JUSTICE BASHEER AHMED SAYEED COLLEGE FOR WOMEN (A.N)

(AUTONOMOUS)

TEYNAMPET, CHENNAI-600018

DEPARTMENT OF COMPUTER SCIENCE

ANDROID DEVELOPMENT LAB

PRACTICAL RECORD

FOR

MASTER OF COMPUTER SCIENCE

II YEAR

NAME:

REGISTER NUMBER:

2023-2025

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Certified to be the genuine record of work done by _____

of II M.SC Computer Science in Justice Basheer Ahmed Sayeed College for Women (AN) (Autonomous), Chennai-600018

STAFF IN CHARGE **HEAD OF THE DEPARTMENT**

DATE: **[DEPARTMENT OF COMPUTERSCIENCE]**

Submitted for the Practical examination held on _____ at Justice Basheer Ahmed Sayeed College for Women (AN) (Autonomous),
Chennai-600018.

Examiners:

1.

2

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1.BASIC HELLO WORLD APPLICATION

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center"
        android:text="Hello World!"
        android:textColor="#FF0000"
        android:textSize="30sp"
        android:textStyle="bold"
        android:textAlignment="center"
        tools:ignore="MissingConstraints" />

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

ANDROID_MAIN.JAVA:

```
package com.example.helloworldapplication;

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;

public class MainActivity extends AppCompatActivity {

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

        setContentView(R.layout.activity_main);

    }
}
```

ANDROID MANIFEST.XML:

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.HelloWorldApplication"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

BASIC HELLO WORLD APPLICATION

OUTPUT:

2.LINKING ACTIVITIES USING INTENTS

ACTIVITY_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">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="91dp"
        android:text="@string/linking_activities_using_intent"
        android:textAlignment="center"
        android:textSize="28sp" />

    <EditText
        android:id="@+id/etNumber"
        android:layout_width="match_parent"
        android:layout_height="66dp"
        android:hint="@string/enter_a_number"
        android:inputType="number" />

    <Button
        android:id="@+id/btnSend"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:text="@string/send_to_next_screen" />

</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.numberlist;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

private EditText etNumber;
private Button btnSend;

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

etNumber = findViewById(R.id.etNumber);
btnSend = findViewById(R.id.btnSend);

btnSend.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
String numberStr = etNumber.getText().toString();

if (!numberStr.isEmpty()) {
int number = Integer.parseInt(numberStr);
```

```
    Intent intent = new Intent(MainActivity.this, MainActivity2.class);
    intent.putExtra("NUMBER", number);
    startActivity(intent);
    } else {
    Toast.makeText(MainActivity.this, "Please enter a number",
Toast.LENGTH_SHORT).show();
    }
    }
    });
    }
    }
```

ACTIVITY_XML2:

```
?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">

<ListView
   android:id="@+id/listView"
   android:layout_width="match_parent"
   android:layout_height="731dp" />
</LinearLayout>
```

MAINACTIVITY2.JAVA:

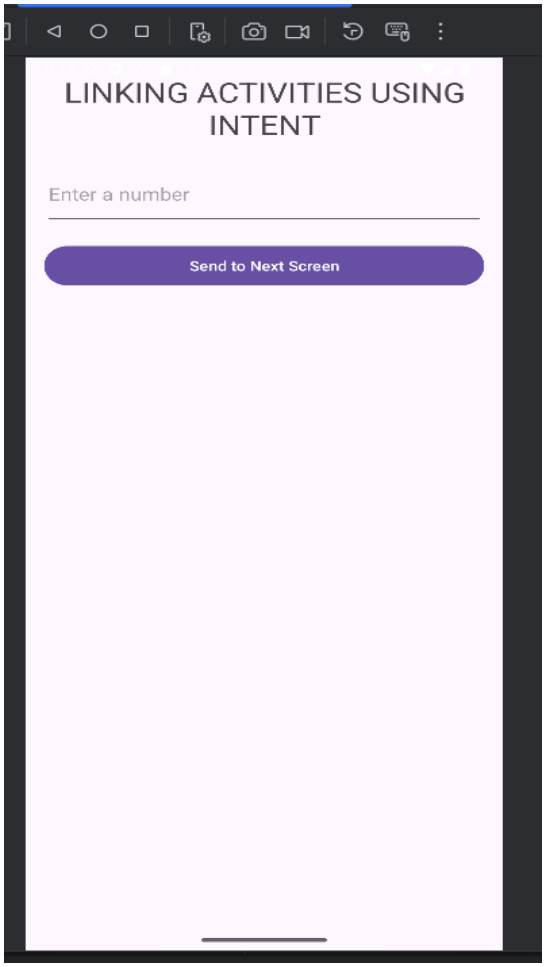
```
package com.example.numberlist;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;

public class MainActivity2 extends AppCompatActivity {
private ListView listView;

@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main2);

listView = findViewById(R.id.listView);

int number = getIntent().getIntExtra("NUMBER", 0);
if (number > 0) {
ArrayList<String> items = new ArrayList<>();
for (int i = 1; i <= number; i++) {
items.add("Item " + i);
}
ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
android.R.layout.simple_list_item_1, items);
    listView.setAdapter(adapter);
    } else {
    Toast.makeText(this, "Invalid number", Toast.LENGTH_SHORT).show();
    }
    }
    }
```

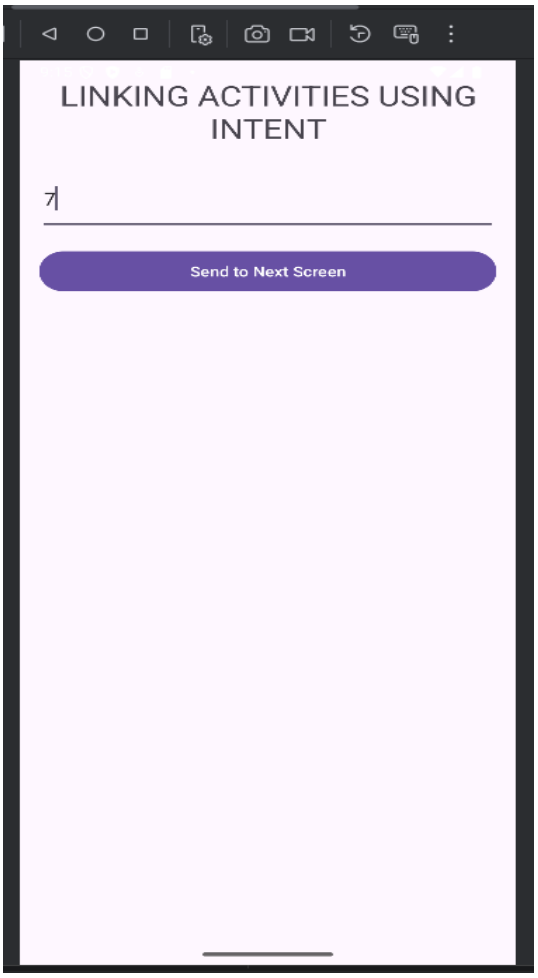
MANIFEST.JAVA:

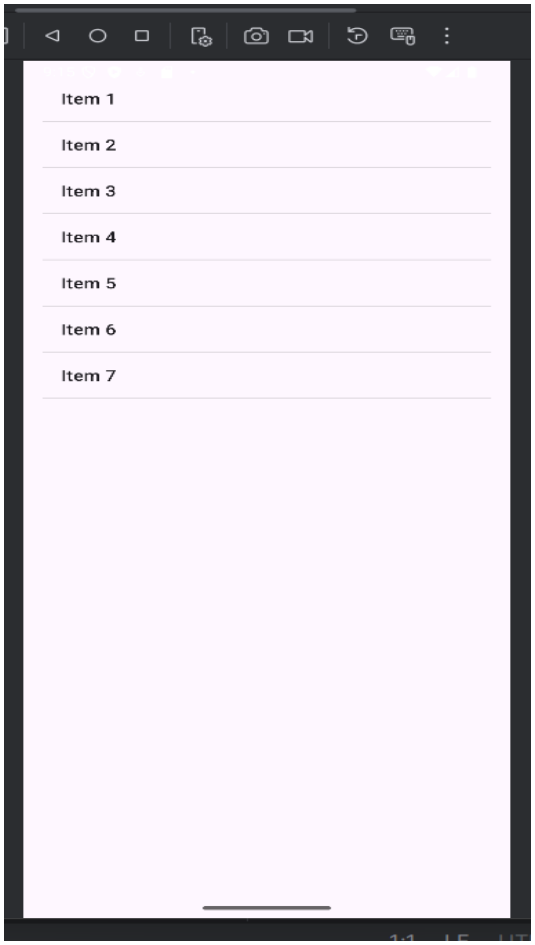
```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Numberlist"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity2"
            android:exported="false" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

LINKING ACTIVITIES USING INTENTS

OUTPUT:






Item 1
Item 2
Item 3
Item 4
Item 5
Item 6
Item 7

3.MENU BASED APPLICATION

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">


    <!-- App Toolbar (If you want an actual app title bar) -->
    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="?attr/colorPrimary"
        android:theme="@style/ThemeOverlay.AppCompat.ActionBar"/>
    <!-- Title for Menu App -->
     <Space
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"/>

<!-- Centered Text -->
    <TextView
        android:id="@+id/center_text"
        android:text=".Menu"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textAlignment="center"
        android:textSize="24sp"
```

```
        android:textStyle="bold"
        android:gravity="center"
        android:textColor="@android:color/black"/>

    <!-- Spacer to Keep the Text Centered -->
    <Space
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"/>


</LinearLayout>
```

MENU.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
   <item
      android:id="@+id/blue"
      android:title="BLUE"/>
   <item
      android:id="@+id/green"
      android:title="GREEN"/>
   <item
      android:id="@+id/red"
      android:title="RED"/>
</menu>
```

STRING.XML:

```
<resources>

<string name="blue">BLUE</string>
<string name="green">GREEN</string>
<string name="red">RED</string>
<string name="menu_text">This is menu</string>

</resource>
```

COLORS.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
   <color name="black">#FF000000</color>
   <color name="white">#FFFFFFFF</color>
   <color name="blue">#0000FF</color>
   <color name="green">#00FF00</color>
   <color name="red">#FF00</color>
</resources>
```

ANDROIDMANIFEST.XML:

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="Change the color of the screen"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Menu"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

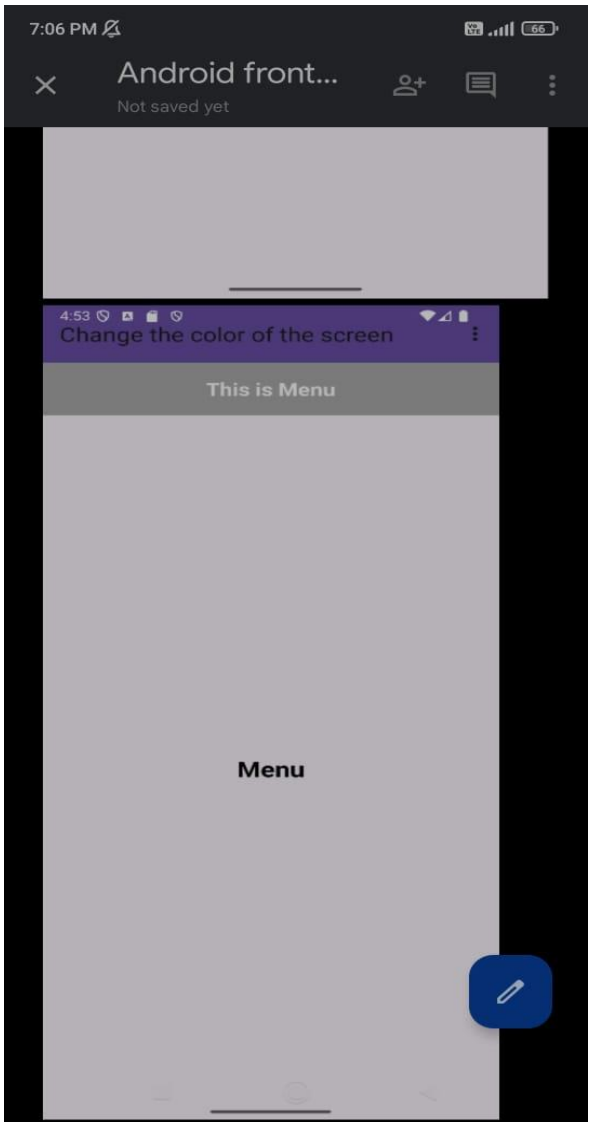
MAINACTIVITY.JAVA:

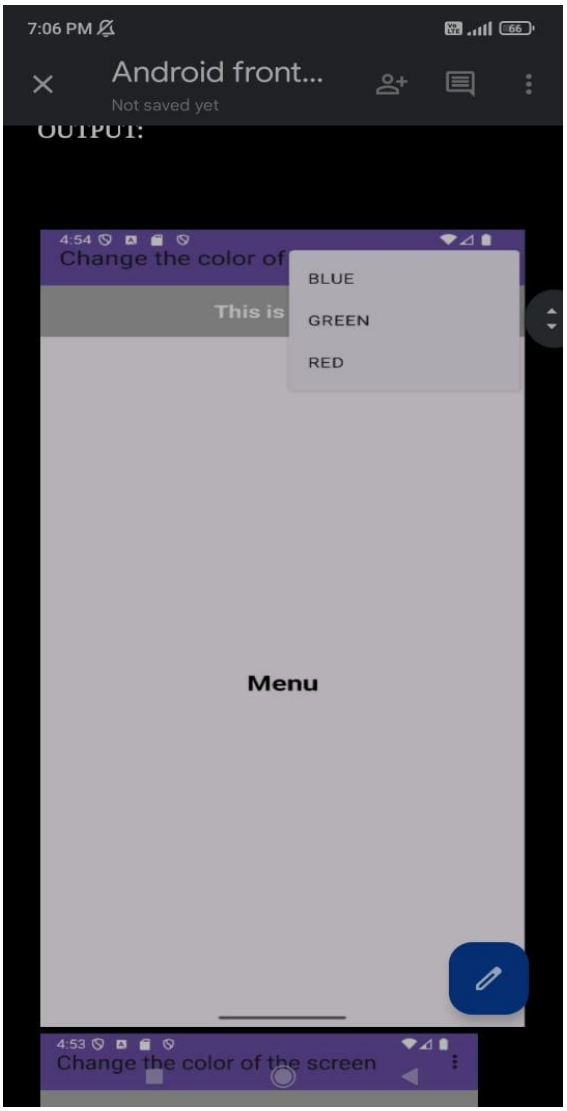
```
package com.example.menu;

import android.graphics.Color;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.LinearLayout;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        androidx.appcompat.widget.Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.menu, menu);
        return true;
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item)

