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CSE-A
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LAB-4

Application Apk:
https://drive.google.com/file/d/1XSCTfLNPIkCytG0yPRVJ0kzTUW4Wq9DU/view?usp=sharing

Mobile Application Development Laboratory – 4

Experiment Name: Working With Intents

Date: 08-03-2021

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

i) Have two activities, In the first activity, include a title, 2 textboxes, and a button. The user types his/her roll number and name in the textboxes and clicks on the button. Upon clicking, starts another activity using explicit intent.

ii) In the second activity (initiated using implicit intent), have welcome messages using toasts, a textview, a text box, three radio buttons(3 options - Send message, Mail the message, Google search) and two buttons (Submit and Back). User has to type some message in the textbox, select one of the radio buttons and click on the Submit button. Upon clicking, based on the selection of radio buttons, do the following [Implicit intents]. If the user clicks on the Back button, call the first activity.

- Send message - Open the messages app with the message entered in textbox.
- Mail the message- Open the Gmail application with the message in body
- Google search - Open browser and search the message in Google.

Description of App: (The detailed working can be seen in screenshots)
1. We have an main Activity where we have an input for roll number, name and submit button it has checks so that users enter the correct roll number else the user will be shown an error.
2. Once the correct Details are submitted the user will be redirected to another Activity using explicit intent.

3. In the Second Activity user showed a welcome message along with roll number using toast.
4. In the second Activity there are 3 check buttons to go for different options like Send message, Send Mail and Google Search the content or Body is taken from the input field present in the second Activity.
5. Handling all operations in try - catch and handling some cases like no radio button choosed or no message provided extra.
6. Based on the chosen option we are redirected to another application along with the data which we entered. This is achieved by using Explicit Intent.

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

● **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 using Toasts

Source Code:

activity_main.xml

```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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#181D28"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/tvTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="sans-serif-black"
        android:text="Message Application"
        android:textColor="@android:color/darker_gray"
        android:textSize="32dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />


    <EditText
        android:id="@+id/etName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Name"
        android:inputType="textPersonName"
```

```xml
        android:textSize="24dp"
        android:textColor="#FFFFFF"
        android:textColorHint="@android:color/darker_gray"
        app:layout_constraintBottom_toTopOf="@id/etRoll"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/tvTitle" />

    <EditText
        android:id="@+id/etRoll"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:textColor="#FFFFFF"
        android:textColorHint="@android:color/darker_gray"
        android:hint="RollNumber"
        android:inputType="textPersonName"
        android:textSize="24dp"
        app:layout_constraintBottom_toTopOf="@id/btnSubmit"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etName" />


    <Button
        android:id="@+id/btnSubmit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"
        android:textColor="@color/black"
        android:textSize="24dp"
        app:backgroundTint="#FF9800"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etRoll" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_option.xml

```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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#3C1E4C"
    tools:context=".OptionActivity">

    <TextView
        android:id="@+id/tvHead"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:gravity="center_horizontal"
        android:text="Services of NITT"
        android:textAlignment="center"
        android:textColor="#FFFFFF"
        android:textSize="28dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />


    <EditText
        android:id="@+id/inputMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_marginTop="25dp"
        android:textColor="@android:color/darker_gray"
        android:hint="Enter The Message"
        android:textColorHint="@android:color/darker_gray"
        android:inputType="textPersonName"
        android:textSize="24dp"
        app:layout_constraintBottom_toTopOf="@id/rgServices"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```xml
        app:layout_constraintTop_toBottomOf="@id/tvHead" />

    <RadioGroup
        android:id="@+id/rgServices"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="15dp"
        app:layout_constraintBottom_toTopOf="@id/btnGo"
        app:layout_constraintEnd_toEndOf="parent"
        android:textColor="@android:color/darker_gray"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/inputMessage">


        <RadioButton
            android:id="@+id/rbCall"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:buttonTint="@color/black"
            android:text="Send message"
            android:textColor="@android:color/darker_gray"
            android:textSize="24dp" />


