RVS SATYANAND
CSE-A
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LAB-5

Application Apk:

https://drive.google.com/file/d/1BN4ZTawNVxOPJslhXkLSk0UvkbnyBEfR/view?usp=sharing

Mobile Application Development Laboratory – 5

Experiment Name: Working With Intents - 2

Date: 15-03-2021

Aim: Design an Android application using Android Studio with the following specifications.

i) In an activity, include a title, 3 radio buttons (Set alarm, Play music, Compose mail) and a submit button. Selection of each radio button redirects to one activity.

ii) In activity 1, have textviews and text boxes for the taking time information and alarm message from the user. Have a 'Set alarm' button, upon clicking it should open the Alarm app with the contents using implicit intents.

iii) In activity 2, have a 'Play' button which will play some music/song with the music app.

iii) In activity 3, have textviews and text boxes for the sender address, subject of the mail and body of the mail. Have a 'Send' button, upon clicking it should open the Gmail app with the contents using implicit intents.

Description of App: (The detailed working can be seen in screenshots)
1. We have an main Activity where we have a radio group and submit button

2. Once the user submits they'll be redirected to the selected option Activity using explicit intent.

3. In the Mail Activity, the user has to give the sender address, subject and body to send it via gmail. If any of the fields are missing then the user will get an error through toast.

4. In the Set Alarm Activity, there are submit button, Message input and TimePicker. Once a user selects the submit button it'll automatically set the alarm for the given time and message.
5. In the Play Song Activity, it looks for a specific mp3 file, if it's available then it'll directly play that song else it'll just open the music player and show a toast message(The desired music isn't available).

Whenever a user does something unexpected like not giving input etc then I flash a message.

Device Specifications:
Both the app run on min SDK version of 16 (so anything above API 16 - Android 4.1 - Jelly Bean would run this app which is 99.8% of devices). Currently, I have run it on Pixel API 30 for outputs. Only default libraries were used for making any app and nothing additional.

Name: Pixel_3
Resolution: 1080 X 2220
API: 30
Target: Android 11.0
hw.lcd.height: 2220
hw.accelerometer: yes
hw.device.manufacturer: Google
hw.lcd.width: 1080
hw.lcd.density: 440
hw.cpu.ncore: 6
hw.sensors.proximity: yes
hw.sensors.orientation: yes
hw.gpu.enabled: yes

Technical Concepts Learnt:

- **Ui perspective:** I learned Working with LinearLayout, ScrollView, TextView, Button, ConstraintLayout, background colors, **TimePicker, Material.io** for styling.

- **Appln Perspective:**

1. Working of Intents - Explicit & Implicit
2. Different Actions and Services
3. Accessing the extra value from bundle
4. Handling exceptions using switch case and prompting errors using Toasts
5. Working with TimePicker to get the hour, min.
6. Checking if the file is present in the mobile device with the given file path.

Source Code:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.lab6">

    <uses-permission android:name="com.android.alarm.permission.SET_ALARM" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Lab6">

        <activity android:name=".PlaySongActivity" />

        <activity
            android:name=".AlarmActivity"
            android:theme="@style/Theme.Lab6.NoActionBar" />

        <activity
            android:name=".MailActivity"
            android:theme="@style/Theme.Lab6.NoActionBar" />

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

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

</manifest>
```

activity_main.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"
```

```xml
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/title"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:gravity="center"
        android:padding="20dp"
        android:text="Intent App"
        android:textColor="@color/black"
        android:textSize="36sp"
        android:textStyle="bold|italic" />


    <RadioGroup
        android:id="@+id/radio_group"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true">

        <RadioButton
            android:id="@+id/rb_mail"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:checked="true"
            android:text="Compose Mail" />

        <RadioButton
            android:id="@+id/rb_alarm"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Set Alarm" />

        <RadioButton
            android:id="@+id/rb_music"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Play Music" />
    </RadioGroup>

    <androidx.appcompat.widget.AppCompatButton
```

```
        android:id="@+id/btn_submit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="20dp"
        android:layout_marginBottom="10dp"
        android:background="@drawable/btn_state_green_gray"
        android:elevation="8dp"
        android:paddingStart="50dp"
        android:paddingTop="10dp"
        android:paddingEnd="50dp"
        android:paddingBottom="10dp"
        android:text="Submit"
        android:textColor="@color/white"
        android:textSize="18sp"
        android:textStyle="bold" />
</LinearLayout>
```

activity_mail.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=".MailActivity">