    {
        int id= item.getItemId();
        LinearLayout mainLayout=findViewById(R.id.main);
        if(id==R.id.blue)
```

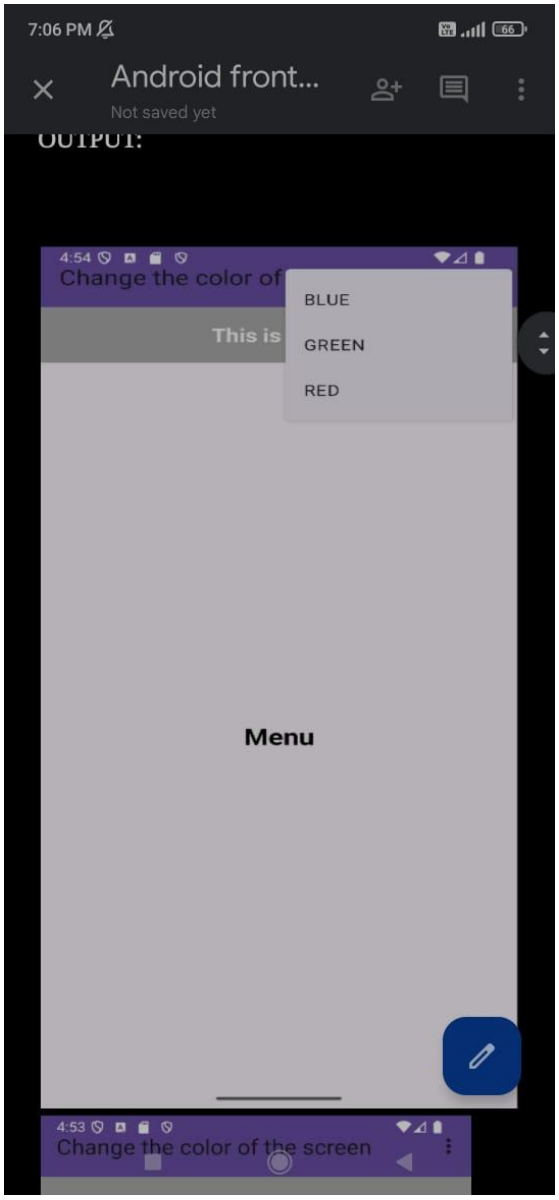
```
        {
            mainLayout.setBackgroundColor(Color.BLUE);
            return true;
        }
        if(id==R.id.green)
        {
            mainLayout.setBackgroundColor(Color.GREEN);
            return true;
        }
        if(id==R.id.red)
        {
            mainLayout.setBackgroundColor(Color.RED);
            return true;
        }
        return false;


    }
}
```

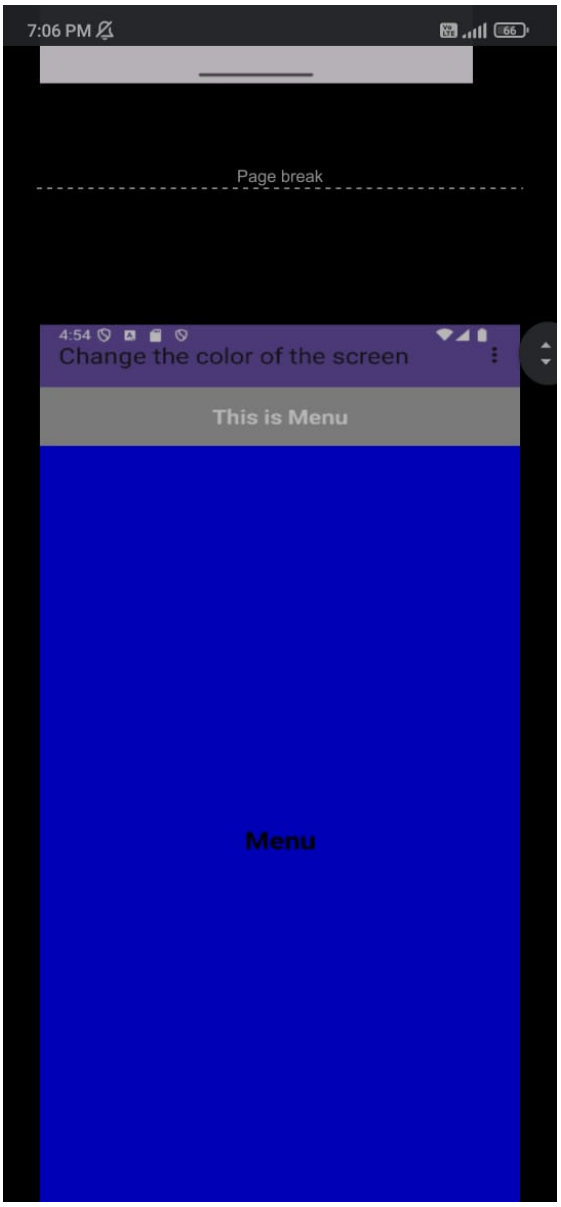
MENU BASED APPLICATION

OUTPUT:






7:06 PM
Android front...
Not saved yet
OUTPUT:
4:54
Change the color of
This is
BLUE
GREEN
RED
Menu
4:53
Change the color of the screen


7:06 PM
Page break
4:54
Change the color of the screen
This is Menu
Menu

4. DISPLAYING TOAST MESSAGE ON SPECIFIC INTERVAL OF TIME

ACTIVITY_MAIN.XML:

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Toast Message"
        android:textSize="20sp"
        android:textStyle="bold"/>

     <TextView

        android:id=”@+id/text_view”
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is Toast Message”

       android:textAlignment=”center”
</LinearLayout>
```

MAINACTIVITY.JAVA:

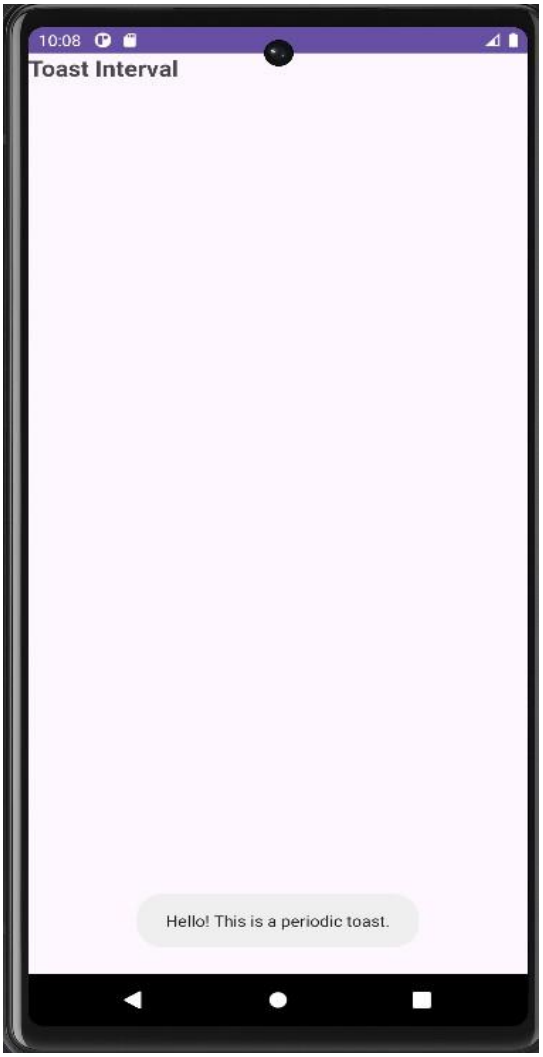
```
package com.example.message;

import android.os.Bundle;
import android.os.Handler;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private Handler handler = new Handler();
    private Runnable runnable;
    private final int INTERVAL = 5000; // 5 seconds interval

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

        runnable = new Runnable() {
            @Override
            public void run() {
                Toast.makeText(MainActivity.this, "This is a periodic toast!",
```

ANDROIDMANIFEST.XML:

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Message"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

OUTPUT:


10:17
Toast Interval


10:08
Toast Interval
Hello! This is a periodic toast.

5. APPLICATION TO MAKE A CALL TO SPECIFIC NUMBER

ACTIVITY_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">

    <EditText
        android:id="@+id/editTextPhoneNumber"
        android:layout_width="match_parent"
        android:layout_height="76dp"
        android:hint="Enter phone number"
        android:inputType="phone" />

    <Button
        android:id="@+id/buttonCall"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Call Number"
        android:layout_marginTop="16dp" />

</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.callnumberapp;

import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;

public class MainActivity extends AppCompatActivity {

    private EditText editTextPhoneNumber;
    private Button buttonCall;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        editTextPhoneNumber = findViewById(R.id.editTextPhoneNumber);
        buttonCall = findViewById(R.id.buttonCall);
        buttonCall.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String phoneNumber = editTextPhoneNumber.getText().toString().trim();
```

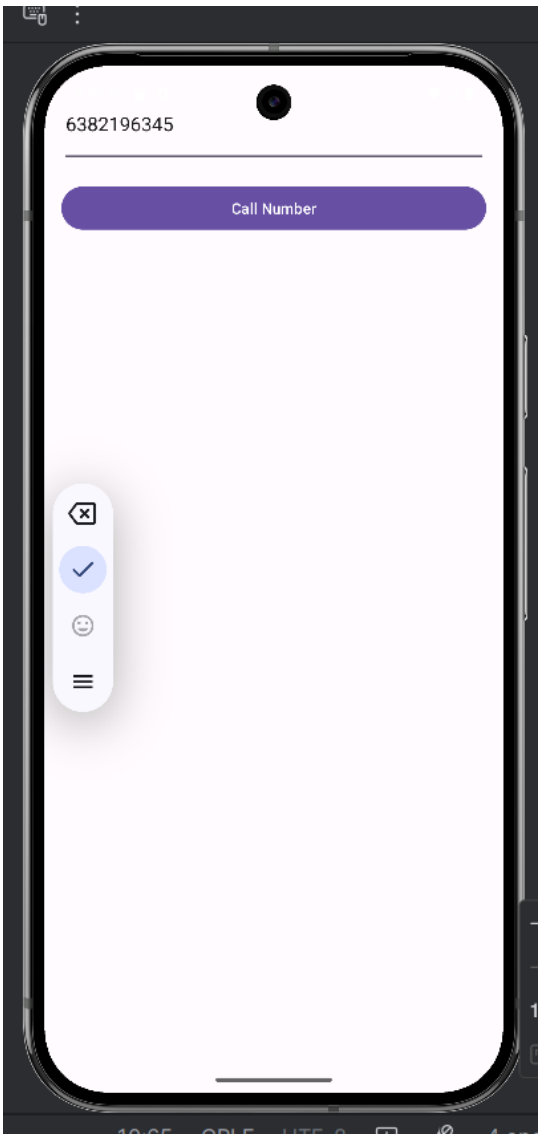
```
            if (phoneNumber.isEmpty()) {
                Toast.makeText(MainActivity.this, "Please enter a phone number",
Toast.LENGTH_SHORT).show();
            } else {
                makePhoneCall(phoneNumber);
            } }

  });
    }
    private void makePhoneCall(String phoneNumber) {
        if (ContextCompat.checkSelfPermission(this, Manifest.permission.CALL_PHONE) !=
PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.CALL_PHONE}, 1);
        } else {
            Intent callIntent = new Intent(Intent.ACTION_CALL);
            callIntent.setData(Uri.parse("tel:" + phoneNumber));
            startActivity(callIntent);
        }