        <RadioButton
            android:textColor="@android:color/darker_gray"
            android:id="@+id/rbYt"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:buttonTint="@color/black"
            android:text="Mail the message"
            android:textSize="24dp" />

        <RadioButton
            android:textColor="@android:color/darker_gray"
            android:id="@+id/rbWeb"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:buttonTint="@color/black"
            android:text="Google Search"
            android:textSize="24dp" />
```

```xml
        </RadioGroup>

        <Button
            android:id="@+id/btnGo"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Submit"
            android:textColor="@color/black"
            android:textSize="24dp"
            app:backgroundTint="#FF9800"
            app:layout_constraintBottom_toTopOf="@id/btnBack"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toBottomOf="@id/rgServices"
            app:layout_constraintVertical_bias="0.1" />

        <Button
            android:id="@+id/btnBack"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Back"
            android:textColor="@color/black"
            android:textSize="24dp"
            app:backgroundTint="#FF9800"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toBottomOf="@id/btnGo"
            app:layout_constraintVertical_bias="0.1" />

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

MainActivity.java

```java
package com.android.nittapp;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Context;
```

```java
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.view.inputmethod.InputMethodManager;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText rollnumber,name;
    private String user_name,roll_number;


    Button submitBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toast.makeText(MainActivity.this, "Welcome to Messaging App",
Toast.LENGTH_LONG).show();

        rollnumber = findViewById(R.id.etRoll);
        name = findViewById(R.id.etName);

        submitBtn=(Button) findViewById(R.id.btnSubmit);
        submitBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                openActivityOption();
            }
        });
    }

    private void openActivityOption() {

        closeKeyboard();

        user_name = name.getText().toString();
        roll_number = rollnumber.getText().toString();
```

```java
        if(roll_number.length() != 9){
            Toast.makeText(getApplicationContext(),"Enter valid Roll Number
of length 9",Toast.LENGTH_LONG).show();
            return;
        }

        if(user_name.matches("")){
            Toast.makeText(getApplicationContext(),"Enter valid
name",Toast.LENGTH_LONG).show();
            return;
        }

        Intent i = new Intent(this, OptionActivity.class);
        i.putExtra("user_name", user_name);
        i.putExtra("roll_number", roll_number);
        startActivity(i);
    }



    public void closeKeyboard(){
        InputMethodManager imm =
(InputMethodManager)getSystemService(Context.INPUT_METHOD_SERVICE);
        imm.hideSoftInputFromWindow(name.getWindowToken(),0);
    }

}
```

OptionActivity.java

```java
package com.android.nittapp;

import androidx.appcompat.app.AppCompatActivity;

import android.app.SearchManager;
import android.content.ActivityNotFoundException;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.util.Log;
```

```java
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;

import java.io.UnsupportedEncodingException;
import java.net.URLEncoder;
import java.security.cert.PKIXRevocationChecker;

public class OptionActivity extends AppCompatActivity {

    Button goBtn, backBtn;
    RadioGroup rg;
    String roll_number, name, query;
    TextView tv_head;

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

        Bundle bundle = getIntent().getExtras();

        roll_number = bundle.getString("roll_number");
        name = bundle.getString("user_name");

        Toast.makeText(getApplicationContext(), "Welcome " + name + ",
Launching activity - 2", Toast.LENGTH_LONG).show();

        tv_head = findViewById(R.id.tvHead);
        rg = findViewById(R.id.rgServices);
        goBtn = (Button) findViewById(R.id.btnGo);
        backBtn = (Button) findViewById(R.id.btnBack);

        tv_head.setText("Available Services for " + roll_number);

        goBtn.setOnClickListener(new View.OnClickListener() {
            @Override
```

```java
            public void onClick(View v) {
                OpenDesiredIntent();
            }
        });
        backBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                OpenMainActivity();
            }
        });
    }

    private void OpenMainActivity() {
        Intent i = new Intent(this, MainActivity.class);
        startActivity(i);
    }

    private void OpenDesiredIntent() {
        int id = rg.getCheckedRadioButtonId();
        EditText et = (findViewById(R.id.inputMessage));
        query = et.getText().toString();

        if (query.length() <= 0) {
            Toast.makeText(this, "Type atleast 1 character in message
body!", Toast.LENGTH_LONG)
                    .show();
            return;
        }

        switch (id) {
            case R.id.rbCall:
                try {
                    String number = "";
                    Intent i = new Intent(Intent.ACTION_VIEW,
Uri.fromParts("sms", number, query));
                    i.putExtra("sms_body", query);
                    startActivity(i);
                } catch (SecurityException s) {
                    Toast.makeText(this, "An error occurred",
Toast.LENGTH_LONG)
```

```java
                        .show();
                }
                break;


        case R.id.rbYt:

            try {
                Intent sendMail = new Intent(Intent.ACTION_SEND);
                sendMail.putExtra(Intent.EXTRA_TEXT, query);
                sendMail.setType("message/rfc822");
                startActivity(sendMail);

            } catch (SecurityException s) {
                Toast.makeText(this, "An error occurred",
Toast.LENGTH_LONG)
                            .show();
            }
            break;

        case R.id.rbWeb:

            try {
                Intent intent = new Intent(Intent.ACTION_WEB_SEARCH);
                intent.putExtra(SearchManager.QUERY, query); // query
contains search string
                startActivity(intent);
            } catch (SecurityException s) {
                Toast.makeText(this, "An error occurred",
Toast.LENGTH_LONG)
                            .show();
            }
            break;

        default:
            Toast.makeText(this, "Select Radio Button to proceed!",
Toast.LENGTH_LONG)
                    .show();
    }
  }
```

```
}
```

Screenshots:
Start:
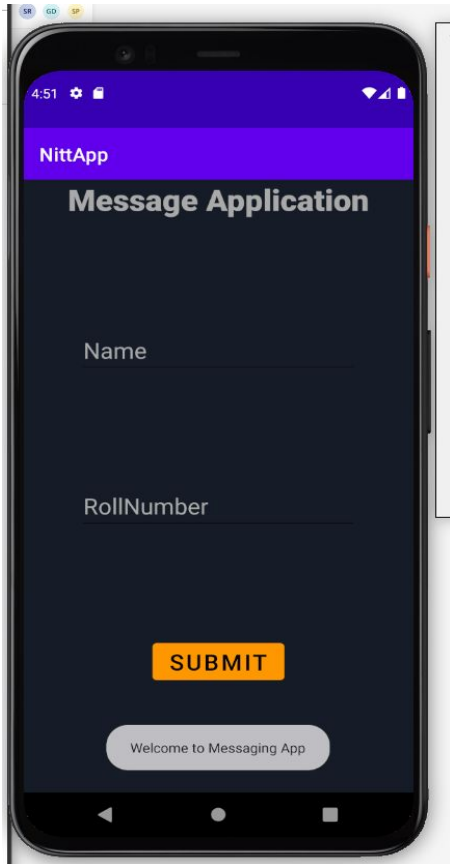
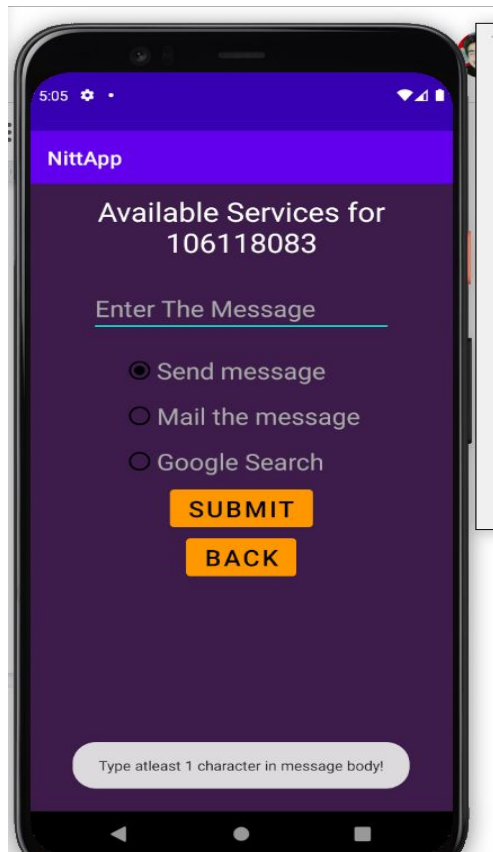**If the roll number is not given or length of roll number is not equal to 9 then I'll show error using toasts.**
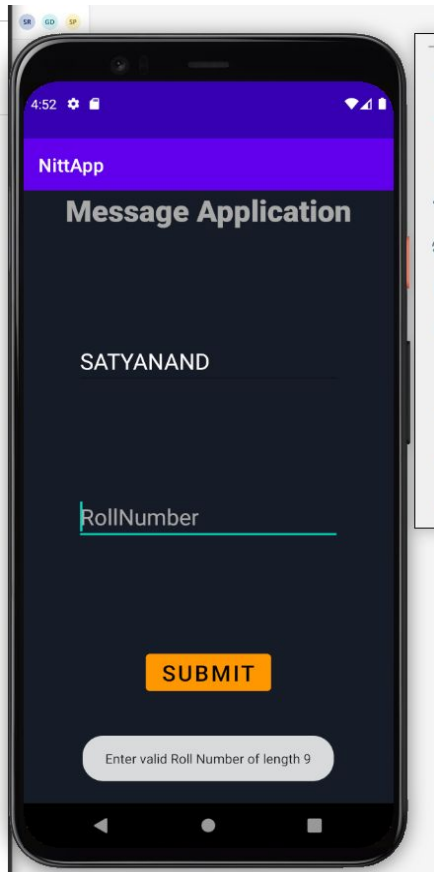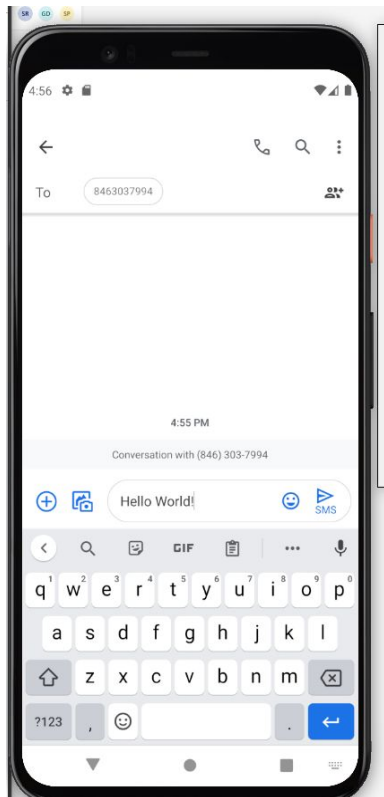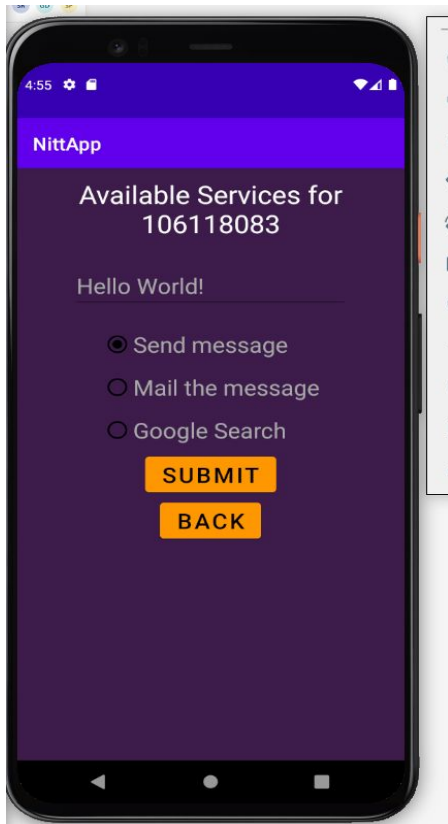
Launching of 2nd Activity:
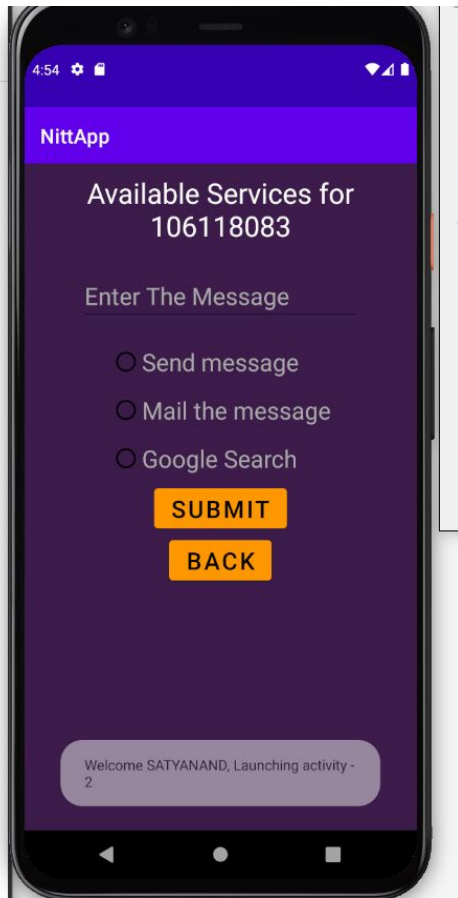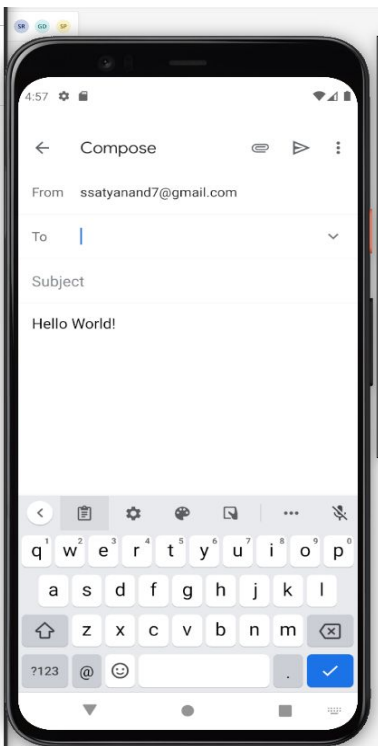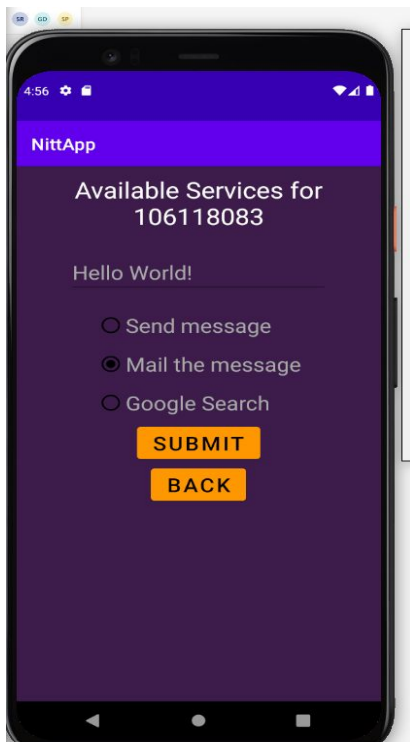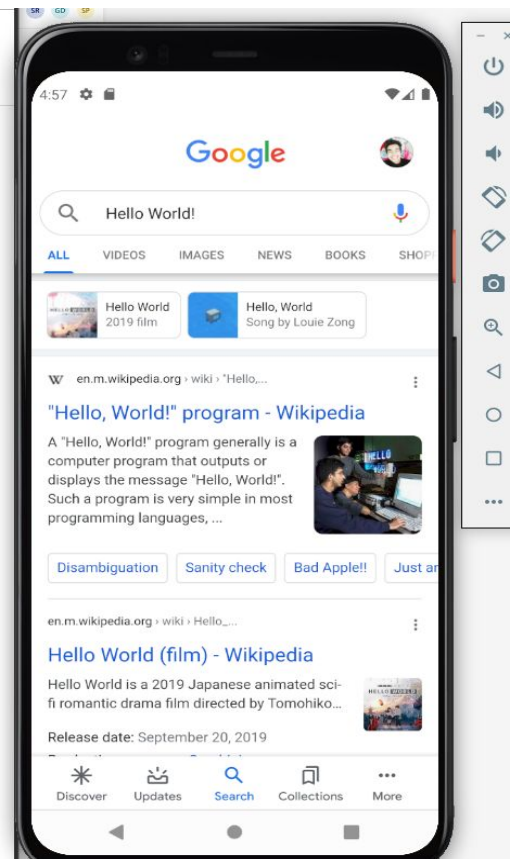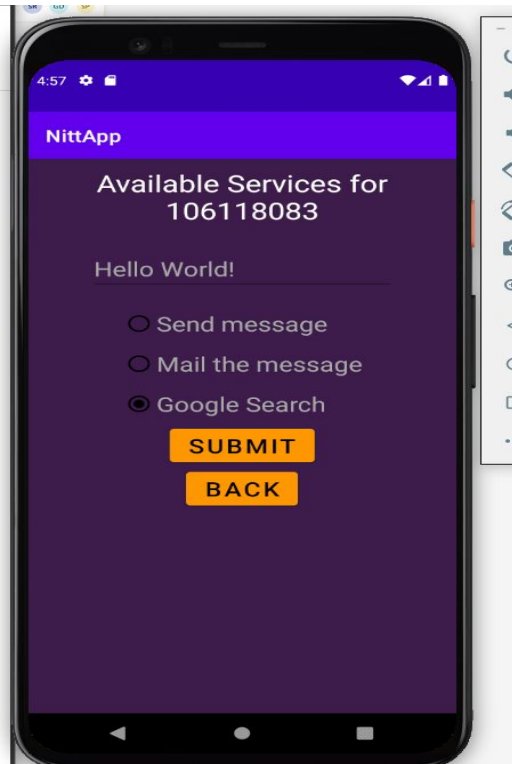
IF no Radio button is selected Showing error:
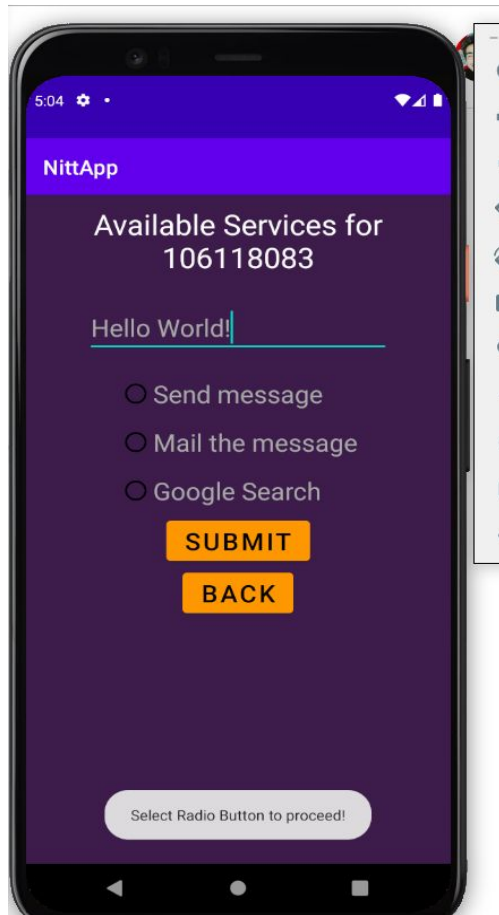
If no message:

Radio Button - 1 => Send Message

Radio-2 Mailing

Radio-3 Google Search

Outcomes: We accomplished the task to get the desired outputs, without any bugs/crashes.