    <TextView
        android:id="@+id/head"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:gravity="center"
        android:padding="20dp"
        android:text="Send Mail"
        android:textColor="@color/black"
        android:textSize="36sp"
        android:textStyle="bold|italic" />

    <LinearLayout
        android:id="@+id/rl1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:orientation="vertical">
```

```xml
<com.google.android.material.textfield.TextInputLayout
    android:id="@+id/input_name"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:padding="5dp"
    android:textColor="@color/white"
    android:textSize="24sp"
    android:textStyle="bold|italic">

    <com.google.android.material.textfield.TextInputEditText
        android:id="@+id/sender_address"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/very_light_gray"
        android:hint="To"
        android:imeOptions="actionNext"
        android:inputType="textCapWords"
        android:lines="1"
        android:singleLine="true"
        android:textColor="@color/black"
        android:textSize="20sp"
        android:textStyle="bold|italic" />
</com.google.android.material.textfield.TextInputLayout>


</LinearLayout>

<LinearLayout
    android:id="@+id/rl2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="10dp"
    android:layout_marginEnd="10dp"
    android:orientation="vertical">

    <com.google.android.material.textfield.TextInputLayout
        android:id="@+id/input_xyz"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:padding="5dp"
        android:textColor="@color/white"
        android:textSize="24sp"
        android:textStyle="bold|italic">
```

```xml
                <com.google.android.material.textfield.TextInputEditText
                    android:id="@+id/mail_subject"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:background="@color/very_light_gray"
                    android:hint="Subject"
                    android:imeOptions="actionNext"
                    android:inputType="textCapWords"
                    android:lines="1"
                    android:singleLine="true"
                    android:textColor="@color/black"
                    android:textSize="20sp"
                    android:textStyle="bold|italic" />
            </com.google.android.material.textfield.TextInputLayout>

    </LinearLayout>


    <com.google.android.material.textfield.TextInputLayout
        android:id="@+id/input_message"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:padding="5dp"
        android:textColor="@color/white"
        android:textSize="24sp"
        android:textStyle="bold|italic">

        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/mail_body"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/very_light_gray"
            android:gravity="top"
            android:hint="Body"
            android:imeOptions="actionDone"
            android:maxLines="4"
            android:minLines="3"
            android:textColor="@color/black"
            android:textSize="20sp"
            android:textStyle="bold|italic" />
    </com.google.android.material.textfield.TextInputLayout>


    <androidx.appcompat.widget.AppCompatButton
        android:id="@+id/send"
        android:layout_width="wrap_content"
```

```xml
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginTop="20dp"
            android:layout_marginBottom="10dp"
            android:background="@drawable/btn_state_green_gray"
            android:elevation="8dp"
            android:paddingStart="50dp"
            android:paddingTop="10dp"
            android:paddingEnd="50dp"
            android:paddingBottom="10dp"
            android:text="Submit"
            android:textColor="@color/white"
            android:textSize="18sp"
            android:textStyle="bold" />