}
    @Override
    public void onRequestPermissionsResult(int requestCode, String[] permissions, int[]
grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if (requestCode == 1) {
            if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                String phoneNumber = editTextPhoneNumber.getText().toString().trim();
                makePhoneCall(phoneNumber);
            } else {
                Toast.makeText(this, "Permission DENIED", Toast.LENGTH_SHORT).show();
            }
        }
    }
}
```

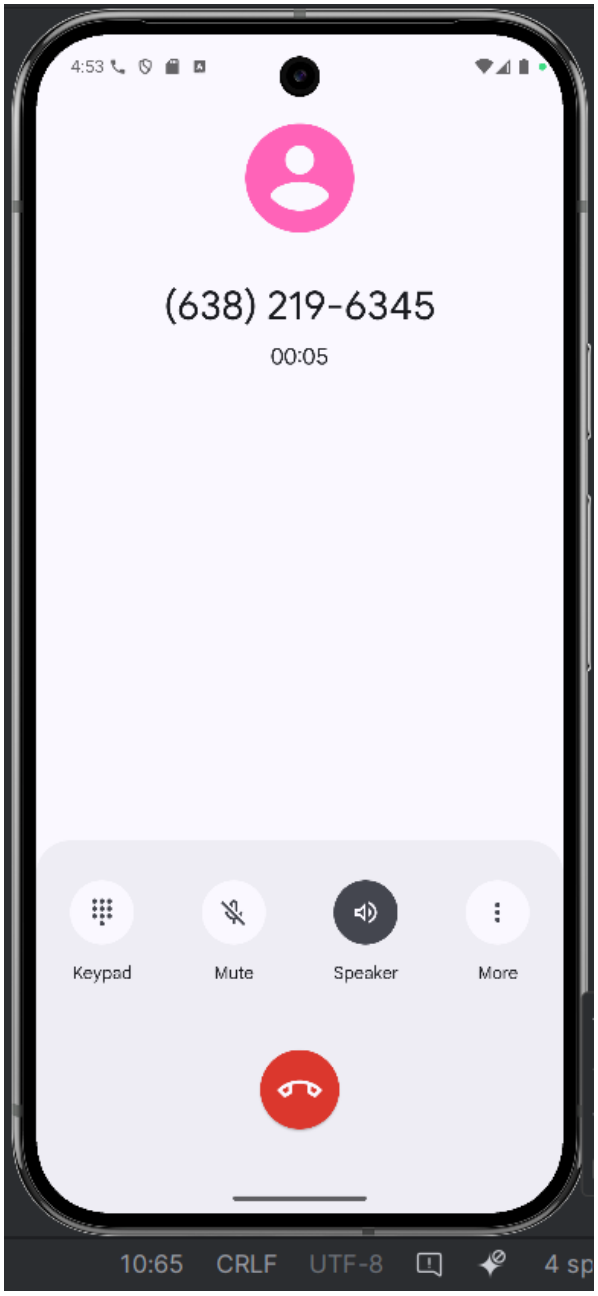
MANIFEST.XML:

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

    <uses-permission-sdk-23 android:name="android.permission.CALL_PHONE"/>

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Callnumberapp"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

</manifest>
```

APPLICATION TO MAKE A CALL TO SPECIFIC NUMBER

OUTPUT:




4:53
(638) 219-6345
00:05
Keypad
Mute
Speaker
More
10:65
CRLF
UTF-8
4 sp

6. READING PHONEBOOK CONTACTS

ACTIVITY_XML:

```
<?xml version="1.0" encoding="utf-8"?>
<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"
    android:padding="16dp">

    <TextView
        android:id="@+id/heading"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Reading The Phonebook Contacts"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_marginBottom="20dp"
        android:textColor="#000000"
        android:gravity="top"
        android:layout_gravity="top"
        android:layout_marginTop="20dp"/>

    <ListView
        android:id="@+id/listViewContacts"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.phonebookcontacts;


import android.Manifest;

import android.content.ContentResolver;
import android.content.pm.PackageManager;
import android.database.Cursor;
import android.os.Bundle;

import android.provider.ContactsContract;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import java.util.ArrayList;


public class MainActivity extends AppCompatActivity {


    private static final int REQUEST_CONTACTS = 100;
    ListView contactsListView;
    ArrayList<String> contactsList;
    ArrayAdapter<String> adapter;
    @Override

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

```
        contactsListView = findViewById(R.id.listViewContacts);
        contactsList = new ArrayList<>();
        adapter = new ArrayAdapter<>(this, android.R.layout.simple_list_item_1, contactsList);
        contactsListView.setAdapter(adapter);


if (ContextCompat.checkSelfPermission(this,
Manifest.permission.READ_CONTACTS)
                != PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(this,
                    new String[]{Manifest.permission.READ_CONTACTS},
REQUEST_CONTACTS);
        } else {
            fetchContacts();
        } }
    private void fetchContacts() {
        ContentResolver resolver = getContentResolver();
        Cursor cursor =
resolver.query(ContactsContract.CommonDataKinds.Phone.CONTENT_URI,
                null, null, null, null);
        if (cursor != null) {
            while (cursor.moveToNext()) {
                String name =
cursor.getString(cursor.getColumnIndexOrThrow(ContactsContract.CommonDataKinds.Pho
ne.DISPLAY_NAME));
                String phoneNumber =
cursor.getString(cursor.getColumnIndexOrThrow(ContactsContract.CommonDataKinds.Pho
ne.NUMBER));
                contactsList.add(name + " : " + phoneNumber);
            }
```

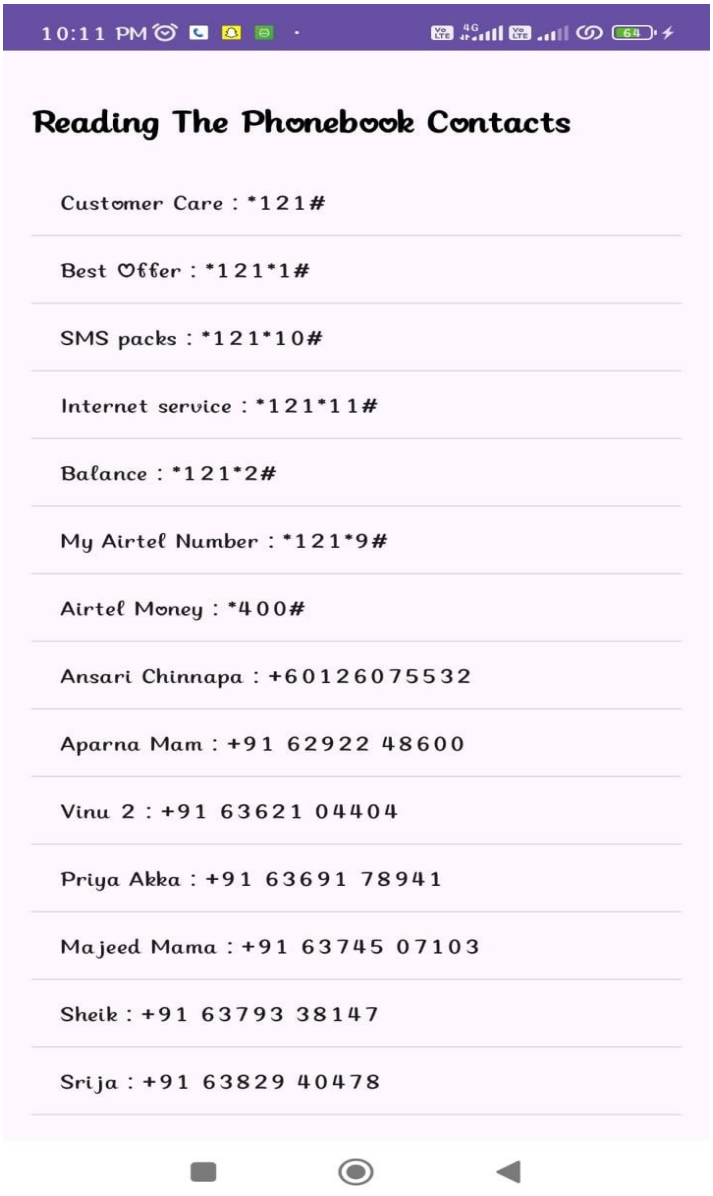
```
            cursor.close();
            }
        adapter.notifyDataSetChanged();
    }
    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
                                           @NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if (requestCode == REQUEST_CONTACTS) {
            if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                fetchContacts();
            } else {
                Toast.makeText(this, "Permission Denied!", Toast.LENGTH_SHORT).show();
            }
        }
    }
```

MANIFEST.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-permission android:name="android.permission.READ_CONTACTS"/>

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.PhonebookContacts"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />


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


</manifest>
```

READING PHONEBOOK CONTACTS

OUTPUT:



7. PLAYING MEDIA FROM INTERNAL STORAGE

ACTIVITY_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:orientation="vertical"
    android:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/playButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Play Media" />

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

```
        android:layout_height="wrap_content"
        android:paddingTop="16dp"
        android:text="No media selected"
        android:textSize="18sp" />

</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.mediaapp;


import android.content.Intent;
import android.content.pm.PackageManager;
import android.database.Cursor;
import android.media.MediaPlayer;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.widget.Button;
import android.widget.TextView;
import android.Manifest;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;


public class MainActivity extends AppCompatActivity {
    private static final int REQUEST_PERMISSION = 1;
    private MediaPlayer mediaPlayer;
    private TextView mediaFn;



    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        mediaFn=findViewById(R.id.mediaFileName);
        Button playBtn=findViewById(R.id.playButton);

        if (ContextCompat.checkSelfPermission(this,
Manifest.permission.READ_EXTERNAL_STORAGE) !=
                PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(this,
                    new String[]{Manifest.permission.READ_EXTERNAL_STORAGE},
                    REQUEST_PERMISSION);
        }
        playBtn.setOnClickListener(view -> {

            Intent intent = new Intent(Intent.ACTION_PICK);
            intent.setType("audio/*");
            startActivityIfNeeded(intent, 100);
        });
    }
    @Override
    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if (resultCode == RESULT_OK && requestCode == 100) {
            // Get the selected file URI
            Uri fileUri = data.getData();
```

```
            if (fileUri != null) {
                String fileName = getFileName(fileUri);
                playMedia(fileUri);
                mediaFn.setText(fileName); // Display the file name
            }
        }
    }
    private String getFileName(Uri uri) {
        String fileName = null;
        String[] projection = {MediaStore.MediaColumns.DISPLAY_NAME}; // Query for the
display name (file name)

        // Query the media store for the file name
        try (Cursor cursor = getContentResolver().query(uri, projection, null, null, null)) {
            if (cursor != null && cursor.moveToFirst()) {
                int columnIndex =
cursor.getColumnIndexOrThrow(MediaStore.MediaColumns.DISPLAY_NAME);
                fileName = cursor.getString(columnIndex); // Get the file name
            }
        }
        if (fileName == null) {

            fileName = uri.getLastPathSegment();
        }
        return fileName;
    }
    private void playMedia(Uri fileUri) {
```

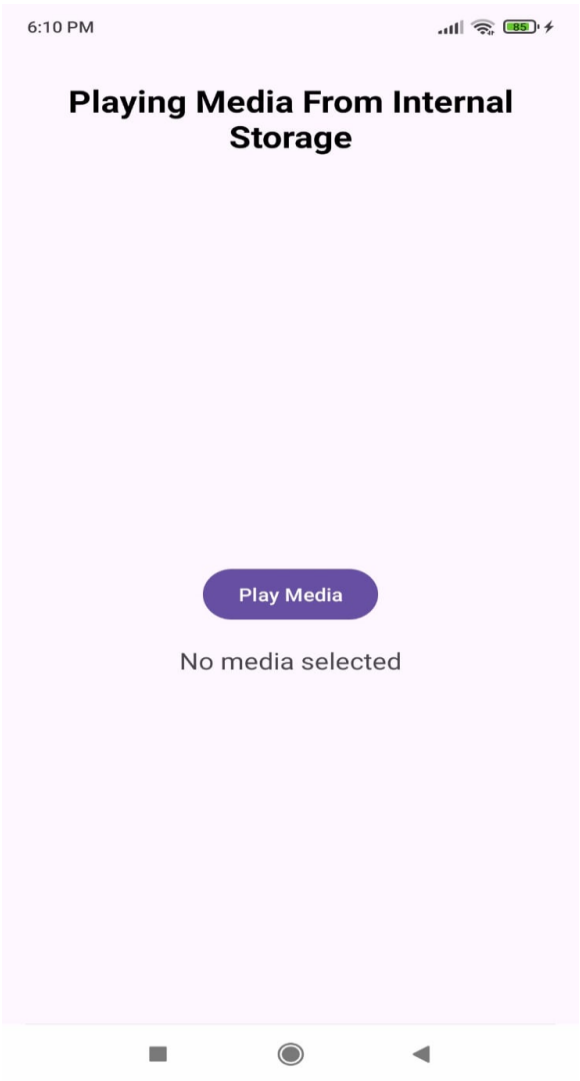
```
        if (mediaPlayer != null) {
            mediaPlayer.release(); // Release any previous media
        }
        try {
            mediaPlayer = new MediaPlayer();
            mediaPlayer.setDataSource(this, fileUri);
            mediaPlayer.prepare();
            mediaPlayer.start();
        } catch (Exception e) {
            Toast.makeText(this, "Error playing media", Toast.LENGTH_SHORT).show();
        }
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        if (mediaPlayer != null) {
            mediaPlayer.release();
        }
    }
}
```

