> {
            fl1.setVisibility(View.VISIBLE);
            fl3.setVisibility(View.GONE);
        });
    }
}
```

OUTPUT SCREENS

task5_c_l.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<ScrollView android:layout_width="match_parent"
    android:layout_height="wrap_content"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:android="http://schemas.android.com/apk/res/android"
    tools:context=".Task5_CL">

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```xml
    >

    <TextView
        android:id="@+id/textView2"
        android:layout_width="194dp"
        android:layout_height="62dp"
        android:layout_marginStart="12dp"
        android:layout_marginTop="8dp"
        android:paddingStart="10dp"
        android:paddingEnd="10dp"
        android:text="Beauty and the Beast"
        android:textColor="@color/black"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintStart_toEndOf="@+id/imageView3"
        app:layout_constraintTop_toBottomOf="@+id/imageView2" />

    <ImageView
        android:id="@+id/imageView2"
        android:layout_width="0dp"
        android:layout_height="250dp"
        android:scaleType="fitXY"
        android:elevation="2dp"
        app:layout_constraintVertical_bias="0.0"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/beauty_bg" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="236dp"
        android:layout_height="22dp"
        android:layout_marginStart="12dp"
        android:layout_marginTop="8dp"
        android:textSize="14sp"
        android:text="March 2017 PG 129 minutes"
        app:layout_constraintStart_toEndOf="@+id/imageView3"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

    <ImageView
        android:id="@+id/imageView3"
        android:layout_width="125dp"
        android:layout_height="180dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="148dp"
        android:background="@drawable/beauty_fg"
        android:elevation="5dp"
        android:scaleType="fitXY"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:srcCompat="@drawable/beauty_fg" />

    <ImageView
        android:id="@+id/imageView4"
        android:layout_width="44dp"
        android:layout_height="47dp"
        android:layout_marginTop="8dp"
```

```xml
        android:layout_marginEnd="16dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:tint="@color/pinkred"
        app:layout_constraintTop_toBottomOf="@+id/imageView2"
        app:srcCompat="@drawable/ic_baseline_bookmark_add_24" />

    <Button
        android:id="@+id/button"
        android:layout_width="185dp"
        android:layout_height="50dp"
        android:layout_marginStart="10dp"
        android:layout_marginTop="16dp"
        android:backgroundTint="@color/red"
        android:text="Rent from Rs 2799 "
        app:layout_constraintEnd_toStartOf="@+id/button2"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />

    <Button
        android:id="@+id/button2"
        android:layout_width="185dp"
        android:layout_height="50dp"
        android:layout_marginTop="16dp"
        android:layout_marginStart="10dp"
        android:layout_marginEnd="10dp"
        android:backgroundTint="@color/red"
        android:text="Buy from Rs 12799"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />

    <View
        android:id="@+id/divider"
        android:layout_width="match_parent"
        android:layout_height="1dp"
        android:layout_marginStart="10dp"
        android:layout_marginTop="10dp"
        android:layout_marginEnd="10dp"
        android:background="?android:attr/listDivider"
        app:layout_constraintTop_toBottomOf="@+id/button" />

    <androidx.cardview.widget.CardView
        android:id="@+id/cardView1"
        android:layout_width="60dp"
        android:layout_height="60dp"
        app:contentPadding="8dp"
        android:layout_marginStart="24dp"
        android:layout_marginTop="28dp"
        app:cardCornerRadius="30dp"
        app:cardBackgroundColor="@color/red"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button">
        <ImageView
            android:id="@+id/imageView5"
            android:layout_width="40dp"
            android:layout_height="40dp"
            android:layout_gravity="center"
            android:scaleType="centerCrop"
```

```xml
            app:srcCompat="@drawable/ic_baseline_star_rate_24"
            app:tint="@color/white" />
    </androidx.cardview.widget.CardView>

    <androidx.cardview.widget.CardView
        android:id="@+id/cardView2"
        android:layout_width="60dp"
        android:layout_height="60dp"
        app:contentPadding="8dp"
        app:cardCornerRadius="30dp"
        app:cardBackgroundColor="@color/red"
        android:layout_marginStart="30dp"
        android:layout_marginTop="28dp"
        app:layout_constraintStart_toEndOf="@+id/cardView1"
        app:layout_constraintTop_toBottomOf="@+id/button">
        <ImageView
            android:id="@+id/imageView6"
            android:layout_width="40dp"
            android:layout_gravity="center"
            android:layout_height="40dp"
            app:tint="@color/white"
            app:srcCompat="@drawable/ic_baseline_supervised_user_circle_24" />