</LinearLayout>
```

activity_alarm.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=".AlarmActivity">

    <TimePicker
        android:id="@+id/timePicker"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />


    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:padding="5dp"
        android:textColor="@color/white"
        android:textSize="24sp"
        android:textStyle="bold|italic">

        <com.google.android.material.textfield.TextInputEditText
```

```xml
            android:id="@+id/message"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/very_light_gray"
            android:hint="Message"
            android:imeOptions="actionNext"
            android:inputType="textCapWords"
            android:lines="1"
            android:singleLine="true"
            android:textColor="@color/black"
            android:textSize="20sp"
            android:textStyle="bold|italic" />
    </com.google.android.material.textfield.TextInputLayout>

    <androidx.appcompat.widget.AppCompatButton
        android:id="@+id/btn_submit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="20dp"
        android:layout_marginBottom="10dp"
        android:background="@drawable/btn_state_green_gray"
        android:elevation="8dp"
        android:paddingStart="50dp"
        android:paddingTop="10dp"
        android:paddingEnd="50dp"
        android:paddingBottom="10dp"
        android:text="Submit"
        android:textColor="@color/white"
        android:textSize="18sp"
        android:textStyle="bold" />

</LinearLayout>
```

activity_play_song.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"
    app:flow_verticalAlign="center"
    tools:context=".PlaySongActivity">

    <View
```

```xml
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:layout_weight="1" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="2"
        android:orientation="vertical">

        <TextView
            android:id="@+id/head"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_centerHorizontal="true"
            android:gravity="center"
            android:padding="20dp"
            android:text="Play Song!"
            android:textColor="@color/black"
            android:textSize="36sp"
            android:textStyle="bold|italic" />


        <androidx.appcompat.widget.AppCompatButton
            android:id="@+id/open_song"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginTop="20dp"
            android:layout_marginBottom="10dp"
            android:background="@drawable/btn_state_green_gray"
            android:elevation="8dp"
            android:paddingStart="50dp"
            android:paddingTop="10dp"
            android:paddingEnd="50dp"
            android:paddingBottom="10dp"
            android:text="Go"
            android:textColor="@color/white"
            android:textSize="18sp"
            android:textStyle="bold" />
    </LinearLayout>

    <View
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:layout_weight="1" />
```

```
</LinearLayout>
```

MainActivity.java

```java
package com.example.lab6;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    RadioGroup radioGroup;
    Button submit;
    Context context;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        radioGroup = findViewById(R.id.radio_group);
        submit = findViewById(R.id.btn_submit);

        context = this;

        submit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (radioGroup.getCheckedRadioButtonId() == -1) {
                    Toast.makeText(context, "Please select atleast one option to
continue!", Toast.LENGTH_SHORT).show();
                } else if (radioGroup.getCheckedRadioButtonId() == R.id.rb_mail) {
                    startActivity(new Intent(MainActivity.this, MailActivity.class));
                } else if (radioGroup.getCheckedRadioButtonId() == R.id.rb_alarm) {
                    startActivity(new Intent(MainActivity.this, AlarmActivity.class));
                } else if (radioGroup.getCheckedRadioButtonId() == R.id.rb_music) {
                    startActivity(new Intent(MainActivity.this,
PlaySongActivity.class));
                }
            }
        });
    }
```

```
}
```

AlarmActivity.java

```java
package com.example.lab6;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.provider.AlarmClock;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.TimePicker;

public class AlarmActivity extends AppCompatActivity {
    Button save;
    Context context;

    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_alarm);
        context = this;

        save = findViewById(R.id.btn_submit);
        save.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                TimePicker timePicker = findViewById(R.id.timePicker);

                TextView msg = findViewById(R.id.message);
                int hour = 0;
                if (android.os.Build.VERSION.SDK_INT >=
android.os.Build.VERSION_CODES.M) {
                    hour = timePicker.getHour();
                }
                int min = 0;
                if (android.os.Build.VERSION.SDK_INT >=
android.os.Build.VERSION_CODES.M) {
                    min = timePicker.getMinute();
                }
```

```java
                String message = msg.getText().toString();

                Log.d("t", message);
                Log.d("t", String.valueOf(hour));
                Log.d("t", String.valueOf(min));

                Intent intent = new Intent(AlarmClock.ACTION_SET_ALARM);
                intent.putExtra(AlarmClock.EXTRA_MESSAGE, message);
                intent.putExtra(AlarmClock.EXTRA_HOUR, hour);
                intent.putExtra(AlarmClock.EXTRA_MINUTES, min);
                startActivity(intent);