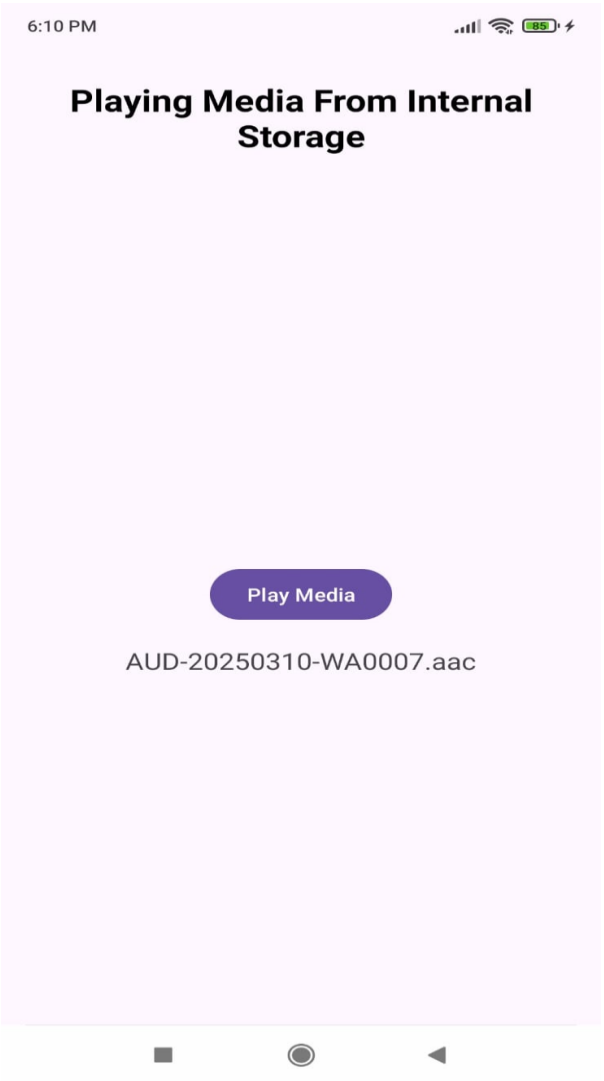
MANIFEST.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.mediaapp">
    <!-- Permission to read external storage (required for Android < 10) -->
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
    <uses-permission android:name="android.permission.READ_MEDIA_AUDIO"/>
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Mediaapp">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

PLAYING MEDIA FROM INTERNAL STORAGE

OUTPUT:





8.LOGIN APPLICATION

MAIN_ACTIVITY.XML

```
<?xml version=”1.0” encoding=”utf-8”?>
<LinearLayout xmlns:android=
      Android:layout_width=”match_parent”
      Android:layout_height=”match_parent”
      Android:orientation=”vertical”
     Android:padding=”16dp”>
   <EditText
        Android:id=”@+id/editTextUsername”
       Android:layout_width=”match_parent”
       Android:layout_height=”wrap_content”
      Android:hint=”Username” />
  <EditText
       Android:id=”@+id/editTextPassword”
      Android:layout_width=”match_parent”
      Android:layout_height=”wrap_content”
     Android:hint=”Password”
     Android:inputType=”textPassword” />
  <Button
      Android:id=”@+id/buttonLogin”
     Android:layout_width=”match_parent”
    Android:layout_height=”wrap_content”
   Android:text=”Login” />
</LinearLayout>
```

MAIN_ACTIVITY.JAVA:

```
Package com.example.loginapp;

Import android.content.Intent;

Import android.os.Bundle;

Import android.view.View;

Import android.widget.Button;

Import android.widget.EditText;

Import android.widget.Toast;

Import androidx.appcompat.app.AppCompatActivity;

Public class MainActivity extends AppCompatActivity {

 EditText editTextUsername, editTextPassword;

 Button buttonLogin;


Final String validUsername = “admin”;

 Final String validPassword = “password123”;

 @Override

Protected void onCreate(Bundle savedInstanceState) {

   Super.onCreate(savedInstanceState);

  setContentView(R.layout.activity_main);

  editTextUsername = findViewById(R.id.editTextUsername);

  editTextPassword = findViewById(R.id.editTextPassword);

  buttonLogin = findViewById(R.id.buttonLogin);

 buttonLogin.setOnClickListener(new View.OnClickListener() {

@Override

  Public void onClick(View v) {
```

```
  String username = editTextUsername.getText().toString();
  String password = editTextPassword.getText().toString();
  If (username.equals(validUsername) &&   password.equals(validPassword)) {
  // Successful login – move to next screen
Intent intent = new Intent(MainActivity.this, WelcomeActivity.class);
Intent.putExtra("username", username);
 startActivity(intent);
      } else {
  // Login failed – show toast
 Toast.makeText(MainActivity.this, "Invalid username or password",
Toast.LENGTH_SHORT).show();
          }
}
});
}
```

WELCOME ACTIVITY.XML:

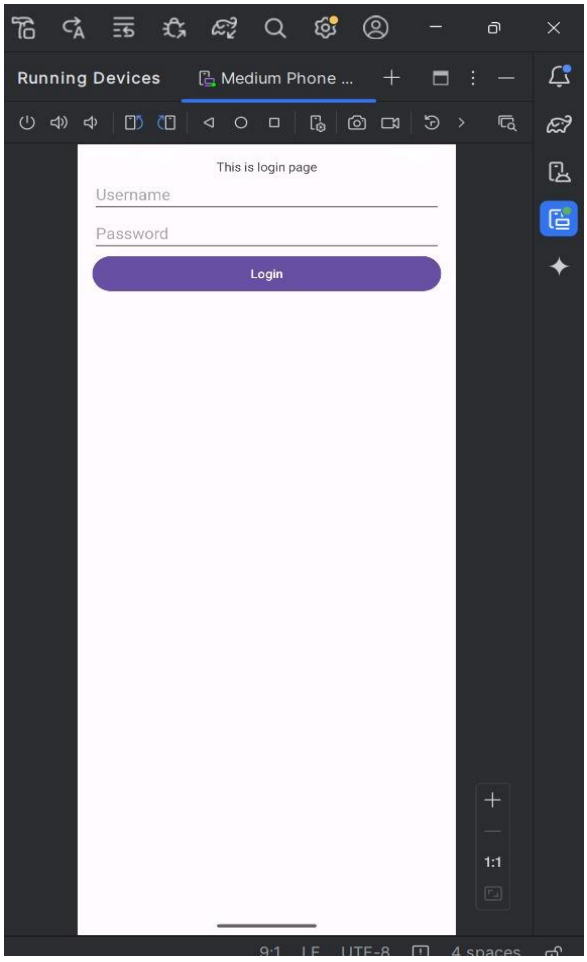
```
<?xml version=”1.0” encoding=”utf-8”?>
<LinearLayout xmlns:android=http://schemas.android.com/apk/res/android
   Android:layout_width=”match_parent”
 Android:layout_height=”match_parent”
  Android:orientation=”vertical”
  Android:padding=”16dp”>
<TextView
    Android:id=”@+id/textViewWelcome”
   Android:layout_width=”wrap_content”
  Android:layout_height=”wrap_content”
 Android:text=”Welcome”
  Android:textSize=”24sp”
  Android:textStyle=”bold” />
 </LinearLayout>
```

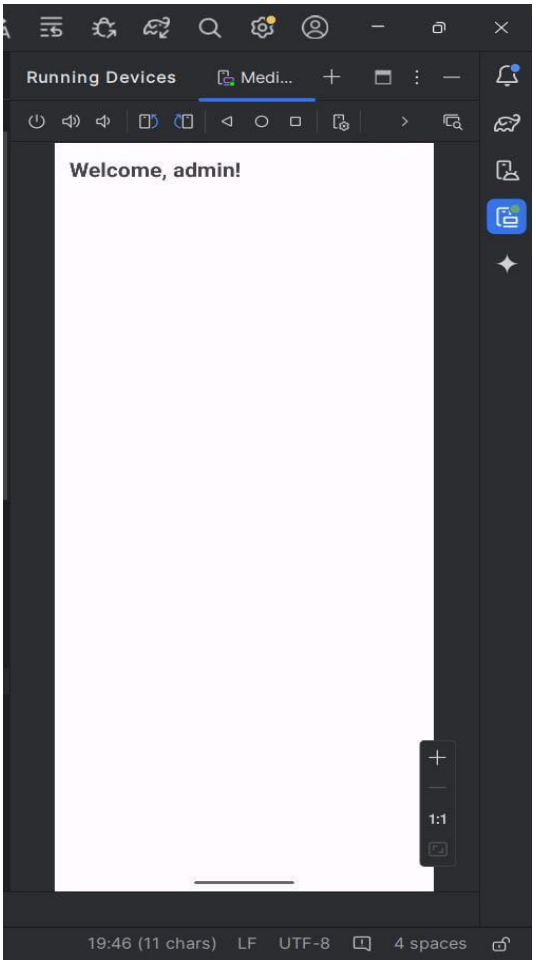
WELCOME ACTIVITY.JAVA:

```
Package com.example.loginapp;
Import android.os.Bundle;
Import android.widget.TextView;
Import androidx.appcompat.app.AppCompatActivity;
Public class WelcomeActivity extends AppCompatActivity {
TextView textViewWelcome;
 @Override
   Protected void onCreate(Bundle savedInstanceState) {
   Super.onCreate(savedInstanceState);
  setContentView(R.layout.activity_welcome);
  textViewWelcome = findViewById(R.id.textViewWelcome);
 // Get the username passed from MainActivity
String username = getIntent().getStringExtra("username");
textViewWelcome.setText("Welcome, " + username + "!");
    }
}
```

LOGIN APPLICATION

OUTPUT :





9.CRUD OPERATION ON A DATABASE

ACTIVITY_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="20dp">

    <EditText
        android:id="@+id/editTextName"
        android:layout_width="match_parent"
        android:layout_height="55dp"
        android:hint="@string/enter_name" />

    <EditText
        android:id="@+id/editTextId"
        android:layout_width="match_parent"
        android:layout_height="64dp"
        android:hint="@string/enter_id_for_update_delete" />

    <Button
        android:id="@+id/buttonInsert"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/insert" />

    <Button
        android:id="@+id/buttonView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/view_data" />
```

```
    <Button
        android:id="@+id/buttonUpdate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/update" />

    <Button
        android:id="@+id/buttonDelete"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/delete" />

    <TextView
        android:id="@+id/textViewResults"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="16sp" />
</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.crud;

import android.database.Cursor;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    DbHelper db;
    EditText editTextName, editTextId;
    TextView textViewResults;

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

        db = new DbHelper(this);
        editTextName = findViewById(R.id.editTextName);
        editTextId = findViewById(R.id.editTextId);
        textViewResults = findViewById(R.id.textViewResults);
        Button buttonInsert = findViewById(R.id.buttonInsert);
        Button buttonView = findViewById(R.id.buttonView);
        Button buttonUpdate = findViewById(R.id.buttonUpdate);
        Button buttonDelete = findViewById(R.id.buttonDelete);

        buttonInsert.setOnClickListener(v -> {
```

```
    String name = editTextName.getText().toString();
    if (name.isEmpty()) {
        Toast.makeText(this, "Enter a name", Toast.LENGTH_SHORT).show();
        return;
    }
    db.insertData(name);
    Toast.makeText(this, "Inserted", Toast.LENGTH_SHORT).show();
});


buttonView.setOnClickListener(v -> {
    Cursor cursor = db.getData();
    StringBuilder result = new StringBuilder();
    while (cursor.moveToNext()) {
        result.append("ID: ").append(cursor.getInt(0))
                .append(", Name: ").append(cursor.getString(1))
                .append("\n");
    }
    textViewResults.setText(result.length() > 0 ? result.toString() : "No Data");
});

buttonUpdate.setOnClickListener(v -> {
    String idStr = editTextId.getText().toString();
    String name = editTextName.getText().toString();
    if (idStr.isEmpty() || name.isEmpty()) {
        Toast.makeText(this, "Enter ID and new name", Toast.LENGTH_SHORT).show();
        return;
    }
    int id = Integer.parseInt(idStr);
    db.updateData(id, name);
    Toast.makeText(this, "Updated", Toast.LENGTH_SHORT).show();
});


buttonDelete.setOnClickListener(v -> {
    String idStr = editTextId.getText().toString();
```