    </androidx.cardview.widget.CardView>

    <androidx.cardview.widget.CardView
        android:id="@+id/cardView3"
        android:layout_width="60dp"
        android:layout_height="60dp"
        app:contentPadding="8dp"
        app:cardCornerRadius="30dp"
        app:cardBackgroundColor="@color/yellow"
        android:layout_marginStart="30dp"
        android:layout_marginTop="28dp"
        app:layout_constraintStart_toEndOf="@+id/cardView2"
        app:layout_constraintTop_toBottomOf="@+id/button2">
        <ImageView
            android:id="@+id/imageView7"
            android:layout_width="40dp"
            android:layout_height="40dp"
            android:layout_gravity="center"
            app:tint="@color/red"
            app:srcCompat="@drawable/ic_baseline_favorite_24" />

    </androidx.cardview.widget.CardView>

    <androidx.cardview.widget.CardView
        android:id="@+id/cardView4"
        android:layout_width="60dp"
        android:layout_height="60dp"
        android:layout_marginStart="30dp"
        app:contentPadding="8dp"
        app:cardCornerRadius="30dp"
        app:cardBackgroundColor="@color/red"
        android:layout_marginTop="28dp"
        android:layout_marginEnd="28dp"
        app:layout_constraintEnd_toEndOf="@+id/button2"
        app:layout_constraintHorizontal_bias="0.87"
        app:layout_constraintStart_toEndOf="@+id/cardView3"
```

```xml
            app:layout_constraintTop_toBottomOf="@+id/button2">
            <ImageView
                android:id="@+id/imageView8"
                android:layout_width="40dp"
                android:layout_height="40dp"
                android:layout_gravity="center"
                app:tint="@color/white"
                app:srcCompat="@drawable/ic_baseline_amp_stories_24" />

        </androidx.cardview.widget.CardView>


        <androidx.constraintlayout.widget.Guideline
            android:id="@+id/guideline5"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            app:layout_constraintGuide_begin="12dp" />

        <androidx.constraintlayout.widget.Guideline
            android:id="@+id/guideline6"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            app:layout_constraintGuide_begin="395dp" />

        <TextView
            android:id="@+id/textView4"
            android:layout_width="wrap_content"
            android:layout_height="20dp"
            android:layout_marginTop="20dp"
            android:gravity="center"
            android:text="242 ratings"
            android:textSize="14sp"
            app:layout_constraintStart_toStartOf="@+id/cardView1"
            app:layout_constraintTop_toBottomOf="@+id/cardView1" />

        <TextView
            android:id="@+id/textView5"
            android:layout_width="60dp"
            android:layout_height="20dp"
            android:layout_marginTop="20dp"
            android:gravity="center"
            android:text="Family"
            android:textSize="14sp"
            app:layout_constraintStart_toStartOf="@+id/cardView2"
            app:layout_constraintTop_toBottomOf="@+id/cardView2" />

        <TextView
            android:id="@+id/textView6"
            android:layout_width="60dp"
            android:layout_height="20dp"
            android:layout_marginTop="20dp"
            android:gravity="center"
            android:text="71%"
            android:textSize="14sp"
            app:layout_constraintStart_toStartOf="@+id/cardView3"
            app:layout_constraintTop_toBottomOf="@+id/cardView3" />
```

```xml
<TextView
    android:id="@+id/textView7"
    android:layout_width="60dp"
    android:layout_height="20dp"
    android:layout_marginTop="20dp"
    android:gravity="center"
    android:text="Similar"
    android:textSize="14sp"
    app:layout_constraintStart_toStartOf="@+id/cardView4"
    app:layout_constraintTop_toBottomOf="@+id/cardView4" />

<View
    android:id="@+id/divider2"
    android:layout_width="match_parent"
    android:layout_height="1dp"
    android:layout_marginStart="10dp"
    android:layout_marginTop="20dp"
    android:layout_marginEnd="10dp"
    android:background="?android:attr/listDivider"
    app:layout_constraintTop_toBottomOf="@+id/textView4" />

<TextView
    android:id="@+id/textView8"
    android:layout_width="match_parent"
    android:layout_height="120dp"
    android:layout_marginStart="12dp"
    android:layout_marginEnd="12dp"
    android:gravity="center"
    android:text="The story and characters you know and love come to
spectacular life in the live-action adaption of Disney's animated classic Beauty
and the Beast."
    android:textColor="@color/black"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/divider2"
    app:layout_constraintVertical_bias="1.0" />

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

ConstraintLayout.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.ImageView;

public class Task5_CL extends AppCompatActivity {

    ImageView imageView3;
```
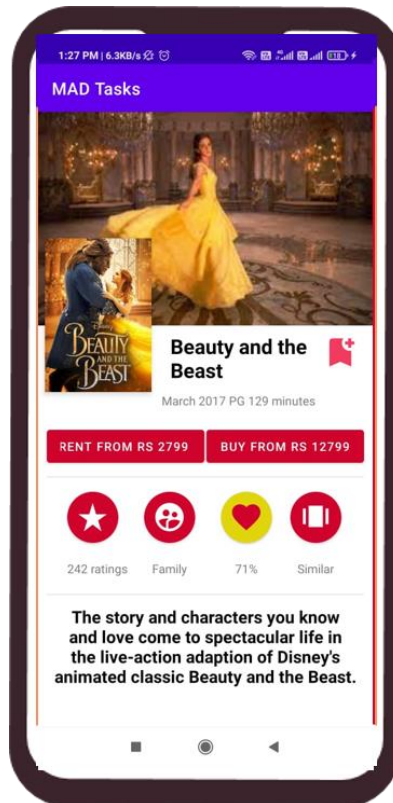
```java
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task5_c_l);
        imageView3 = findViewById(R.id.imageView3);
        imageView3.bringToFront();
        imageView3.invalidate();
    }
}
```