            }
        });
    }
}
```

MailActivity.java

```java
package com.example.lab6;

import androidx.appcompat.app.AppCompatActivity;

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

public class MailActivity extends AppCompatActivity {
    EditText senderAddressET, mailSubjectET, mailBodyET;
    Button send;

    Context context;

    String senderAddress = "", mailSubject = "", mailBody = "";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_mail);

        senderAddressET = findViewById(R.id.sender_address);
        mailSubjectET = findViewById(R.id.mail_subject);
        mailBodyET = findViewById(R.id.mail_body);
        send = findViewById(R.id.send);
```

```java
        context = this;

        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                senderAddress = senderAddressET.getText().toString();
                mailSubject = mailSubjectET.getText().toString();
                mailBody = mailBodyET.getText().toString();
                if(senderAddress == null || senderAddress.isEmpty()){
                    Toast.makeText(context,"Please enter sender's
address",Toast.LENGTH_SHORT).show();
                } else if (mailBody == null || mailBody.isEmpty()){
                    Toast.makeText(context,"Please write something in the
mail",Toast.LENGTH_SHORT).show();
                } else {
                    Intent emailIntent = new Intent(Intent.ACTION_SEND);
                    emailIntent.setType("message/rfc822");
                    emailIntent.putExtra(Intent.EXTRA_EMAIL, new
String[]{senderAddress});
                    emailIntent.putExtra(Intent.EXTRA_SUBJECT,mailSubject);
                    emailIntent.putExtra(Intent.EXTRA_TEXT,mailBody);
                    startActivity(Intent.createChooser(emailIntent,"Choose the app to
send email:"));
                }
            }
        });
    }
}
```

PlaySongActivity.java

```java
package com.example.lab6;

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

import com.google.android.material.floatingactionbutton.FloatingActionButton;
import com.google.android.material.snackbar.Snackbar;

import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;

import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
```

```java
import java.io.File;

public class PlaySongActivity extends AppCompatActivity {

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

        open = findViewById(R.id.open_song);
        open.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                String filePath = "/storage/emulated/0/Download/Death Note - Ls
Theme.mp3";
                File file = new File(filePath);

                try {
                    if (file.exists()) {
                        Intent intent = new Intent();
                        intent.setAction(android.content.Intent.ACTION_VIEW);
                        intent.setDataAndType(Uri.parse(filePath), "audio/*");
                        startActivity(intent);
                    } else {
                        Toast.makeText(getApplicationContext(), "The desired music
isn't available!", 0).show();

                        Intent intent = new
Intent(MediaStore.INTENT_ACTION_MUSIC_PLAYER);
                        startActivity(intent);
                    }

                } catch (Exception e) {
                    Toast.makeText(getApplicationContext(), "Something went wrong",
0).show();
                }
            }
        });
    }
}
```
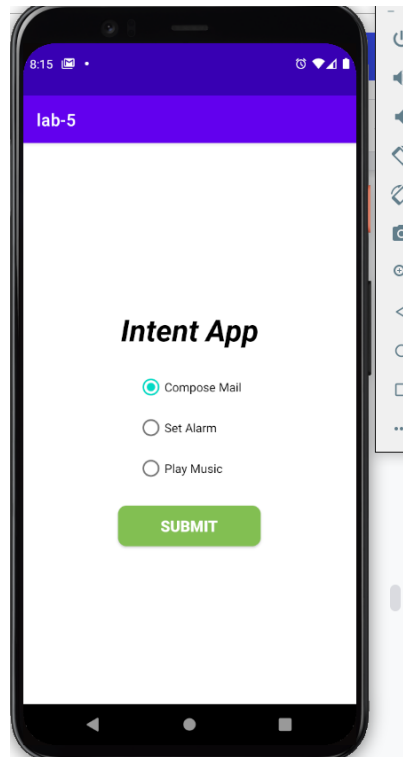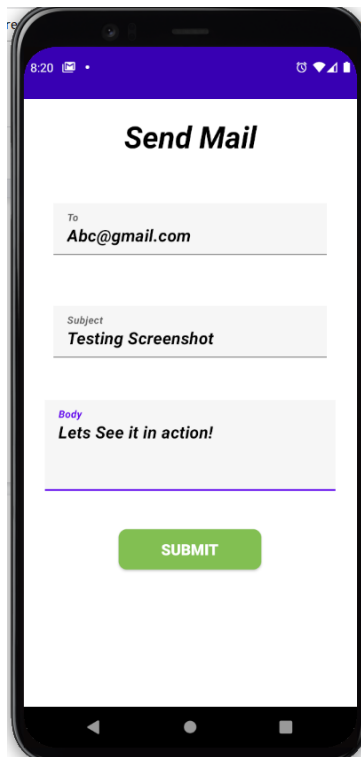
Screenshots:
Start:

When I click submit on Compose Mail:
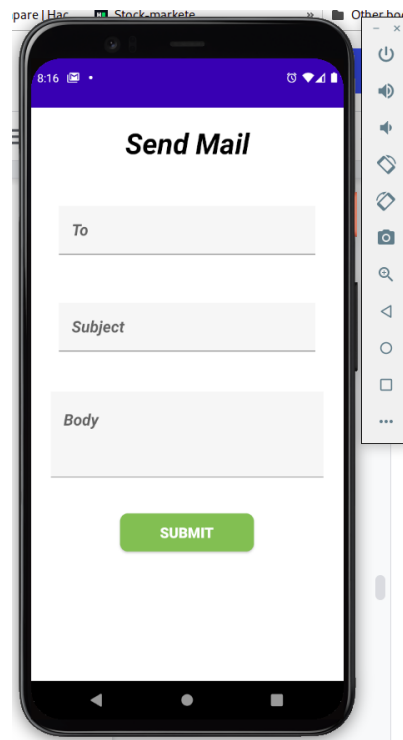
If the sender address isn't mentioned then I'll show errors using toasts.
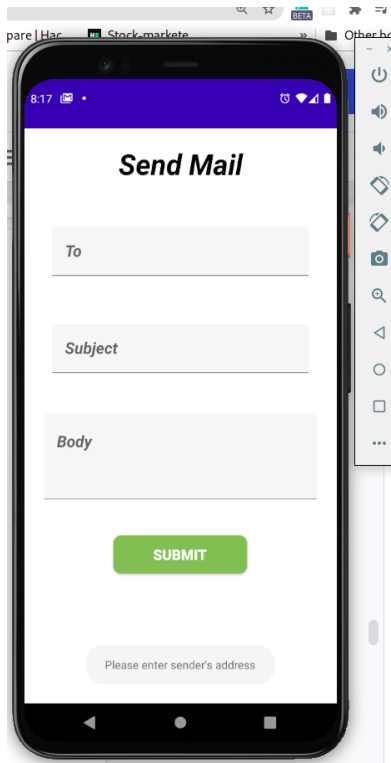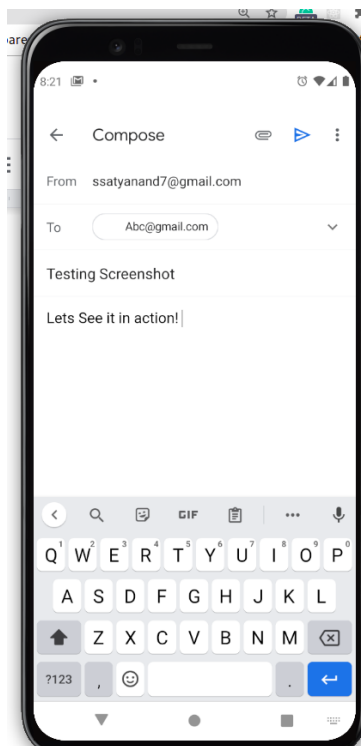

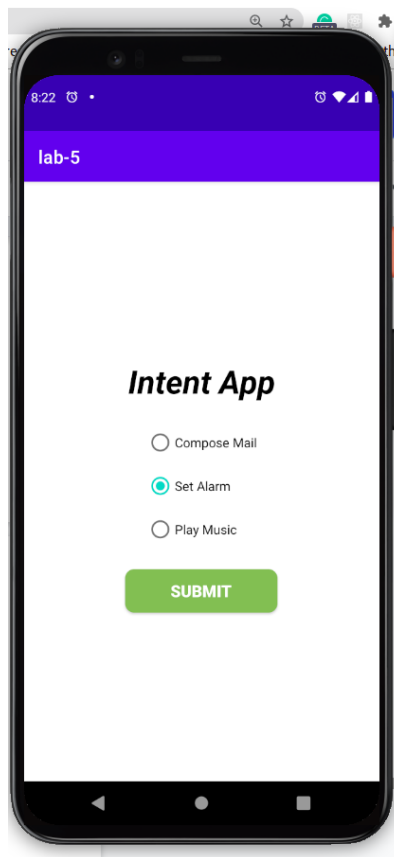**If the body isn't filled then showing toast message to fill it**
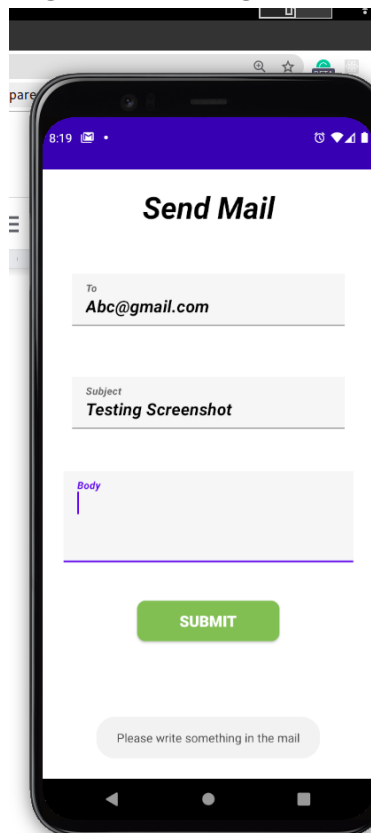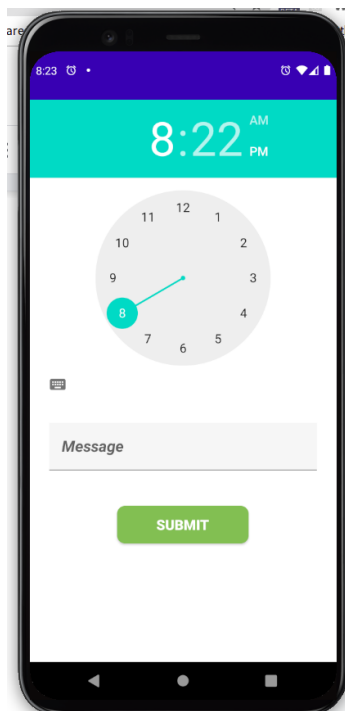
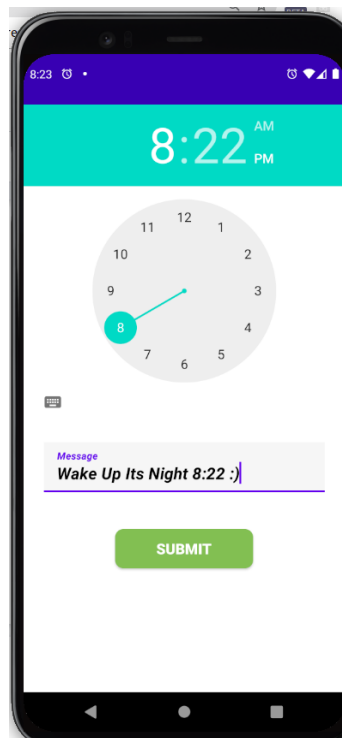**Now filling every details properly:**

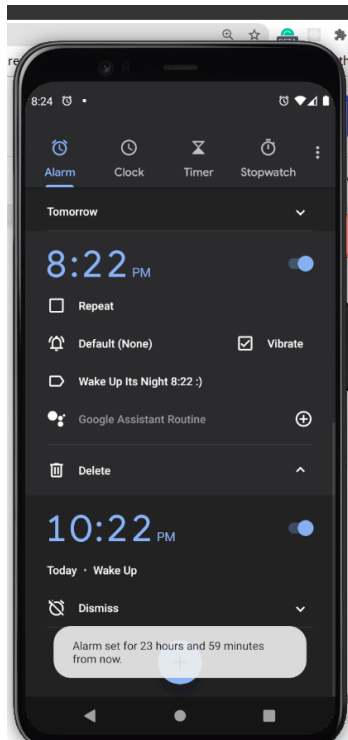**Im redirected to:**
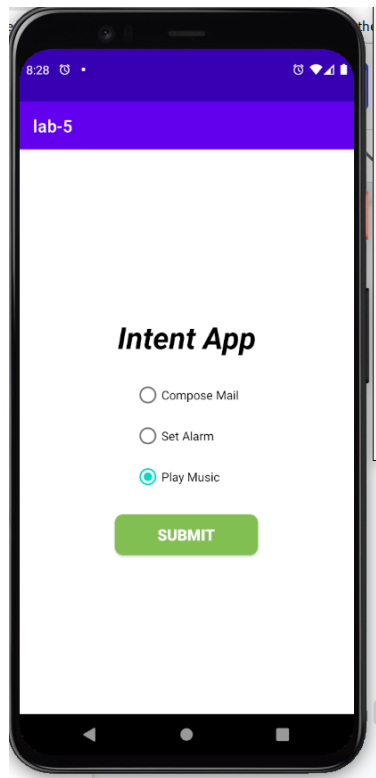
If I select option-2 Set Alarm:

I'm redirected to here:
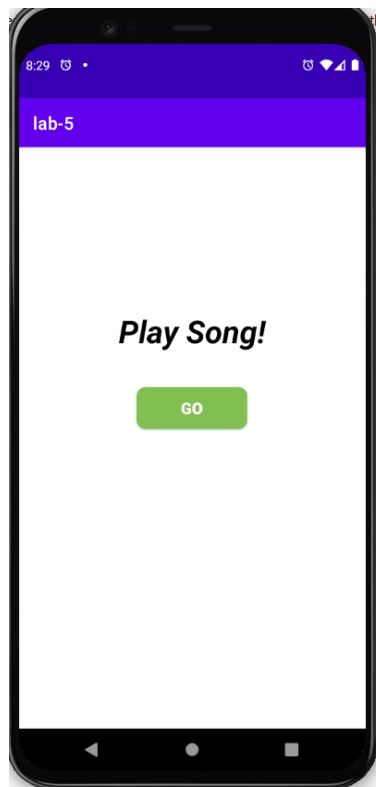
Now Lets submit it with a message.

The output I get: (See at 8:22 alarm is automatically switched on and the message can be found as well):

**Now Selecting the 3rd option (Play Music):**

I'm redirected here:

On pressing Go!, it's looking for a music file at path(`/storage/emulated/0/Download/Death Note - Ls Theme.mp3"`) if it's not present then it'll just open the music player, if it's available then it plays this.

As this file isn't present in my emulator so it'll just open music player and shows a toast message saying the desired music isn't available:
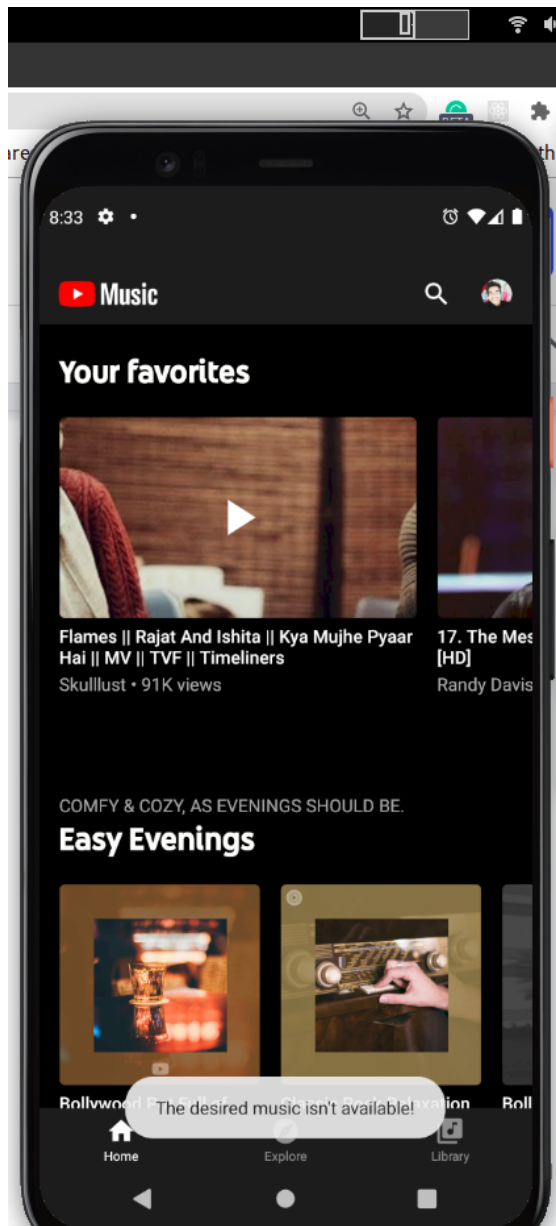
Now attaching ss from my personal phone(as the audio is present in that)
It starts automatically :)
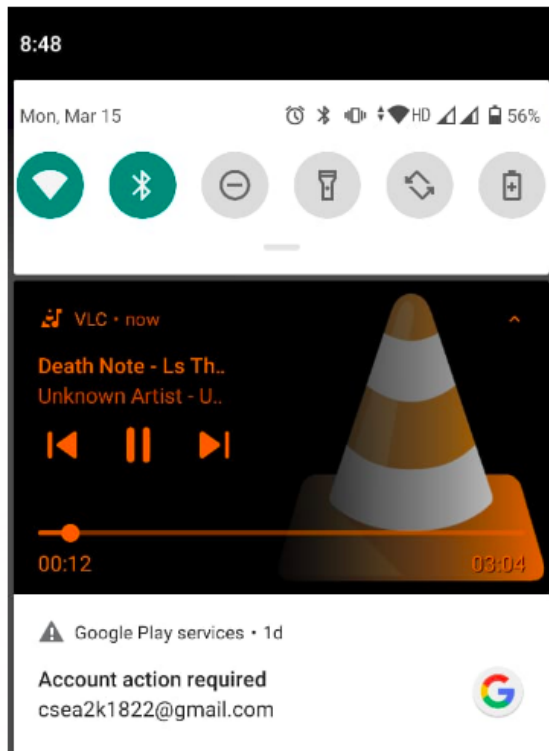
Outcomes: We accomplished the task to get the desired outputs, without any bugs/crashes.

Some Practical Applns:
1. We can redirect users to the Call application if they click on the contact button on our application.
2. We can automate the process of sending mails that can be useful when we make an application that gets data from the web like ind vs eng score every over and sends it to our gmail(Users don't have to go to the web browser and search for score).
3. Can make an application that plays a song of user preference. For example if a user wants to listen to a sad song, in english language and in rock type then the application can check for such song either using some machine learning model or if **these(song emotion, song language, song type)** are present for each song then just normal filtering according to our need will be fine to play such song **(This feature I've seen in samsung mobile phones -> in that it only classify based on whether it is rock or something else).**