```
        if (idStr.isEmpty()) {
            Toast.makeText(this, "Enter ID to delete", Toast.LENGTH_SHORT).show();
            return;
        }
        int id = Integer.parseInt(idStr);
        db.deleteData(id);
        Toast.makeText(this, "Deleted", Toast.LENGTH_SHORT).show();
    });
  }
}
```

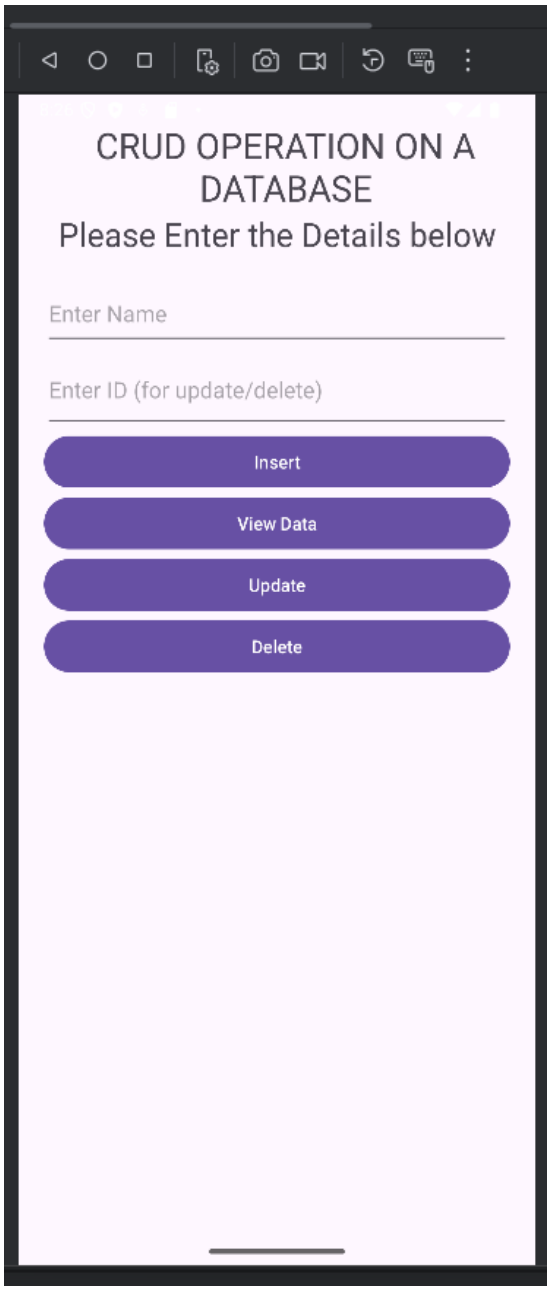
DBHELPER.JAVA:

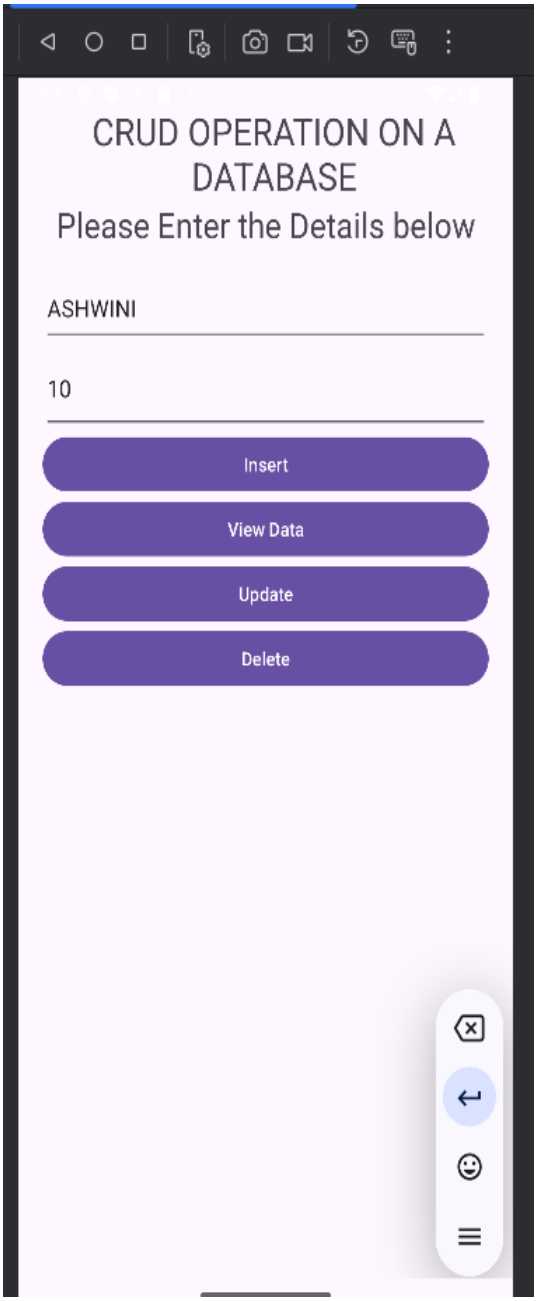
```
package com.example.crud;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class DbHelper extends SQLiteOpenHelper {

    public DbHelper(Context context) {
        super(context, "MyDB", null, 1);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE users(id INTEGER PRIMARY KEY
AUTOINCREMENT, name TEXT)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS users");
        onCreate(db);
    }
    public void insertData(String name) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put("name", name);
        db.insert("users", null, values);
    }

    public Cursor getData() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM users", null);
    }
```

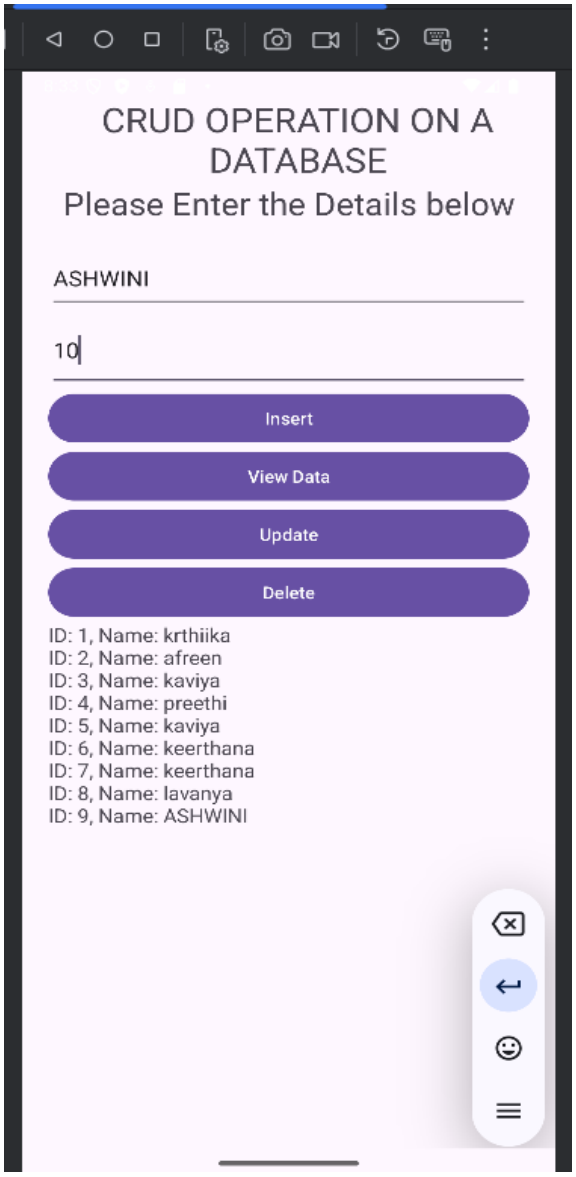
```
    public void updateData(int id, String name) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put("name", name);
        db.update("users", values, "id=?", new String[]{String.valueOf(id)});
    }
    public void deleteData(int id) {
        SQLiteDatabase db = this.getWritableDatabase();
        db.delete("users", "id=?", new String[]{String.valueOf(id)});
    }
}
```

CRUD OPERATION ON A DATABASE

OUTPUT:






CRUD OPERATION ON A DATABASE
Please Enter the Details below
ASHWINI
10
Insert
View Data
Update
Delete
ID: 1, Name: krthiika
ID: 2, Name: afreen
ID: 3, Name: kaviya
ID: 4, Name: preethi
ID: 5, Name: kaviya
ID: 6, Name: keerthana
ID: 7, Name: keerthana
ID: 8, Name: lavanya
ID: 9, Name: ASHWINI

10. OPENING AN URL INSIDE THE APPLICATION

ANDROIDMANIFEST.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="com.example.urlwebviewapp">
    <uses-permission android:name="android.permission.INTERNET" />
    <application
        android:allowBackup="true"
        android:fullBackupContent="@@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Urlwebviewapp"
        tools:targetApi="31">
        <activity
            android:name=".WebActivity"
            android:exported="true" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
```

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

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

MAIN_ACTIVITY.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".MainActivity" >
    <TextView
        android:id="@+id/heading"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="URL Program"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_marginBottom="20dp"
        android:textColor="#000000"
        android:gravity="top"
        android:layout_gravity="top"
        android:layout_marginTop="20dp"/>
```

```
<EditText
    android:id="@+id/link"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textSize="21dp"
    android:padding="4dp"
    android:layout_margin="4dp"
    android:hint="Enter a url"/>
<Button
    android:id="@+id/click"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Open Webpage"/>

</LinearLayout>
```

ACTIVITY_MAIN.JAVA:

```
package com.example.urlwebviewapp;
import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        EditText et = findViewById(R.id.link);
        Button btn = findViewById(R.id.click);
        btn.setOnClickListener(v -> {
            String url=et.getText().toString();
            if (!url.isEmpty()) {
                Intent intent = new Intent(MainActivity.this, WebActivity.class);
                intent.putExtra("URL", url);
                startActivity(intent);
            } });
    } }
```

WEB_ACTIVITY.XML:

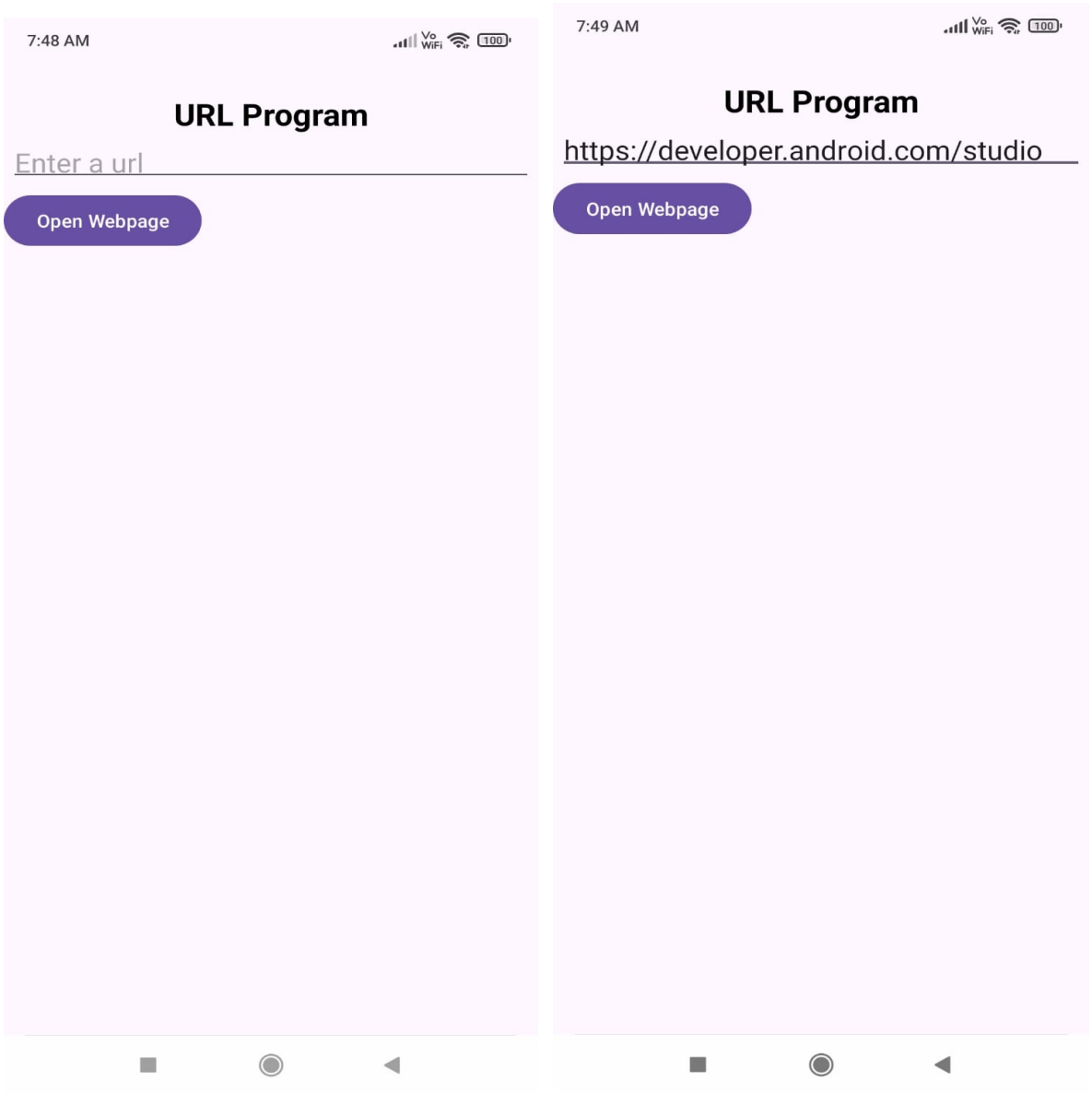
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <WebView
        android:id="@+id/wv1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```

WEB_ACTIVITY.JAVA:

```
package com.example.urlwebviewapp;
import android.os.Bundle;
import android.webkit.WebView;
import android.webkit.WebViewClient;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
public class WebActivity extends AppCompatActivity {
   WebView wv1;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
       EdgeToEdge.enable(this);
       setContentView(R.layout.activity_web);
       wv1 = findViewById(R.id.wv1);
       wv1.getSettings().setJavaScriptEnabled(true);
       wv1.setWebViewClient(new WebViewClient());
       String url = getIntent().getStringExtra("URL");
       if (url != null && !url.isEmpty())
          wv1.loadUrl(url);            }
   @Override
          public void onBackPressed() {
             if(wv1.canGoBack()) {
                wv1.goBack();
             }else{
                super.onBackPressed();   }          }     }
```

OPENING AN URL INSIDE THE APPLICATION

OUTPUT:



Android Studio

The official IDE for Android app development now accelerates your productivity with Gemini in Android Studio, your AI-powered coding companion.

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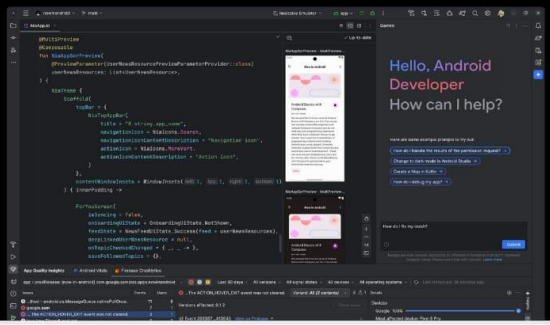


11. NAVIGATING TO SPECIFIC LOCATION IN MAP

ACTIVITY_MAIN.XML:

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

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


<TextView

        android:id="@+id/heading"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Enter location to navigate"
        android:textSize="24sp" android:textStyle="bold"
        android:layout_marginBottom="20dp"
        android:textColor="#000000" android:gravity="top"
        android:layout_gravity="top"
        android:layout_marginTop="20dp"/>


<EditText

        android:id="@+id/etSrc"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Source Location" />
<EditText

        android:id="@+id/etDest"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Destination Location" />
```

```
<Button

    android:id="@+id/btnDir"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:padding="20dp" android:text="Navigate" />
</LinearLayout>
```

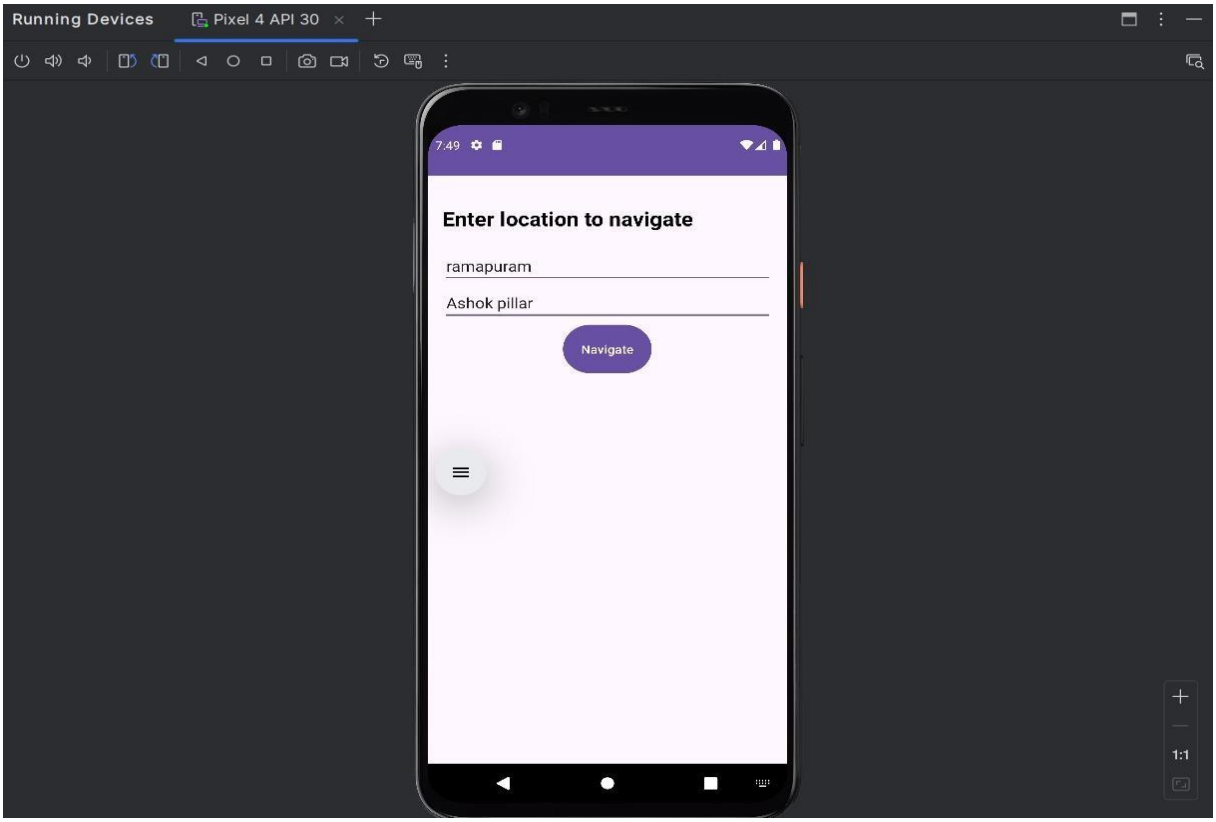
MAINACTIVITY.JAVA:

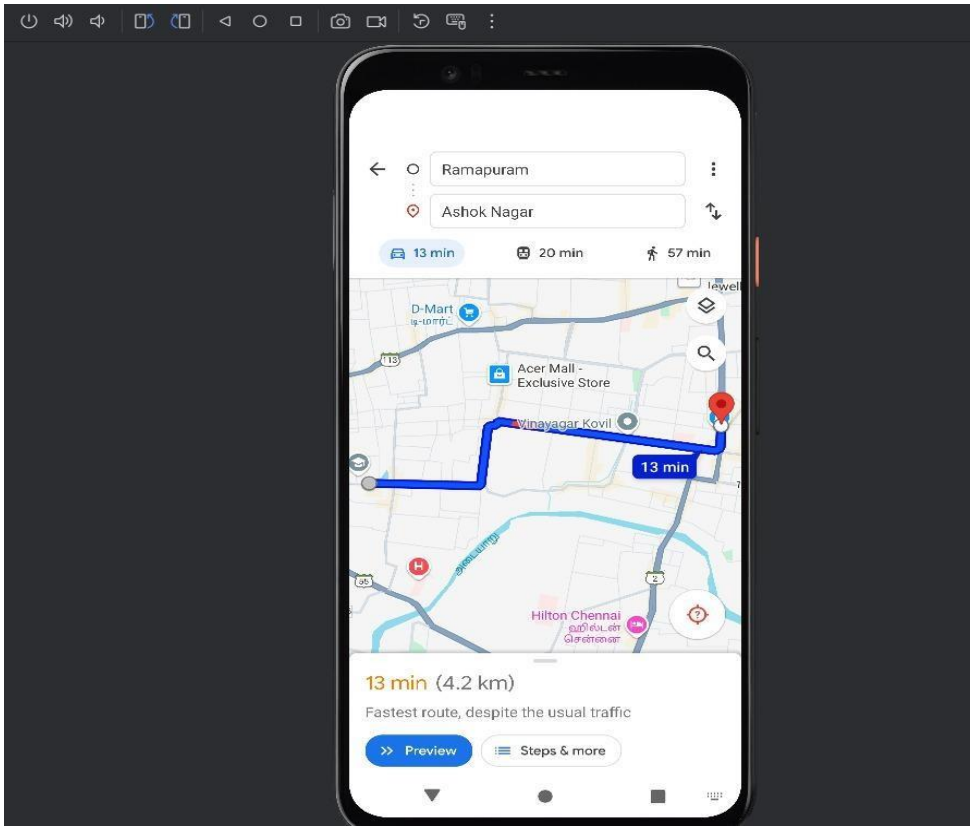
```
package com.example.program11;

import android.content.ActivityNotFoundException;
import android.content.Intent;
import android.net.Uri;  import
android.os.Bundle; import
android.view.View; import
android.widget.Button;
import android.widget.EditText; import
android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity { private
    EditText srcEt, destEt;
    private Button dirBtn;

    @Override

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


        srcEt = findViewById(R.id.etSrc); destEt =
        findViewById(R.id.etDest); dirBtn =
        findViewById(R.id.btnDir);

dirBtn.setOnClickListener(new View.OnClickListener() {

        @Override
            public void onClick(View v) {
                (srcEt.getText().toString().isEmpty() ||
destEt.getText().toString().isEmpty()) {
```

```
                Toast.makeText(MainActivity.this, "Please enter source and destination location.", Toast.LENGTH_SHORT).show();
            } else {
                openMapsIntent(srcEt.getText().toString(), destEt.getText().toString());
            }
        }
    });
}
private void openMapsIntent(String source, String destination) { try {
        // FIX: Updated Google Maps URL with api=1 for proper navigation
        Uri uri = Uri.parse("https://www.google.com/maps/dir/?api=1&origin=" + source + "&destination=" + destination);
        Intent i = new Intent(Intent.ACTION_VIEW, uri);
        i.setPackage("com.google.android.apps.maps");
        i.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
        startActivity(i);
    } catch (ActivityNotFoundException e) {

        Uri uri = Uri.parse("https://play.google.com/store/apps/details?id=com.google.android.apps.ma ps");
        Intent i = new Intent(Intent.ACTION_VIEW, uri);
        i.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
        startActivity(i);
    }
}
```

NAVIGATING TO SPECIFIC LOCATION IN MAP

OUTPUT:





12. SENDING SMS TO ENTERED MOBLIE NUMBER

MANIFEST.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.smsmonitor">
    <!-- Permissions for SMS Monitoring -->
    <uses-permission android:name="android.permission.RECEIVE_SMS"/>
    <uses-permission android:name="android.permission.SEND_SMS"/>
    <uses-permission android:name="android.permission.READ_SMS"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN"/>
                <category android:name="android.intent.category.LAUNCHER"/>
            </intent-filter>
        </activity>
```

```
        <!-- SMS Received Broadcast Receiver -->
        <receiver android:name=".SMSReceiver">
            <intent-filter>
                <action android:name="android.provider.Telephony.SMS_RECEIVED"/>
            </intent-filter>
        </receiver>
    </application>
</manifest>
```

ACTIVITY_MAIN.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="20dp">
    <TextView
        android:id="@+id/txtStatus"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SMS Status will be displayed here"
        android:textSize="18sp"
        android:padding="10dp"/>
    <EditText
        android:id="@+id/edtPhoneNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter phone number"/>
    <EditText
        android:id="@+id/edtMessage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter message"/>
```

```
    <Button
        android:id="@+id/btnSendSMS"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send SMS"/>
</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.smsmonitor;


import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;


public class MainActivity extends AppCompatActivity {
    private static final int SMS_PERMISSION_REQUEST = 101;
    EditText edtPhoneNumber, edtMessage;
    Button btnSendSMS;
    TextView txtStatus;
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        edtPhoneNumber = findViewById(R.id.edtPhoneNumber);
        edtMessage = findViewById(R.id.edtMessage);
        btnSendSMS = findViewById(R.id.btnSendSMS);
        txtStatus = findViewById(R.id.txtStatus);
        if (ContextCompat.checkSelfPermission(this, Manifest.permission.SEND_SMS)
                != PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(this,
                    new String[]{Manifest.permission.SEND_SMS},
SMS_PERMISSION_REQUEST);
        }
        btnSendSMS.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sendSMS();
            }
        });
    }
    private void sendSMS() {
        String phoneNumber = edtPhoneNumber.getText().toString().trim();
        String message = edtMessage.getText().toString().trim();
        if (!phoneNumber.isEmpty() && !message.isEmpty()) {
```