OUTPUT SCREEN

Task 6 Create a Fragment

activity_task6.xml

```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:orientation="vertical"
    android:layout_height="match_parent"
    tools:context=".Task6">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Fragment Example"
        android:textSize="22sp"
        android:layout_margin="12dp"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginEnd="10dp"
        android:orientation="horizontal">

        <com.google.android.material.button.MaterialButton
            android:id="@+id/btn_first_frag"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:text="First"
            android:textStyle="bold"
            android:layout_weight="1"/>
        <com.google.android.material.button.MaterialButton
            android:id="@+id/btn_second_frag"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="10dp"
            android:text="Second"
            android:backgroundTint="@color/pinkred"
            android:textStyle="bold"
            android:layout_weight="1"/>

    </LinearLayout>

    <androidx.fragment.app.FragmentContainerView
        android:id="@+id/frag_container"
        android:name="androidx.navigation.fragment.NavHostFragment"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:defaultNavHost="true"
        app:navGraph="@navigation/navigation"/>

</LinearLayout>
```

Task6.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.content.ContextCompat;
import androidx.navigation.Navigation;
import androidx.navigation.fragment.NavHostFragment;

import android.graphics.drawable.ColorDrawable;
import android.os.Bundle;

import com.google.android.material.button.MaterialButton;

import java.util.Objects;

public class Task6 extends AppCompatActivity {

    MaterialButton btnFirstFrag,btnSecondFrag;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task6);
        btnFirstFrag = findViewById(R.id.btn_first_frag);
        btnSecondFrag = findViewById(R.id.btn_second_frag);

        btnFirstFrag.setOnClickListener(v -> {
            Navigation.findNavController(this,R.id.frag_container)
                    .navigate(R.id.action_fragment2_to_fragment1);

Objects.requireNonNull(getSupportActionBar()).setBackgroundDrawable(new
ColorDrawable(ContextCompat.getColor(this,R.color.purple_500)));
            btnFirstFrag.setClickable(false);
            btnSecondFrag.setClickable(true);
        });

        btnSecondFrag.setOnClickListener(v -> {
            Navigation.findNavController(this,R.id.frag_container)
                    .navigate(R.id.action_fragment1_to_fragment2);

Objects.requireNonNull(getSupportActionBar()).setBackgroundDrawable(new
ColorDrawable(ContextCompat.getColor(this,R.color.pinkred)));
            btnFirstFrag.setClickable(true);
            btnSecondFrag.setClickable(false);
        });

        btnFirstFrag.setClickable(false);
    }
}
```

Fragment1.java

```java
package com.amrit.mad.fragments;

import android.os.Bundle;
```

```java
import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import com.amrit.mad.R;


public class Fragment1 extends Fragment {


    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_1, container, false);
    }
}
```

Fragment2.java

```java
package com.amrit.mad.fragments;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import com.amrit.mad.R;


public class Fragment2 extends Fragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_2, container, false);
    }
}
```

fragment_1.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:background="@color/purple_500"
    tools:context=".fragments.Fragment1">
```

```xml
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Fragment 1"
        android:gravity="center"
        android:textSize="22sp"
        android:textColor="@color/white"
        android:layout_centerInParent="true"/>

</RelativeLayout>
```

fragment_2.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:background="@color/pinkred"
    tools:context=".fragments.Fragment2">


    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Fragment 2"
        android:gravity="center"
        android:textSize="22sp"
        android:textColor="@color/white"
        android:layout_centerInParent="true"/>

</RelativeLayout>
```
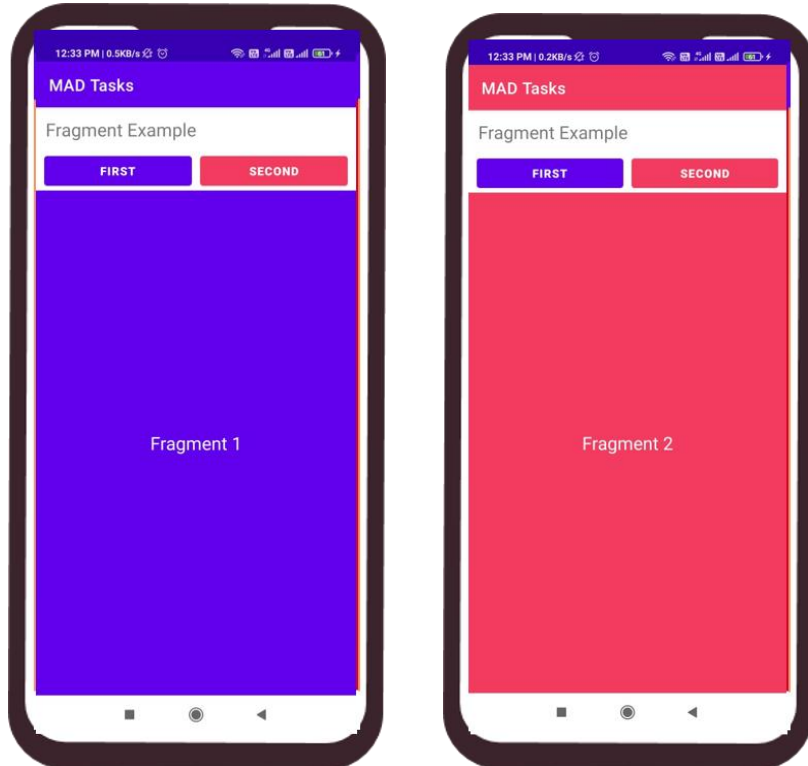
navigation.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<navigation 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/navigation"
    app:startDestination="@id/fragment1">

    <fragment
        android:id="@+id/fragment1"
        android:name="com.amrit.mad.fragments.Fragment1"
        android:label="fragment_1"
        tools:layout="@layout/fragment_1" >
        <action
            android:id="@+id/action_fragment1_to_fragment2"
            app:destination="@id/fragment2" />
    </fragment>
    <fragment
        android:id="@+id/fragment2"
        android:name="com.amrit.mad.fragments.Fragment2"
        android:label="fragment_2"
        tools:layout="@layout/fragment_2" >
        <action
```

```
            android:id="@+id/action_fragment2_to_fragment1"
            app:destination="@id/fragment1" />
    </fragment>
</navigation>
```

