Exercise 8 – SMS Sending and Notification

Objective

Develop an android app that sends SMS and creates an alert upon receiving the SMS with text in the notification.

Algorithm

1. Initialize the Project:
   - Open Android Studio and create a new Android Project.

2. Design the UI:
   - Create a simple layout with an `EditText` for entering SMS content and a `Button` to send the SMS.

3. Request SMS Permission:
   - In the manifest file, request permission to send and receive SMS.

4. Send SMS:
   - Implement logic to send an SMS when the user clicks the send button.
   - Utilize the `SmsManager` class for sending SMS.

5. Receive SMS:
   - Register a `BroadcastReceiver` to listen for incoming SMS.
   - Extract the SMS content from the received message.

6. Create Alert:
   - When an SMS is received, create an alert or notification displaying the SMS content.

Features used

Main Features:
- Permission handling for SMS sending and receiving.
- UI components for entering SMS content and sending.
- Utilization of `SmsManager` for sending SMS.
- Implementation of a `BroadcastReceiver` for receiving SMS.
- Creation of an alert or notification upon receiving an SMS.

Source Code

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:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<TextView
android:id="@+id/textView2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="SMS App"
android:textAppearance="@style/TextAppearance.AppCompat.Display1"
android:textColor="#067A6A"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.096" />
<TextView
android:id="@+id/textView"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="28dp"
```

```
android:layout_marginEnd="140dp"
android:text="Send an SMS"
android:textAppearance="@style/TextAppearance.AppCompat.Large"
android:textColor="#0C675A"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView2" />
<TextView
android:id="@+id/phno"

android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="44dp"
android:layout_marginTop="44dp"
android:text="Phone Number:"
android:textAppearance="@style/TextAppearance.AppCompat.Medium"
android:textColor="#304FFE"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView" /> <TextView
android:id="@+id/smstv"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginStart="44dp"
android:layout_marginTop="104dp"
android:text="SMS Content:"
android:textAppearance="@style/TextAppearance.AppCompat.Medium"
android:textColor="#304FFE"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/textView" /> <EditText
android:id="@+id/etPhone"
android:layout_width="199dp"
android:layout_height="39dp"
android:layout_marginStart="12dp"
android:layout_marginTop="36dp"
android:ems="10"
android:inputType="phone"
android:textAppearance="@style/TextAppearance.AppCompat.Body1"
app:layout_constraintStart_toEndOf="@+id/phno"
app:layout_constraintTop_toBottomOf="@+id/textView" /> <EditText
android:id="@+id/content"
android:layout_width="341dp"
android:layout_height="123dp"
android:layout_marginTop="68dp"
```

```
android:layout_marginEnd="32dp"
android:ems="10"
android:gravity="start|top"
android:hint="Type here"
android:inputType="textMultiLine"
android:textAppearance="@style/TextAppearance.AppCompat.Body1"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/etPhone" /> <Button
android:id="@+id/sendbtn"
android:layout_width="wrap_content"

android:layout_height="wrap_content"
android:layout_marginTop="48dp"
android:layout_marginEnd="160dp"
android:backgroundTint="#00BFA5"
android:text="SEND"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toBottomOf="@+id/content" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

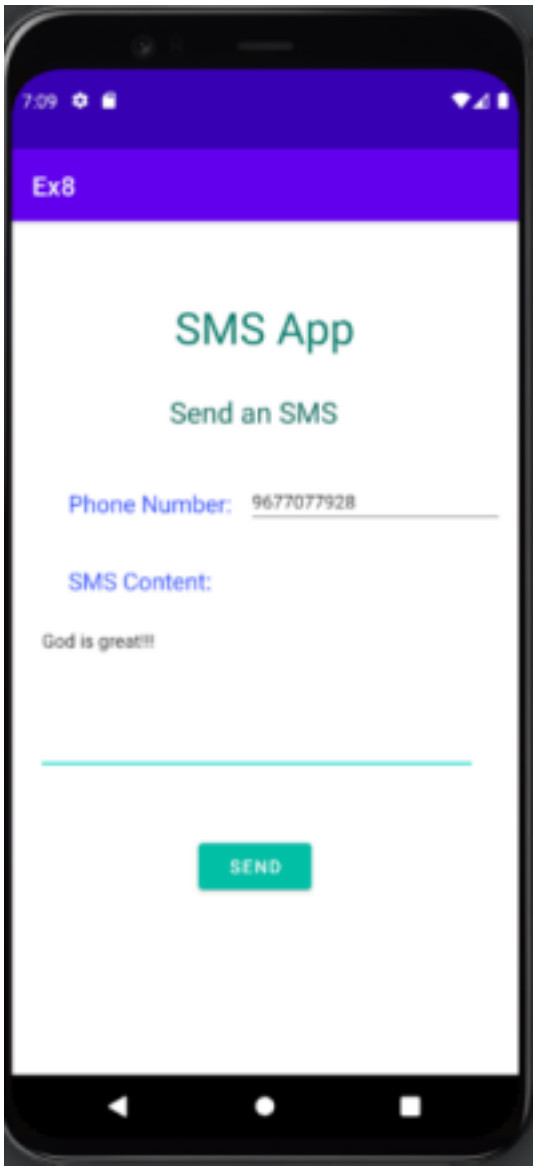
```
package com.example.ex8;
import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity; import
androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
public class MainActivity extends AppCompatActivity { private static final
int MY_PERMISSIONS_REQUEST_SEND_SMS = 0; Button sendBtn;
EditText txtphoneNo;
EditText txtMessage;
String phoneNo;
String message;
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
sendBtn = (Button) findViewById(R.id.sendbtn);
txtphoneNo = (EditText) findViewById(R.id.etPhone); txtMessage = (EditText)
findViewById(R.id.content); sendBtn.setOnClickListener(new
View.OnClickListener() { public void onClick(View view) {
sendSMSMessage();
}
});
}
protected void sendSMSMessage() {

phoneNo = txtphoneNo.getText().toString();
message = txtMessage.getText().toString();
if (ContextCompat.checkSelfPermission(this, Manifest.permission.SEND_SMS) !=
PackageManager.PERMISSION_GRANTED) {
if (ActivityCompat.shouldShowRequestPermissionRationale(
this, Manifest.permission.SEND_SMS)) {
} else {
ActivityCompat.requestPermissions(this,
new String[] {Manifest.permission.SEND_SMS},
MY_PERMISSIONS_REQUEST_SEND_SMS);
}
}
}
@Override
public void{onRequestPermissionsResult(int requestCode, String permissions[],
int[] grantResults)
switch (requestCode) {
case MY_PERMISSIONS_REQUEST_SEND_SMS: {
if (grantResults.length > 0
&& grantResults[0] == PackageManager.PERMISSION_GRANTED) {
SmsManager smsManager = SmsManager.getDefault();
smsManager.sendTextMessage(phoneNo, null, message, null, null);
Toast.makeText(getApplicationContext(), "SMS sent.",
Toast.LENGTH_LONG).show();
}
else {
Toast.makeText(getApplicationContext(), "SMS failed, please try
again.",Toast.LENGTH_LONG).show();
return;
```

```
}
}
}
}
}
```

Output Screenshots



Result

Thus an SMS sending app was implemented

Best Practices

1. User friendly design
2. Readable layouts
3. Modularity
4. Used apt names for xml and java files.
5. Set padding and margins for dynamically added elements

Learning outcomes

- An android application to send an SMS was implemented.
- A notification for the SMS was also implemented.