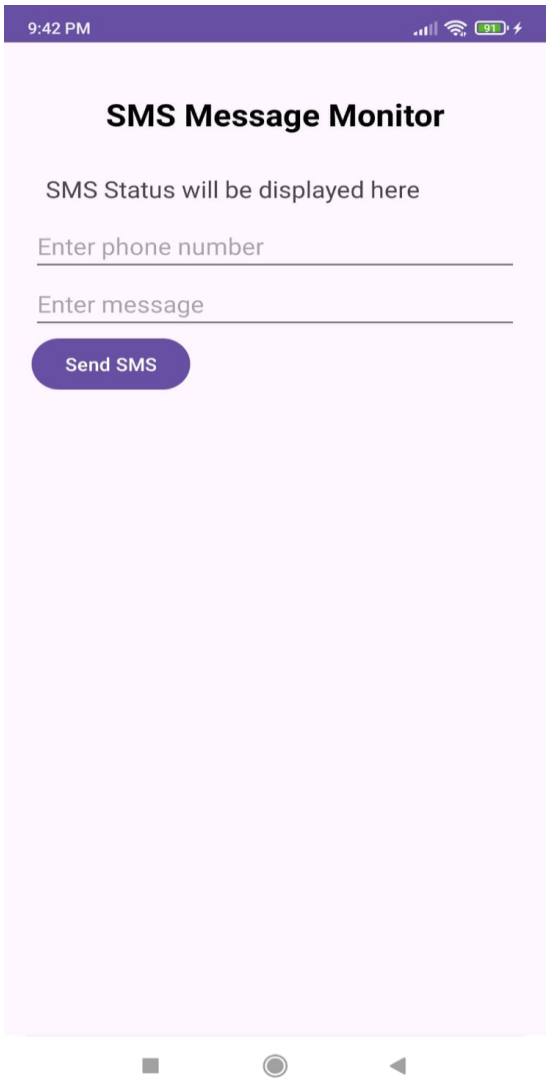
```
            try {
                SmsManager smsManager = SmsManager.getDefault();
                smsManager.sendTextMessage(phoneNumber, null, message, null, null);
                txtStatus.setText("SMS Sent Successfully");
                Toast.makeText(this, "SMS Sent", Toast.LENGTH_SHORT).show();
            } catch (Exception e) {
                txtStatus.setText("SMS Sending Failed");
                Toast.makeText(this, "Failed to send SMS", Toast.LENGTH_SHORT).show();
            }
        } else {
            Toast.makeText(this, "Please enter phone number and message",
Toast.LENGTH_SHORT).show();
        }
    }
    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if (requestCode == SMS_PERMISSION_REQUEST) {
            if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                Toast.makeText(this, "SMS Permission Granted",
Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(this, "SMS Permission Denied", Toast.LENGTH_SHORT).show();
            }
        }     }    }
```

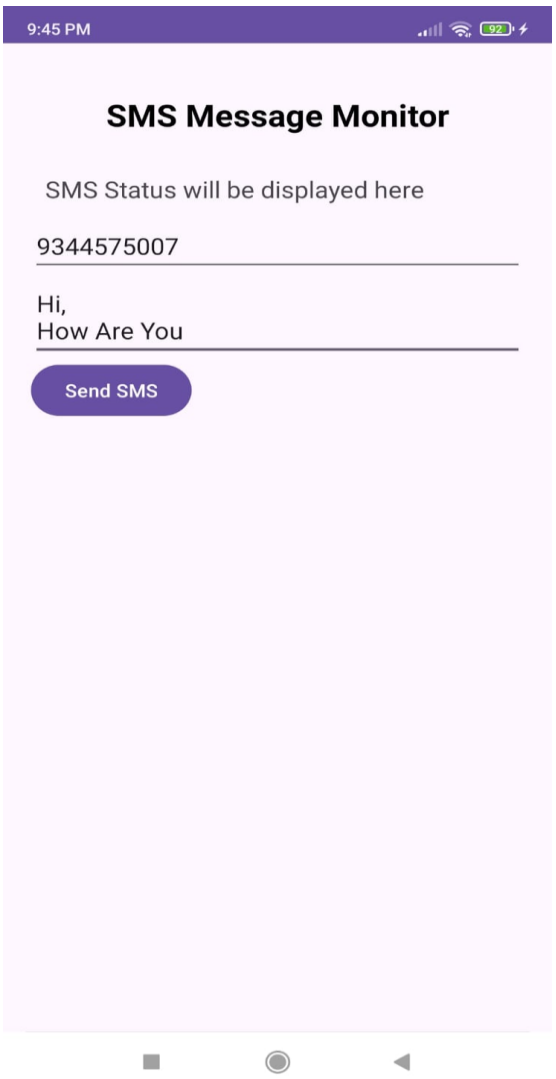
SMSRECEIVER.JAVA:

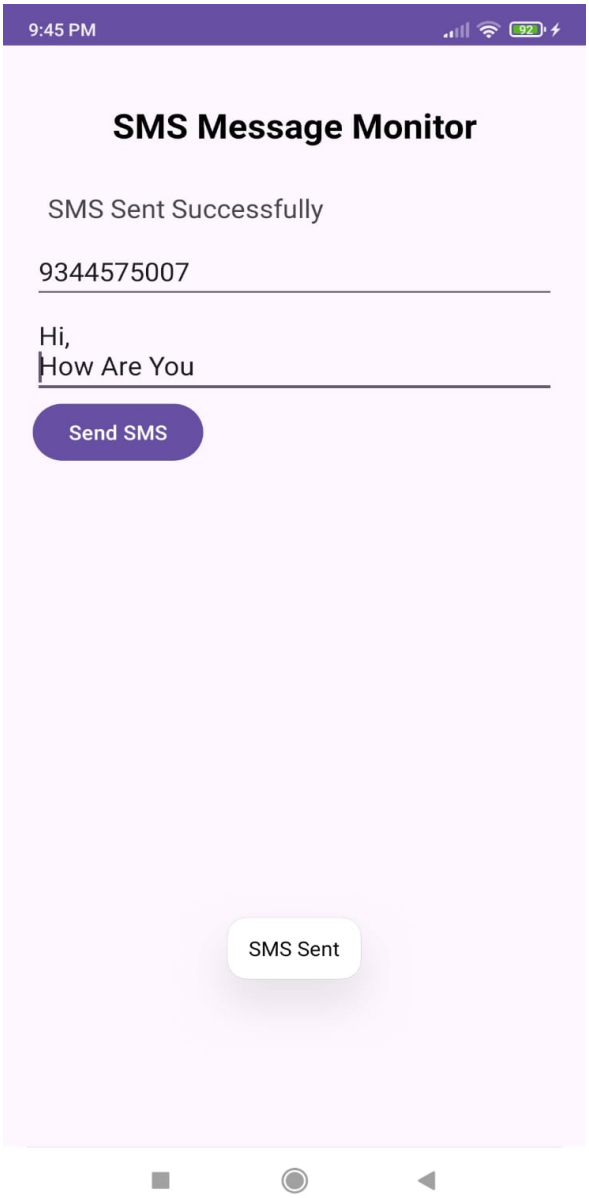
```
package com.example.smsmonitor;

import android.content.BroadcastReceiver;

import android.content.Context;

import android.content.Intent;

import android.os.Bundle;

import android.telephony.SmsMessage;

import android.widget.Toast;

public class SMSReceiver extends BroadcastReceiver {

   @Override

   public void onReceive(Context context, Intent intent) {

      if (intent.getAction().equals("android.provider.Telephony.SMS_RECEIVED")) {

         Bundle bundle = intent.getExtras();

         if (bundle != null) {

            Object[] pdus = (Object[]) bundle.get("pdus");

            if (pdus != null) {

               for (Object pdu : pdus) {

                  SmsMessage smsMessage = SmsMessage.createFromPdu((byte[]) pdu);

                  String senderNumber = smsMessage.getOriginatingAddress();

                  String messageBody = smsMessage.getMessageBody();

                  Toast.makeText(context, "SMS Received: " + messageBody,
Toast.LENGTH_LONG).show();

               }

            }

         }

      }   }   }
```

SENDING SMS TO ENTERED MOBLIE NUMBER

OUTPUT:






9:45 PM
SMS Message Monitor
SMS Sent Successfully
9344575007
Hi,
How Are You
Send SMS
SMS Sent

13. CREATING A BACKGROUND APPLICATION

ACTIVITY_MAIN.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<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"
    android:gravity="center"
    android:background="#CDDC39"
    tools:context=".MainActivity">

     <TextView
        android:id="@+id/heading"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ALARM"
        android:textSize="24sp"
        android:textStyle="bold"
        android:layout_marginBottom="20dp"
        android:textColor="#000000"
        android:layout_marginTop="20dp"/>
 <TimePicker
        android:id="@+id/time"
        android:layout_width="373dp"
        android:layout_height="wrap_content"
        android:timePickerMode="clock" />
```

```
 <Button
      android:id="@+id/set_alarm"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:padding="10dp"
      android:text="SET ALARM" />
  <Button
      android:id="@+id/cancel_alarm"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:padding="10dp
      android:text="CANCEL ALARM" />
<LinearLayout/>
```

MAINACTIVITY.JAVA:

```
package com.example.alarmapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.TimePicker;
import android.widget.Toast;
import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
    private TimePicker tp;
    private Button btn_set, btn_cancel;

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

        btn_set = findViewById(R.id.set_alarm);
        tp = findViewById(R.id.time);
        btn_cancel = findViewById(R.id.cancel_alarm);

        // Set button listener
        btn_set.setOnClickListener(view -> {
            Calendar cal = Calendar.getInstance();
            cal.set(cal.get(Calendar.YEAR),
                    cal.get(Calendar.MONTH),
```

```
                cal.get(Calendar.DAY_OF_MONTH),
                tp.getHour(),  // Updated for modern TimePicker
                tp.getMinute(),
                0);
        Alarm_set(cal.getTimeInMillis());
    });
    btn_cancel.setOnClickListener(view -> Alarm_cancel());
  }
  private void Alarm_set(long timeInMillis) {
    AlarmManager alarmManager = (AlarmManager)
getSystemService(Context.ALARM_SERVICE);
    Intent intent = new Intent(this, Alarm.class);
    PendingIntent pendingIntent = PendingIntent.getBroadcast(this, 0, intent,
PendingIntent.FLAG_IMMUTABLE);

    alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, timeInMillis,
AlarmManager.INTERVAL_DAY, pendingIntent);

    Toast.makeText(this, "Your Alarm is Set", Toast.LENGTH_LONG).show();
  }
  private void Alarm_cancel() {
    AlarmManager alarmManager = (AlarmManager)
getSystemService(Context.ALARM_SERVICE);
    Intent intent = new Intent(this, Alarm.class);
    PendingIntent pendingIntent = PendingIntent.getBroadcast(this, 0, intent,
PendingIntent.FLAG_IMMUTABLE);

    alarmManager.cancel(pendingIntent);
    Toast.makeText(this, "Your Alarm is Canceled", Toast.LENGTH_LONG).show();
  }
}
```

ALARM.JAVA:

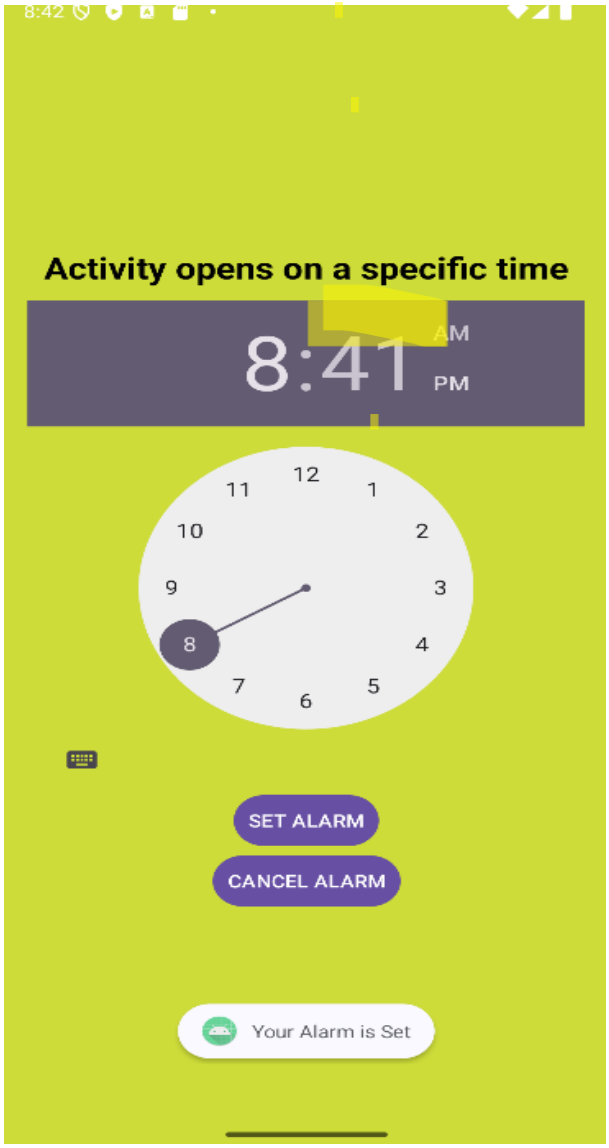
```
package com.example.alarmapplication;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.MediaPlayer;
import android.provider.Settings;

public class Alarm extends BroadcastReceiver {

    @Override
    public void onReceive(Context context, Intent intent) {
        MediaPlayer mp = MediaPlayer.create(context,
Settings.System.DEFAULT_ALARM_ALERT_URI);
        mp.start();