OUTPUT SCREENS

Task 7 Demonstration on Activities and Intents

activity_task7_1.xml

```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=".Task7_1">

    <TextView
        android:id="@+id/txt11_1a"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Activity 1"
        android:textSize="32sp"
        android:textColor="@color/orange"
        android:textStyle="bold"
        android:gravity="center"
        android:layout_marginTop="30dp"/>

    <com.google.android.material.textfield.TextInputLayout
        android:id="@+id/TIL_11"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Something..."
        android:layout_below="@+id/txt11_1a"
        android:layout_marginStart="10dp"
        android:layout_marginEnd="10dp"
        android:layout_marginTop="30dp"
        style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox">
        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/etxt11_1a"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:inputType="textMultiLine"
            android:lines="3"/>
    </com.google.android.material.textfield.TextInputLayout>

    <com.google.android.material.button.MaterialButton
        android:id="@+id/btn11_Send"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send"
        android:paddingStart="60dp"
        android:paddingEnd="60dp"
        android:layout_below="@+id/TIL_11"
        android:layout_centerInParent="true"
        android:backgroundTint="@color/pinkred"
        android:layout_marginTop="20dp"/>
</RelativeLayout>
```

Task7_1.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;

import com.google.android.material.button.MaterialButton;
import com.google.android.material.textfield.TextInputEditText;

public class Task7_1 extends AppCompatActivity {

    MaterialButton btnSend;
    TextInputEditText etxt1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task7_1);
        etxt1 = findViewById(R.id.etxt11_1a);
        btnSend = findViewById(R.id.btn11_Send);

        btnSend.setOnClickListener(v->{
            String input= etxt1.getText().toString().trim();
            if(input.isEmpty()){
                etxt1.setError("Invalid Input");
                return;
            }
            Intent intent = new Intent(Task11_1.this,Task11_2.class);
            Bundle bundle = new Bundle();
            bundle.putString("myInput",input);
            intent.putExtra("myBundle",bundle);
            startActivity(intent);
        });
    }
}
```

activity_task7_2.xml

```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=".Task7_2">

    <TextView
        android:id="@+id/txt11_2a"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Activity 2"
        android:textSize="32sp"
        android:textColor="@color/teal_700"
        android:textStyle="bold"
```

```xml
            android:gravity="center"
            android:layout_marginTop="30dp"/>

    <TextView
        android:id="@+id/txt11_2b"
        android:layout_width="match_parent"
        android:layout_below="@+id/txt11_2a"
        android:layout_marginTop="40dp"
        android:textColor="@color/purple_500"
        android:text="Data from Activity 1"
        android:gravity="center"
        android:textSize="20sp"
        android:layout_height="wrap_content"/>
</RelativeLayout>
```

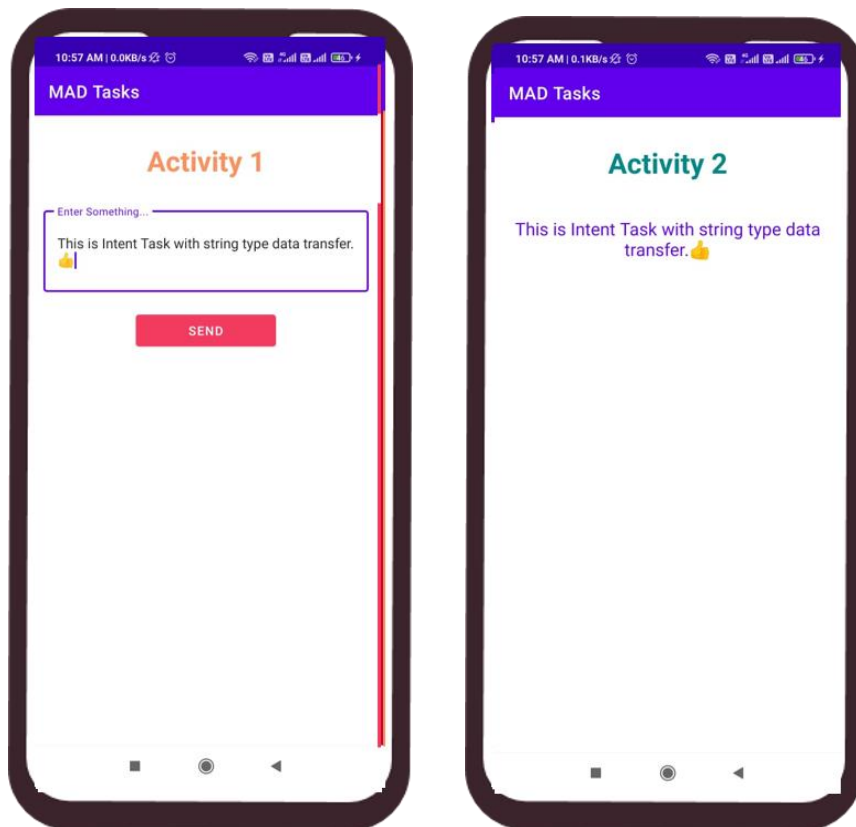## Task7_2.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.TextView;

public class Task7_2 extends AppCompatActivity {

    TextView txtReceived;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task7_2);
        txtReceived = findViewById(R.id.txt11_2b);
        Bundle rcv = getIntent().getBundleExtra("myBundle");
        String received = rcv.getString("myInput");
        txtReceived.setText(received);
    }
}
```

OUTPUT SCREENS

Task 8 Demonstration on SQLite

activity_task8.xml

```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"
    android:orientation="vertical"
    tools:context=".Task8">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="SQLiteDatabase"
        android:layout_marginTop="20dp"
        android:textSize="28sp"
        android:gravity="center"/>

    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginTop="20dp"
        style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox"
        android:hint="Enter Student Name">

        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/etxtStudentName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:inputType="text"/>

    </com.google.android.material.textfield.TextInputLayout>

    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginTop="20dp"
        style="@style/Widget.MaterialComponents.TextInputLayout.OutlinedBox"
        android:hint="Enter your College Name">

        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/etxtCollegeName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:inputType="text"/>

    </com.google.android.material.textfield.TextInputLayout>

    <com.google.android.material.button.MaterialButton
        android:layout_width="match_parent"
```

```xml
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="40dp"
        android:layout_gravity="center"
        android:onClick="doSave"
        android:text="Save"/>

    <com.google.android.material.button.MaterialButton
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:layout_marginStart="40dp"
        android:layout_marginEnd="40dp"
        android:layout_gravity="center"
        android:backgroundTint="@color/black"
        android:onClick="doLoad"
        android:text="Load"/>
</LinearLayout>
```

Task8.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;

import com.amrit.mad.db.MySqlLiteHelper;
import com.google.android.material.textfield.TextInputEditText;

public class Task8 extends AppCompatActivity {

    TextInputEditText etxtStudentName,etxtCollege;
    MySqlLiteHelper mSqlLiteHelper;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task8);
        mSqlLiteHelper = new MySqlLiteHelper(this);
        etxtStudentName = findViewById(R.id.etxtStudentName);
        etxtCollege = findViewById(R.id.etxtCollegeName);
    }

    public void doSave(View view) {

mSqlLiteHelper.insertData(etxtStudentName.getText().toString(),etxtCollege.getText
().toString());
    }

    public void doLoad(View view) {
        mSqlLiteHelper.getAll();
    }
}
```

MySQLiteHelper.java

```java
package com.amrit.mad.db;

import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.util.Log;
import android.widget.Toast;

import androidx.annotation.Nullable;

public class MySqlLiteHelper extends SQLiteOpenHelper {
    private static final String TAG = "MySqlLiteHelper";
    private static final String DB_NAME = "Education";
    private static final String DB_TABLE = "students";
    private static final int DB_VER = 1;
    Context context;
    SQLiteDatabase myDb;

    public MySqlLiteHelper(@Nullable Context context) {
        super(context, DB_NAME, null, DB_VER);
        this.context = context;
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("create table "+DB_TABLE+" (_id integer primary key
autoincrement,student_name text,college_name text);");
        Log.i(TAG, "onCreate: Table Created");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("drop table if exists "+DB_TABLE);
        onCreate(db);
    }

    public void insertData(String s1,String s2){
        myDb = getWritableDatabase();
        myDb.execSQL("insert into "+DB_TABLE+" (student_name,college_name)
values('"+s1+"','"+s2+"');");
        Toast.makeText(context,"Data Saved
Successfully",Toast.LENGTH_SHORT).show();
    }

    public void getAll(){
        myDb = getReadableDatabase();
        Cursor cr = myDb.rawQuery("Select * from " + DB_TABLE,null);
        StringBuilder str = new StringBuilder();
        while ((cr.moveToNext())){
            String s1= cr.getString(1);
            String s2= cr.getString(2);
            str.append("StudentName: ").append(s1).append("\nCollegeName:
```
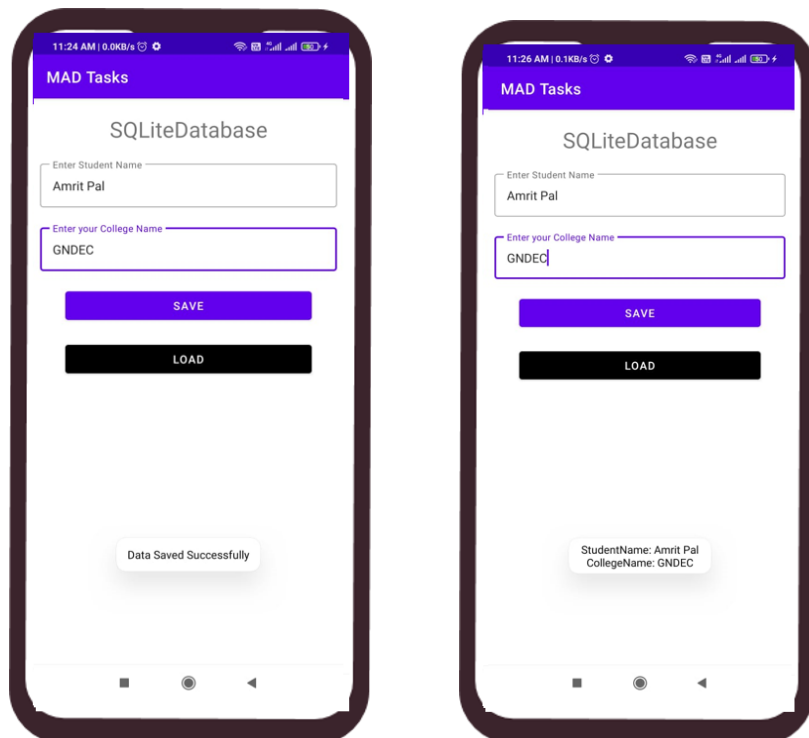
```
").append(s2);
        }
        cr.close();
        Toast.makeText(context,str.toString(),Toast.LENGTH_SHORT).show();
    }
}
```

OUTPUT SCREENS

Task 9 Content Providers

activity_content_provider.xml

```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"
    android:orientation="vertical"
    android:padding="8dp"
    tools:context=".ContentProvider">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="CONTENT PROVIDER"
        android:textColor="@color/black"
        android:textSize="30dp"
        android:gravity="center"
        android:layout_marginTop="30dp"

        ></TextView>

    <EditText
        android:layout_width="match_parent"
        android:id="@+id/tv1"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:hint="Enter Employee Name"


        ></EditText>

    <EditText
        android:layout_width="match_parent"
        android:id="@+id/tv2"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:hint="Enter Employee Job Profile"


        ></EditText>

    <Button
        android:layout_width="wrap_content"
        android:id="@+id/bt1"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="50dp"
        android:text="Save"
        android:background="@color/teal_200"
        android:textSize="20dp"
        android:onClick="doSaveContent"

        ></Button>
```

```xml
<Button
    android:layout_width="wrap_content"
    android:id="@+id/bt2"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="30dp"
    android:text="Load"
    android:textSize="20dp"
    android:background="@color/yellow"
    android:onClick="doLoadContent"

    ></Button>
</LinearLayout>
```

ContentProvider.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.content.ContentValues;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class ContentProvider extends AppCompatActivity {

    EditText et1, et2;
    Button b1,b2;

    ContentValues values = new ContentValues();

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

        getSupportActionBar().setTitle("Task_9");

        et1 = findViewById(R.id.tv1);
        et2 = findViewById(R.id.tv2);
        b1 = findViewById(R.id.bt1);
        b2 = findViewById(R.id.bt2);


    }

    public void doSaveContent(View view) {

        values.put("emp_name",et1.getText().toString());
        values.put("profile",et2.getText().toString());

        Uri uri = getContentResolver().insert(CompanyProvider.CONTENT_URI,values);
        Toast.makeText(this, uri.toString(), Toast.LENGTH_SHORT).show();
```

```java
    }

    public void doLoadContent(View view) {

        Cursor cr =
getContentResolver().query(CompanyProvider.CONTENT_URI,null,null,null,"_id");
        StringBuilder stringBuilder = new StringBuilder();


        while(cr.moveToNext()){

            int id = cr.getInt(0);
            String s1 = cr.getString(1);
            String s2 = cr.getString(2);
            stringBuilder.append(id+"   "+s1+"   "+s2+"   \n");

        }

         Toast.makeText(this, stringBuilder.toString(), Toast.LENGTH_SHORT).show();
    }
}
```

CompanyProvider.java

```java
package com.amrit.mad;

import android.content.ContentProvider;
import android.content.ContentUris;
import android.content.ContentValues;
import android.content.Context;
import android.content.UriMatcher;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.database.sqlite.SQLiteQueryBuilder;
import android.net.Uri;

import androidx.annotation.Nullable;

import java.net.URI;

public class CompanyProvider extends ContentProvider {

    SQLiteDatabase myDb;

    private static final String DB_Name = "company";
    private static final String DB_Table = "emp";
    private static final int DB_VER = 1;


    public CompanyProvider() {
    }

    public static final String AUTHORITY = "com.mobile_lab.company_provider";
    public static final Uri CONTENT_URI =
Uri.parse("content://"+AUTHORITY+"/emp");
```

```java
public static int EMP = 1;
public static int EMP_ID = 2;

static UriMatcher myUri = new UriMatcher((UriMatcher.NO_MATCH));
static{
    myUri.addURI(AUTHORITY,"emp",EMP);
    myUri.addURI(AUTHORITY,"emp/#",EMP_ID);



}



private class MyOwnDatabase extends SQLiteOpenHelper{


    public MyOwnDatabase(Context ct){
        super(ct,DB_Name,null,DB_VER);
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {

        sqLiteDatabase.execSQL("create table "+DB_Table+" (_id integer primary
key autoincrement, emp_name text, profile text);");

    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {

        sqLiteDatabase.execSQL("drop table if exists "+DB_Table);
    }
}


@Override
public int delete(Uri uri, String selection, String[] selectionArgs) {
    // Implement this to handle requests to delete one or more rows.
    throw new UnsupportedOperationException("Not yet implemented");
}

@Override
public String getType(Uri uri) {
    // TODO: Implement this to handle requests for the MIME type of the data
    // at the given URI.
    throw new UnsupportedOperationException("Not yet implemented");
}

@Override
public Uri insert(Uri uri, ContentValues values) {

    long row = myDb.insert(DB_Table,null,values);

    if(row > 0){
        uri = ContentUris.withAppendedId(CONTENT_URI,row);
        getContext().getContentResolver().notifyChange(uri,null);
```

```java
        }
        return uri;

    }

    @Override
    public boolean onCreate() {

        MyOwnDatabase myHelper = new MyOwnDatabase(getContext());

        myDb = myHelper.getWritableDatabase();

        if(myDb != null){
            return true;
        }
        else{
            return  false;
        }


    }

    @Override
    public Cursor query(Uri uri, String[] projection, String selection,
                        String[] selectionArgs, String sortOrder) {

        SQLiteQueryBuilder myQuery = new SQLiteQueryBuilder();
        myQuery.setTables(DB_Table);

        Cursor cr = myQuery.query(myDb,null,null,null,null,null,"_id");

        cr.setNotificationUri(getContext().getContentResolver(),uri);

        return cr;


    }

    @Override
    public int update(Uri uri, ContentValues values, String selection,
                        String[] selectionArgs) {

        throw new UnsupportedOperationException("Not yet implemented");

    }
}
```
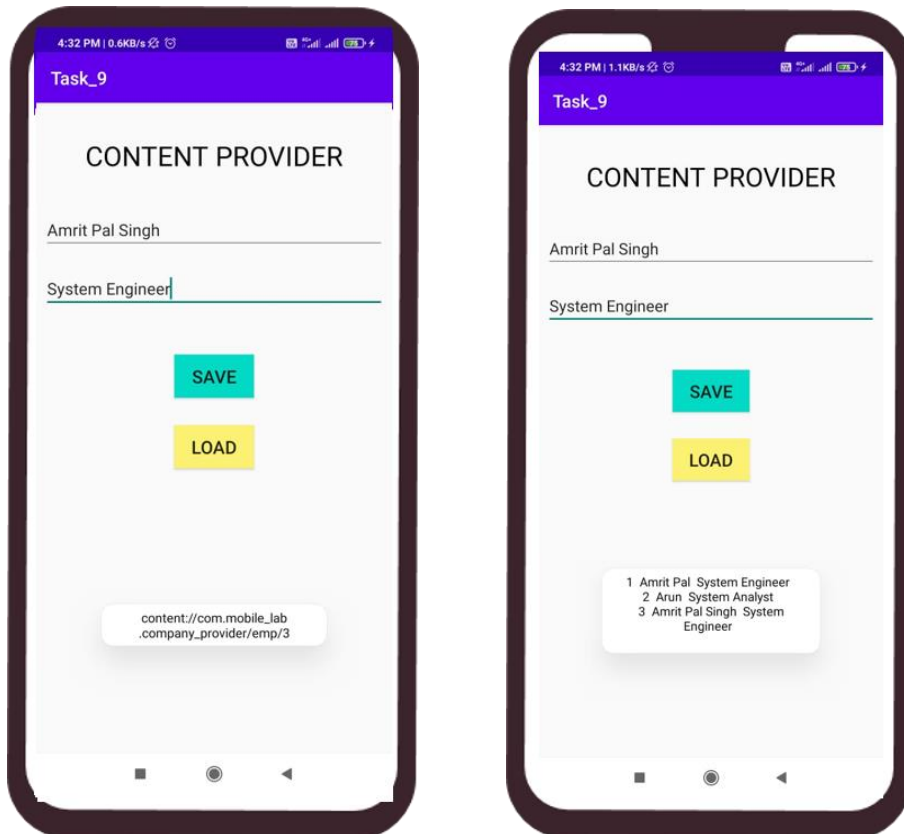
OUTPUT SCREENS

Task 10 Demonstration on Services

activity_task10.xml

```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"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".Task10">

    <TextView
        android:id="@+id/textView9"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Service Demo"
        android:layout_marginBottom="80dp"
        android:textSize="32sp"
        android:gravity="center"/>

    <com.google.android.material.button.MaterialButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Service"
        android:onClick="startMyService"
        android:layout_marginTop="20dp"/>

    <com.google.android.material.button.MaterialButton
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:onClick="stopMyService"
        android:text="Stop Service"
        android:backgroundTint="@color/red"/>
</LinearLayout>
```

Task10.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;

import com.amrit.mad.services.MyService;

public class Task10 extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```java
        setContentView(R.layout.activity_task10);
    }

    public void startMyService(View view) {
        Intent intent = new Intent(this, MyService.class);
        startService(intent);
    }

    public void stopMyService(View view) {
        Intent intent = new Intent(this, MyService.class);
        stopService(intent);
    }
}
```

MyService.java

```java
package com.amrit.mad.services;

import android.app.Service;
import android.content.Intent;
import android.os.IBinder;
import android.util.Log;
import android.widget.Toast;

public class MyService extends Service {
    private static final String TAG = "MyService";
    public MyService() {
    }

    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }

    @Override
    public void onCreate() {
        super.onCreate();
        Toast.makeText(this,"Service Created",Toast.LENGTH_SHORT).show();
        Log.i(TAG, "onCreate: Service Created");
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        Toast.makeText(this,"Service Started",Toast.LENGTH_SHORT).show();
        Log.i(TAG, "onCreate: Service Started");
        return START_STICKY;
    }

    @Override
    public void onDestroy() {
        super.onDestroy();
        Toast.makeText(this,"Service Destroyed",Toast.LENGTH_SHORT).show();
        Log.i(TAG, "onCreate: Service Destroyed");
    }
}
```
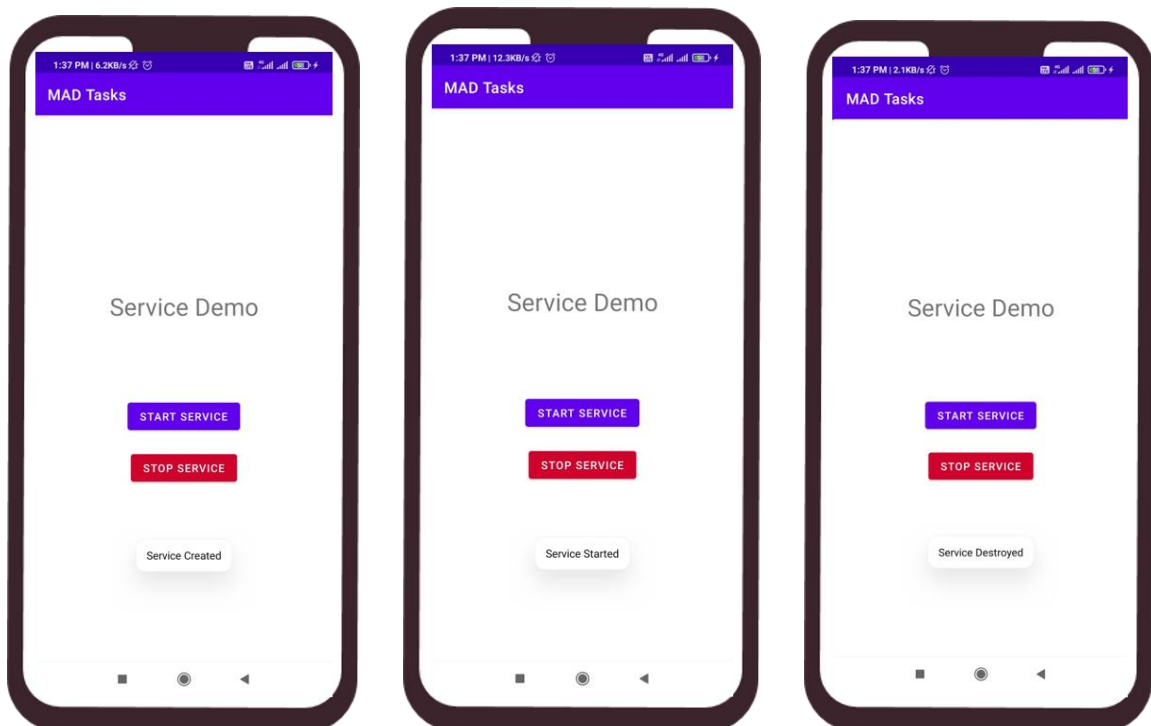
OUTPUT SCREENS

Task 11 Android Security and Debugging

activity_task11.xml

```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:orientation="vertical"
    android:padding="8dp"
    android:layout_height="match_parent"
    tools:context=".Task11">


    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Debugging Task"
        android:layout_marginTop="10dp"
        android:layout_marginBottom="30dp"

android:textAppearance="@style/TextAppearance.MaterialComponents.Headline4"/>

    <EditText
        android:id="@+id/eTxtNum1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Number 1"/>
    <EditText
        android:id="@+id/eTxtNum2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Number 2"/>

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Result"
        android:layout_marginTop="20dp"
        android:layout_marginStart="5dp"

android:textAppearance="@style/TextAppearance.MaterialComponents.Headline6"/>
    <TextView
        android:id="@+id/txtResult"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="5dp"
        android:text="0"/>

    <com.google.android.material.button.MaterialButton
        android:id="@+id/btnAddNum"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Add"
        android:layout_marginTop="20dp"
        android:backgroundTint="@color/pinkred"
```

```xml
            android:layout_gravity="center"
            android:paddingStart="40dp"
            android:paddingEnd="40dp"
            app:cornerRadius="8dp"/>

</LinearLayout>
```

Task11.java

```java
package com.amrit.mad;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.widget.EditText;
import android.widget.TextView;

import com.google.android.material.button.MaterialButton;

public class Task11 extends AppCompatActivity {

    private static final String TAG = "Task11_Debugging";
    private EditText eTxt1,eTxt2;
    private TextView txtResult;
    private MaterialButton btnAdd;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_task11);
        eTxt1 = findViewById(R.id.eTxtNum1);
        eTxt2 = findViewById(R.id.eTxtNum2);
        txtResult = findViewById(R.id.txtResult);
        btnAdd = findViewById(R.id.btnAddNum);

        btnAdd.setOnClickListener(v -> {
            Log.i(TAG, "onCreate: Executed 1");
            int num1 = Integer.parseInt(eTxt1.getText().toString().trim());
            Log.i(TAG, "onCreate: Executed 2");
            int num2 = Integer.parseInt(eTxt2.getText().toString().trim());
            Log.i(TAG, "onCreate: Executed 3");
            int res = num1+num2;
            Log.i(TAG, "onCreate: Executed 4");
            txtResult.setText(String.valueOf(res));
            Log.i(TAG, "onCreate: Executed 5");
        });
    }
}
```

OUTPUT SCREENS