        // Optionally stop the alarm after a set period, or add code for user interaction
        mp.setOnCompletionListener(mediaPlayer -> mediaPlayer.release());
    }
}
```

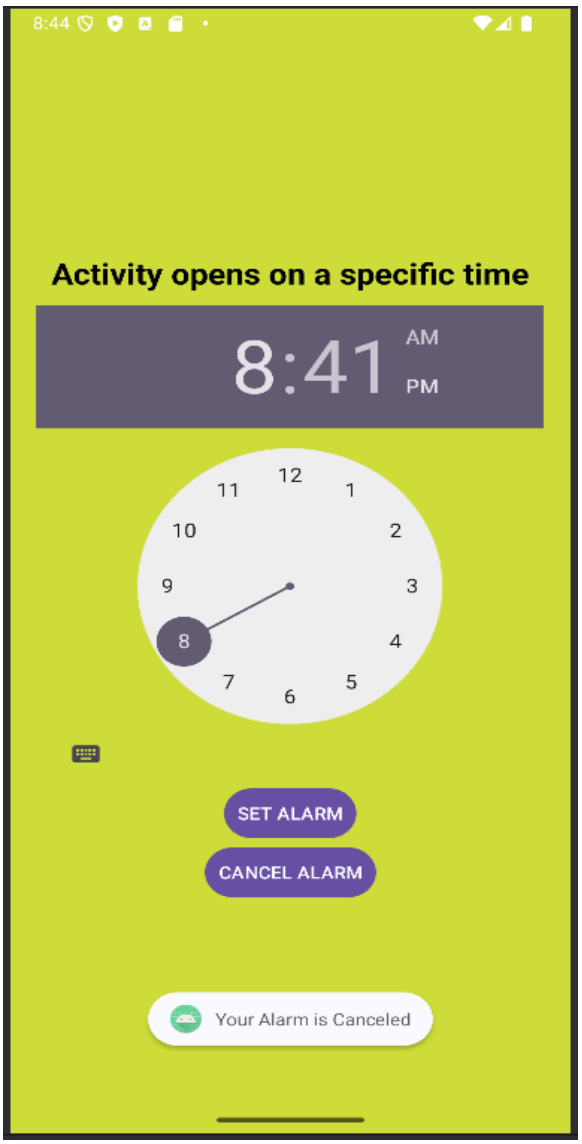
MANIFEST.XML:

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.alarmapplication">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="AlarmApp"
        android:theme="@style/Theme.AlarmApplication">

        <receiver android:name=".Alarm" android:enabled="true" android:exported="false" />

        <activity
            android:name=".MainActivity"
            android:exported="true"
            android:label="AlarmApplication"
            android:theme="@style/Theme.AlarmApplication">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

CREATING A BACKGROUND APPLICATION

OUTPUT:





14 .INTERACTION BETWEEN FRAGMENTS

ACTIVITY_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="horizontal"
    android:padding="8dp">

    <FrameLayout
        android:id="@+id/fragment_first_container"
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"/>

    <FrameLayout
        android:id="@+id/fragment_second_container"
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"/>
</LinearLayout>
```

MAINACTIVITY.JAVA:

```
package com.example.fragmentactivity;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        getSupportFragmentManager().beginTransaction()
                .replace(R.id.fragment_first_container, new FragmentA())
                .replace(R.id.fragment_second_container, new FragmentB())
                .commit();
    }
}
```

FRAGMENT_A 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:gravity="center"
    android:orientation="vertical">

    <TextView
        android:id="@+id/text_fragment1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="10dp"
        android:text="This is fragment #1"
        android:textSize="20sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/edit_text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="10dp"
        android:hint="Enter text here"
        android:padding="8dp" />

    <Button
        android:id="@+id/btn_send"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send" />
</LinearLayout>
```

FRAGMENT A.JAVA:

```
package com.example.fragmentactivity;


import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.EditText;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;
import androidx.lifecycle.ViewModelProvider;
public class FragmentA extends Fragment {
    private SharedViewModel sharedViewModel;
    private EditText editText;
    private Button btnSend;
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup
container, @Nullable Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_a, container, false);


        editText = view.findViewById(R.id.edit_text);
        btnSend = view.findViewById(R.id.btn_send);


        sharedViewModel = new
ViewModelProvider(requireActivity()).get(SharedViewModel.class);
        btnSend.setOnClickListener(v -> {
            String enteredText = editText.getText().toString().trim();
            sharedViewModel.setText(enteredText); // Send text to ViewModel
        });

        return view;
    }    }
```

FRAGMENT_B 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:gravity="center"
    android:orientation="vertical">

    <TextView
        android:id="@+id/text_fragment2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is fragment #2"
        android:textSize="20sp"
        android:textStyle="bold" />
</LinearLayout>
```

FRAGMENT B.JAVA:

```
package com.example.fragmentactivity;


import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;
import androidx.lifecycle.Observer;
import androidx.lifecycle.ViewModelProvider;
public class FragmentB extends Fragment {
    private SharedViewModel sharedViewModel;
    private TextView textView;
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup
container, @Nullable Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_b, container, false);
        textView = view.findViewById(R.id.text_fragment2);
        sharedViewModel = new
ViewModelProvider(requireActivity()).get(SharedViewModel.class);
sharedViewModel.getText().observe(getViewLifecycleOwner(), new
Observer<String>() {
            @Override
            public void onChanged(String text) {
                textView.setText(text);
}    });
return view;
    }    }
```

SHARED VIEW MODEL.JAVA:

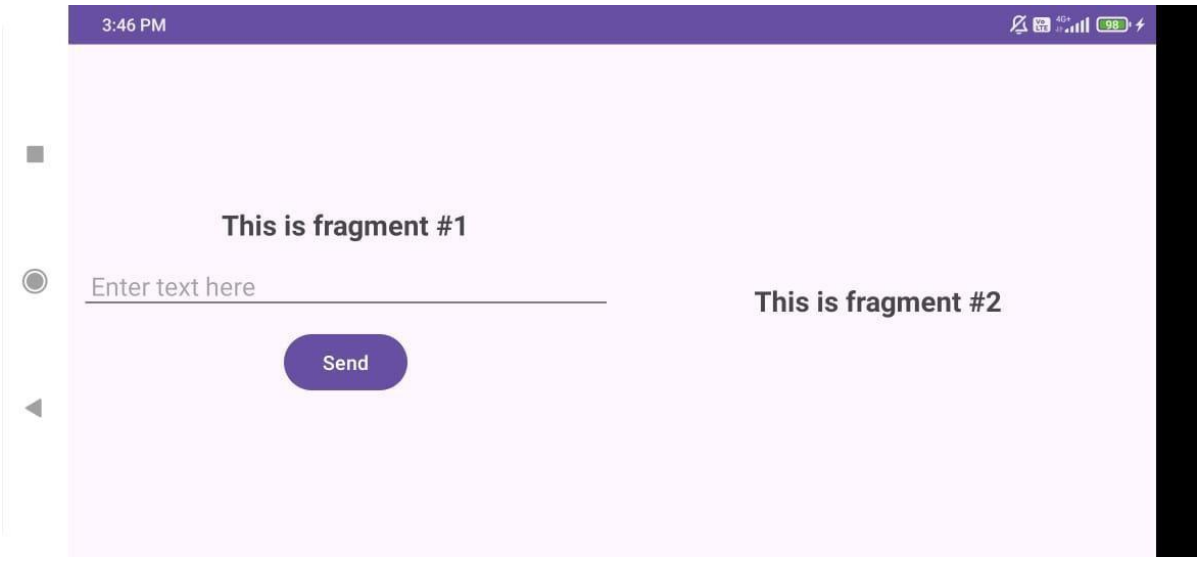
```
package com.example.fragmentactivity;

import androidx.lifecycle.LiveData;
import androidx.lifecycle.MutableLiveData;
import androidx.lifecycle.ViewModel;

public class SharedViewModel extends ViewModel {
    private final MutableLiveData<String> textData = new MutableLiveData<>();

    // Method to set text
    public void setText(String text) {
        textData.setValue(text);
    }

    // Method to get text
    public LiveData<String> getText() {
        return textData;
    }
}
```

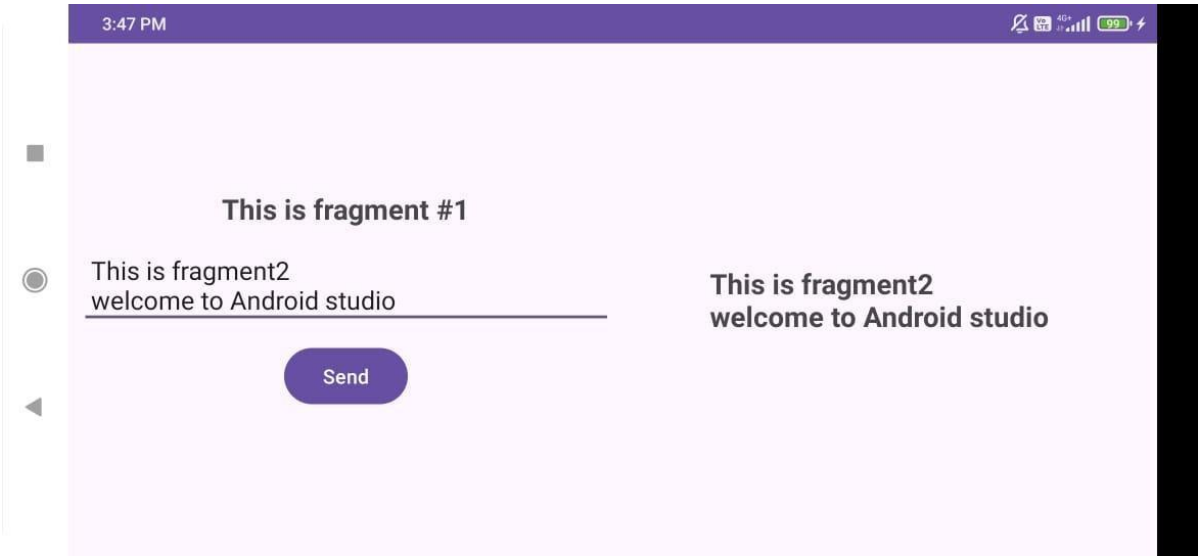
MANIFEST.XML:

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Fragmentactivity"
        tools:targetApi="31">

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

        <activity android:name=".FragmentA"
            android:exported="true"
            tools:ignore="Instantiatable" />

        <activity android:name=".FragmentB"
            android:exported="true"
            tools:ignore="Instantiatable,MissingClass" />
    </application>
</manifest>
```

INTERACTION BETWEEN FRAGMENTS

OUTPUT:





15. INVOKING THE SERVICE IN ANDROID

ACTIVITY_MAIN.XML:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    android:padding="20dp">

    <Button
        android:id="@+id/btnStartService"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Service" />
</LinearLayout>
```

MAIN ACTIVITY.JAVA:

```
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btnStartService = findViewById(R.id.btnStartService);
            btnStartService.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent serviceIntent = new Intent(MainActivity.this, MyService.class);
                startService(serviceIntent);
            }
        });
    }
}
```

ACTIVITY_TARGET.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:gravity="center"
    android:orientation="vertical"
    android:padding="20dp">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Target Activity Opened"
        android:textSize="20sp"
        android:textStyle="bold"/>
</LinearLayout>
```

TARGER ACTIVITY.JAVA:

```
package com.example.serviceinvokeactivity;
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class TargetActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_target);
        TextView textView = findViewById(R.id.textView);
        textView.setText("Activity Launched from Service!");
    }
}
```

MYSERVICE.JAVA:

```
package com.example.serviceinvokeactivity;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.app.Service;
import android.content.Context;
import android.content.Intent;
import android.os.IBinder;
import android.widget.Toast;
import java.util.Calendar;
public class MyService extends Service {
    @Override
    public void onCreate() {
        super.onCreate();
        Toast.makeText(this, "Service Started", Toast.LENGTH_SHORT).show();
        scheduleActivity();}
    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        return START_STICKY  }
    private void scheduleActivity() {
        Calendar calendar = Calendar.getInstance();
        calendar.add(Calendar.SECOND, 5); // Invoke activity after 5 seconds
        Intent intent = new Intent(this, TargetActivity.class);
```

```
        intent.addFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
        PendingIntent pendingIntent = PendingIntent.getActivity(
                this, 0, intent, PendingIntent.FLAG_UPDATE_CURRENT |
PendingIntent.FLAG_IMMUTABLE);
        AlarmManager alarmManager = (AlarmManager)
getSystemService(Context.ALARM_SERVICE);


   if (alarmManager != null) {
   alarmManager.set(AlarmManager.RTC_WAKEUP, calendar.getTimeInMillis(),
pendingIntent);
        }
    }
  @Override
    public IBinder onBind(Intent intent) {
        return null;
    }
}
```

ANDROID MANIFEST.XML:

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.serviceinvokeactivity">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="Service Invoke Activity"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.ServiceInvokeActivity">

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

        <activity android:name=".TargetActivity" />
       <service android:name=".MyService"
            android:enabled="true"
            android:exported="false"/>
      </application>
</manifest>
```

INVOKING THE SERVICE IN ANDROID

OUTPUT: