Android SMS

SMS

Introduction

- We can send SMS from our android application in two ways either by using **SMSManager** API or **Intents** based on our requirements.

- If we use **SMSManager** API, it will directly send SMS from our application. Using the SMS Manager, you can replace the native SMS application to send text messages,react to incoming texts, or use SMS as a data transport layer.

- In case if we use Intent with proper action (**ACTION_VIEW**), it will invoke a built-in SMS app to send SMS from our application.

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Android Send SMS using SMSManager API

- To send SMS using SMSManager API we need to write the code like as shown below.

```
SmsManager smgr = SmsManager.getDefault();
smgr.sendTextMessage(MobileNumber,null,Message,null,null);
```

- Following are the five arguments to the sendTextMessage() method:
  - destinationAddress—Phone number of the recipient
  - scAddress—Service center address; use null for default SMSC
  - text—Content of the SMS message
  - sentIntent—Pending intent to invoke when the message is sent
  - deliveryIntent—Pending intent to invoke when the message has been delivered

- **SMSManager** API required **SEND_SMS** permission in our android manifest to send SMS. Following is the code snippet to set **SEND_SMS** permissions in manifest file.

```
<uses-permission android:name="android.permission.SEND_SMS"/>
```

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Sending SMS Messages Programmatically

- **Step 1:** Using Android Studio, create a new Android project and name it **SMS.**
- **Step 2 :**Replace the TextView with the following bolded statements in the activity_main.xml file.[Be sure to replace instances of com.jfdimarzio with the package used in your project:]

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

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Sending SMS Messages Programmatically

- **Step 3:** In the AndroidManifest.xml file, add the following bolded statements.

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   package="com.jfdimarzio.sms">
   <uses-permission android:name="android.permission.SEND_SMS"/>
   <application
      android:allowBackup="true"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:supportsRtl="true"
      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>
    </application>
```

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Sending SMS Messages Programmatically

- **Step 4:** Add the following statements in bold to the MainActivity.java file:

```
import android.support.v4.app.ActivityCompat;
import android.support.v4.content.ContextCompat;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;

public class MainActivity extends AppCompatActivity {
    final private int REQUEST_SEND_SMS = 123;
    @Override
     protected void onCreate(Bundle savedInstanceState) {
         super.onCreate(savedInstanceState);
         setContentView(R.layout.activity_main);
```

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Sending SMS Messages Programmatically

```
public void onClick(View v) {
    //---the "phone number" of your emulator should be 5554---
   sendSMS("5554", "Hello my friends!");
 }

 //---sends an SMS message---
 private void sendSMS(String phoneNumber, String message)
{
      SmsManager sms = SmsManager.getDefault();
      sms.sendTextMessage(phoneNumber, null, message, null, null);
 }
}
```

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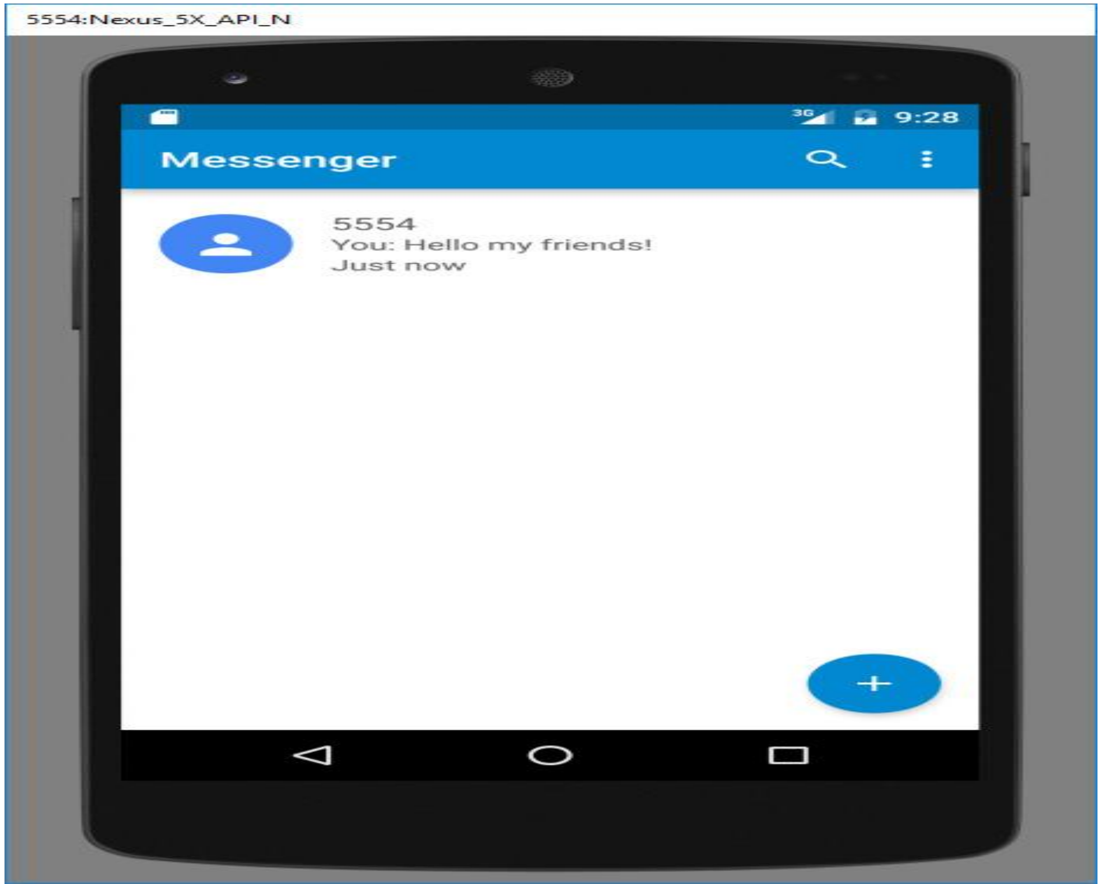
Sending SMS Messages Programmatically

- **Step 5:** Pess Shift+F9 to debug the application on the Android emulator.

- **Step 6 :** Click the Send SMS button to send an SMS message. Figure shows the SMS message received (view it by opening the messaging app on the emulator).



5554
You: Hello my friends!
Just now

SMS

Receiving SMS Messages

- **Step 1:** Using the same project created in the previous example, add the following bolded statements to the AndroidManifest.xml file.

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.jfdimarzio.sms">
     <uses-permission android:name="android.permission.SEND_SMS"/>
     <uses-permission android:name="android.permission.RECEIVE_SMS"/>
     <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
```

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Receiving SMS Messages

```
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                 <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <receiver android:name=".SMSReceiver" android:exported="true"
            android:permission="android.permission.BROADCAST_SMS">
            <intent-filter android:priority="9000">
              <action
                android:name="android.provider.Telephony.SMS_RECEIVED" />
          </intent-filter>
        </receiver>
    </application>
</manifest>
```

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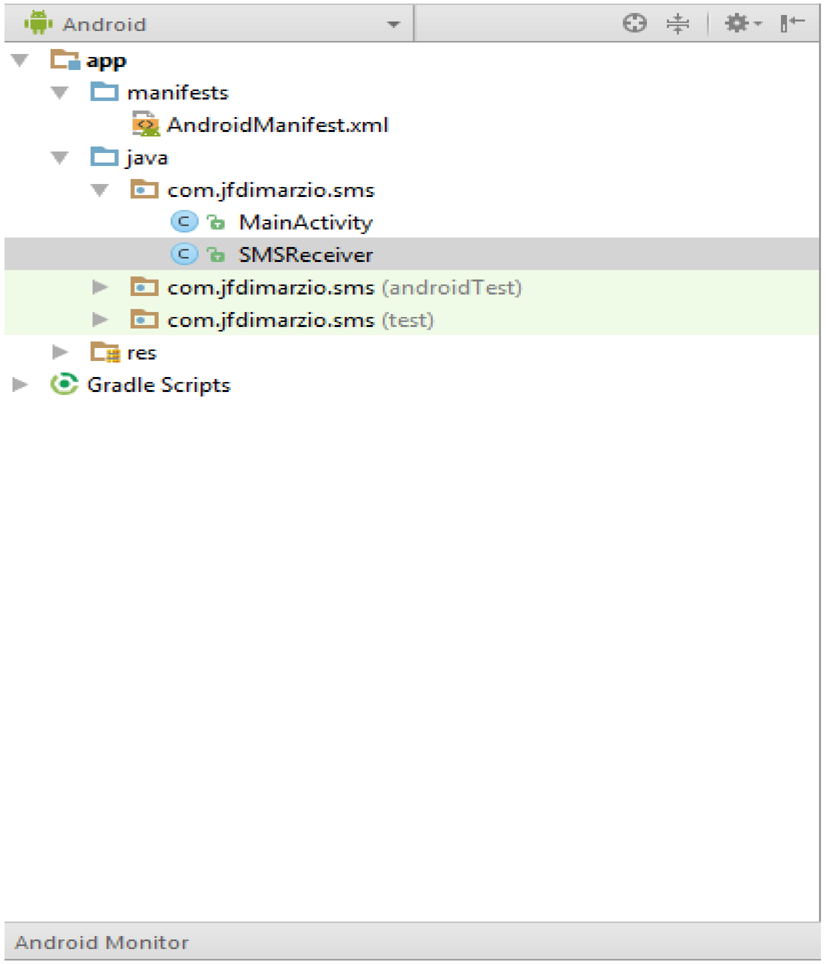
Receiving SMS Messages

- **Step 2:** In the src folder of the project, add a new Class file to the package name and call it **SMSReceiver**



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Receiving SMS Messages

- **Step 3:** Code the SMSReceiver.java file as follows:

```
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.telephony.SmsMessage;
import android.util.Log;
import android.widget.Toast;
public class SMSReceiver extends BroadcastReceiver
 {
     @Override
     public void onReceive(Context context, Intent intent)
     {
          //---get the SMS message passed in---
          Bundle bundle = intent.getExtras();
          SmsMessage[] msgs = null;
          String str = "SMS from ";
          if (bundle != null)
```

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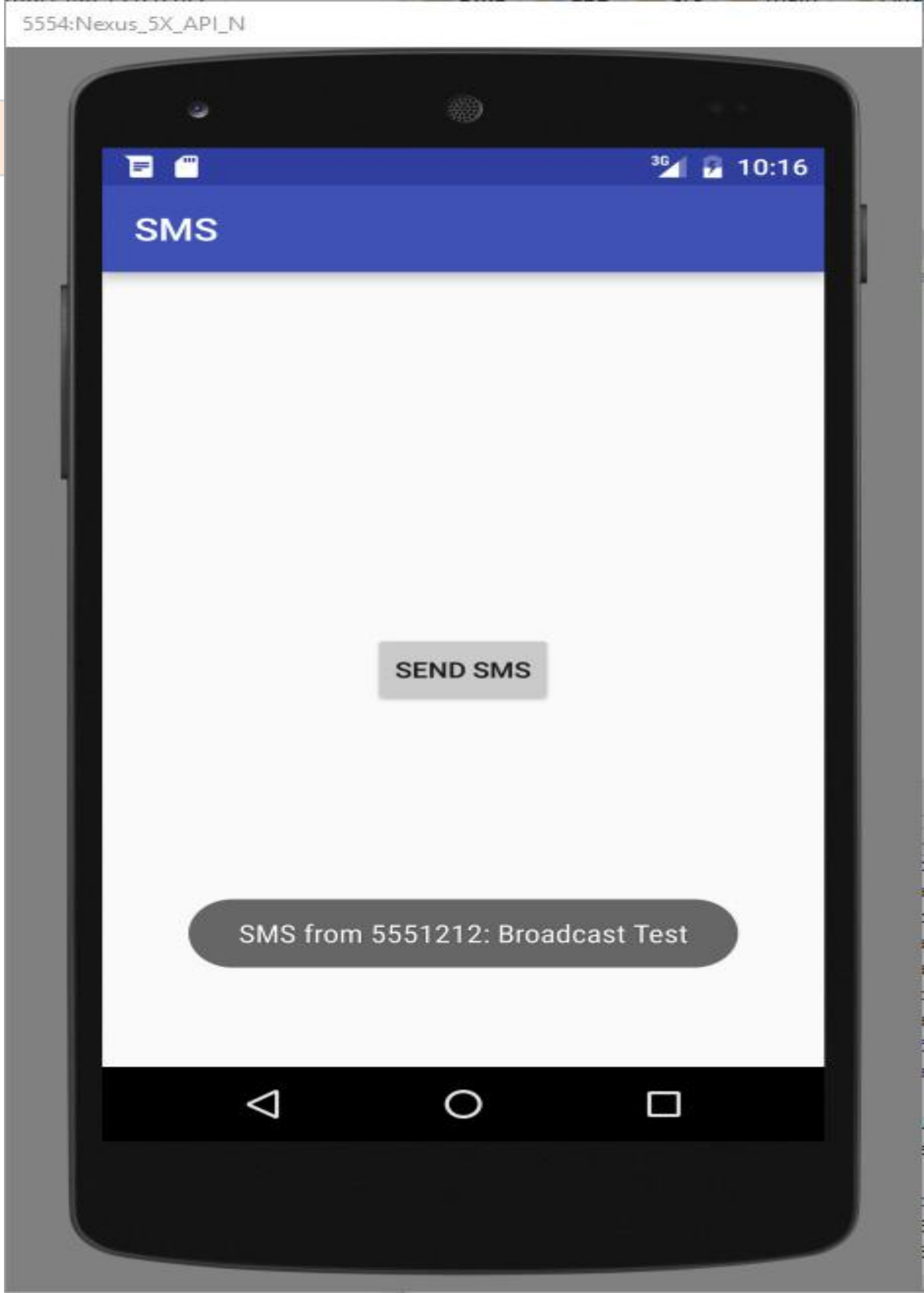
Receiving SMS Messages

```
            {
              //---retrieve the SMS message received---
              msgs = Telephony.Sms.Intents.getMessagesFromIntent(intent);
              for (int i=0; i<msgs.length; i++){
                    str += msgs[i].getMessageBody().toString();
               }
               //---get the message body---
                str += msgs[i].getMessageBody().toString();
             }
            //---display the new SMS message---
            Toast.makeText(context, str, Toast.LENGTH_SHORT).show();
             Log.d("SMSReceiver", str);
        }
      }
}
```

Receiving SMS Messages

- **Step 4:** Press Shift+F9 to debug the application on the Android emulator.

- **Step 5**: Using the More setting on the emulator, select Phone and Send Message, send a message to the emulator. Your application should be able to receive the message and display it using the Toast class (see Figure) .



SMS from 5551212: Broadcast Test

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Android Send SMS using Intent

- Intent is a messaging object which is used to request an action from another app component such as activities, services, broadcast receivers, and content providers.

- To send SMS using the Intent object, we need to write the code like as shown below.

```
Intent sInt = new Intent(Intent.ACTION_VIEW);
sInt.putExtra("address", new String[]{txtMobile.getText().toString()});
sInt.putExtra("sms_body",txtMessage.getText().toString());
sInt.setType("vnd.android-dir/mms-sms");
```

- Even for Intent, it required a **SEND_SMS** permission in our android manifest to send SMS. Following is the code snippet to set **SEND_SMS** permissions in manifest file.

```
<uses-permission android:name="android.permission.SEND_SMS"/>
```

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Android Send SMS using Intent

- Call startActivity with an Intent.ACTION_SENDTO action Intent. Specify a target number using sms: schema notation as the Intent data. Include the message you want to send within the Intent payload using an sms_body extra:

```
Intent smsIntent = new Intent(Intent.ACTION_SENDTO,
                              Uri.parse(“sms:55512345”));
smsIntent.putExtra(“sms_body”, “Press send to send me”);
startActivity(smsIntent);
```

- To attach files to your message (effectively creating an MMS message), add an Intent.EXTRA_STREAM with the URI of the resource to attach, and set the Intent type to the MIME type of the attached resource.

- Note that the native MMS application doesn’t include an Intent Receiver for ACTION_SENDTO with a type set. Instead, you need to use ACTION_SEND and include the target phone number as an address extra:

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Android Send SMS using Intent

```
// Get the URI of a piece of media to attach.
Uri attached_Uri = Uri.parse("content://media/external/images/media/1");
// Create a new MMS intent
Intent mmsIntent = new Intent(Intent.ACTION_SEND, attached_Uri);
mmsIntent.putExtra("sms_body", "Please see the attached image");
mmsIntent.putExtra("address", "07912355432");
mmsIntent.putExtra(Intent.EXTRA_STREAM, attached_Uri);
mmsIntent.setType("image/jpeg");
startActivity(mmsIntent);
```

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Listening for Incoming SMS Messages

- When a device receives a new SMS message, a new Broadcast Intent is fired with the **android.provider.Telephony.SMS_RECEIVED** action.

- For an application to listen for SMS Broadcast Intents, it needs to specify the RECEIVE_SMS manifest permission:

<uses-permission android:name=”android.permission.RECEIVE_SMS” />

- The SMS Broadcast Intent includes the incoming SMS details. To extract the array of SmsMessage objects packaged within the SMS Broadcast Intent bundle, use the pdu key to extract an array of SMS PDUs (protocol data units — used to encapsulate an SMS message and its metadata).

- To convert each PDU byte array into an SMS Message object, call SmsMessage.createFromPdu, passing in each byte array:

```
Bundle bundle = intent.getExtras();
if (bundle != null) {
        Object[] pdus = (Object[]) bundle.get(“pdus”);
        SmsMessage[] messages = new SmsMessage[pdus.length];
         for (int i = 0; i < pdus.length; i++)
            messages[i] = SmsMessage.createFromPdu((byte[]) pdus[i]);   }
```

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Listening for Incoming SMS Messages

- To listen for incoming messages, register your SMS Broadcast Receiver using an Intent Filter that listens for the android.provider.Telephony.SMS_RECEIVED action String.

- Register this in the application manifest to ensure your application can always respond to incoming SMS messages.

```
<receiver android:name=”MySMSReceiver”>
    <intent-filter>
        <action android:name=”android.provider.Telephony.SMS_RECEIVED”/>
    </intent-filter>
</receiver>
```

- Each SmsMessage contains the SMS message details, including the originating address (phone number), timestamp, and the message body, which can be extracted using the getOriginatingAddress, getTimestampMillis, and getMessageBody methods, respectively:

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Listening for Incoming SMS Messages

```
public class MySMSReceiver extends BroadcastReceiver {
        @Override
        public void onReceive(Context context, Intent intent) {
              Bundle bundle = intent.getExtras();
               if (bundle != null) {
                     Object[] pdus = (Object[]) bundle.get(“pdus”);
                      SmsMessage[] messages = new SmsMessage[pdus.length];
                      for (int i = 0; i < pdus.length; i++)
                          messages[i] = SmsMessage.createFromPdu((byte[]) pdus[i]);
                     for (SmsMessage message : messages) {
                        String msg = message.getMessageBody();
                         long when = message.getTimestampMillis();
                         String from = message.getOriginatingAddress();
                         Toast.makeText(context, from + “ : “ + msg,
                         Toast.LENGTH_LONG).show();
                      }
              }
        }
}
```

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Android Send SMS Example

- The example to send SMS using **SMSManager** API in the android application.

- Create a new android application using android studio and give names as **SendSMSExample**. Now open activity_main.xml file and write the code below.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:orientation="vertical" android:layout_width="match_parent"
  android:layout_height="match_parent">
  <TextView
    android:id="@+id/fstTxt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="100dp"
    android:layout_marginTop="150dp"
    android:text="Mobile No" />
```

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Android Send SMS Example

```
<EditText
   android:id="@+id/mblTxt"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:layout_marginLeft="100dp"
   android:ems="10"/>
<TextView
   android:id="@+id/secTxt"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Message"
   android:layout_marginLeft="100dp" />
<EditText
   android:id="@+id/msgTxt"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:layout_marginLeft="100dp"
   android:ems="10" />
```

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Android Send SMS Example

```
    <Button
        android:id="@+id/btnSend"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="100dp"
        android:text="Send SMS" />
</LinearLayout>
```

Android Send SMS Example

- Now open our main activity file **MainActivity.java** and write the code like as shown below

MainActivity.java

```
package com.tutlane.sendsmsexample;
import android.content.Intent;
import android.net.Uri;
import android.provider.Telephony;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    private EditText txtMobile;
    private EditText txtMessage;
    private Button btnSms;
```

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Android Send SMS Example

```
@Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtMobile = (EditText)findViewById(R.id.mblTxt);
        txtMessage = (EditText)findViewById(R.id.msgTxt);
        btnSms = (Button)findViewById(R.id.btnSend);
        btnSms.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                try{
                    SmsManager smgr = SmsManager.getDefault();
                    smgr.sendTextMessage(txtMobile.getText().toString(),null,txtMes
 sage.getText().toString(),null,null);
                    Toast.makeText(MainActivity.this, "SMS Sent Successfully",
 Toast.LENGTH_SHORT).show();
                }
```

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Android Send SMS Example

```
            catch (Exception e){
               Toast.makeText(MainActivity.this, "SMS Failed to Send, Please try
again", Toast.LENGTH_SHORT).show();
            }
         }
      });
   }
}
```

Android Send SMS Example

- Now open android manifest file (**AndroidManifest.xml**) and write the code like as shown below

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.tutlane.sendsmsexample">
  <uses-permission android:name="android.permission.SEND_SMS"/>
  <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/AppTheme">
    <activity android:name=".MainActivity">
```

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Android Send SMS Example

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

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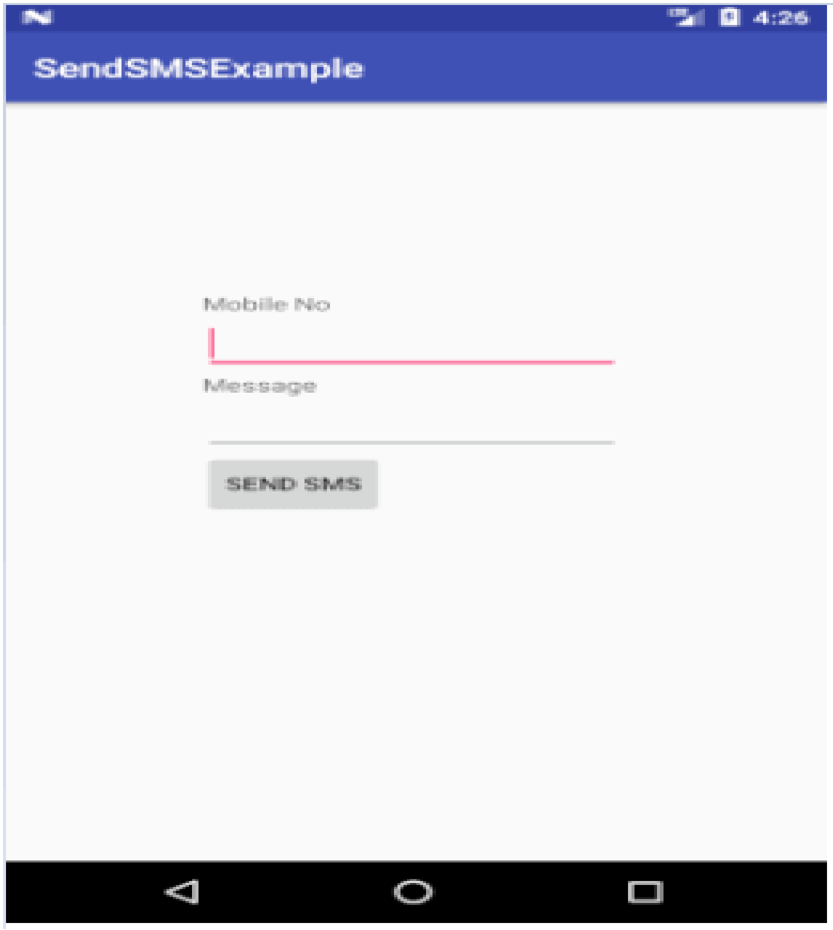
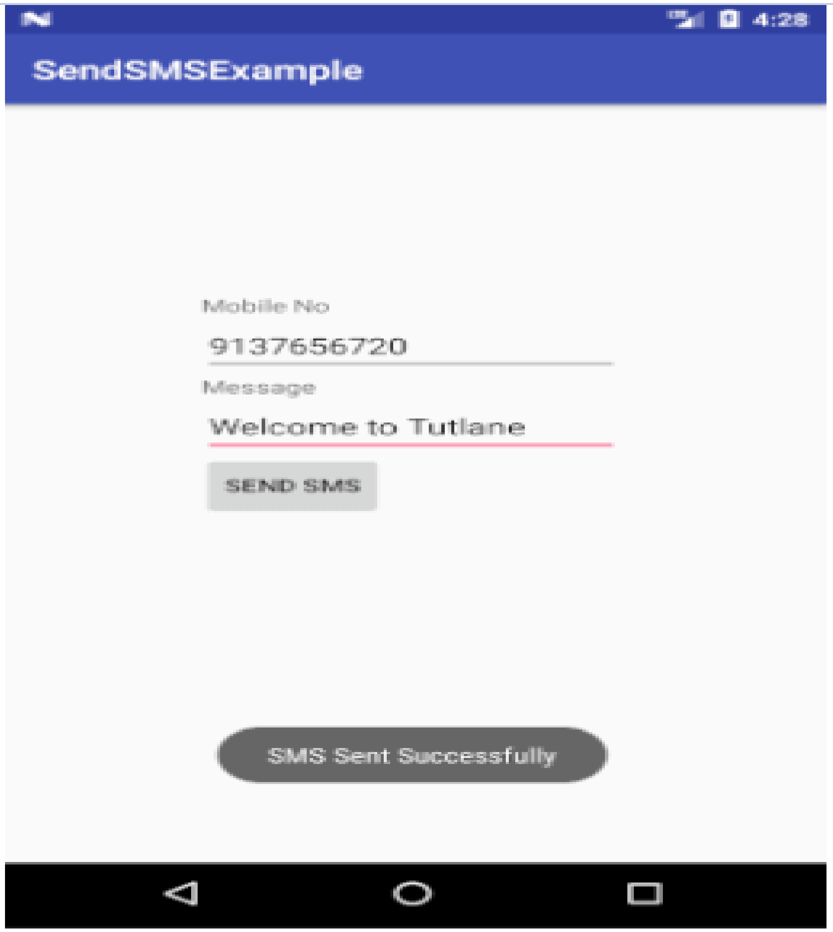
Output of Android Send SMS Example





Once you enter all details and click on **Send SMS** button it will send SMS and show the alert message like as mentioned in above image.

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Android Send SMS Example

- The above example we implemented using **SMSManager** API. In case if we want to use Intent to send SMS to replace button click code like as shown below.

```
btnSms.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        try{
            Intent i = new Intent(Intent.ACTION_VIEW);
            i.setData(Uri.parse("smsto:"));
            i.setType("vnd.android-dir/mms-sms");
            i.putExtra("address", new String(txtMobile.getText().toString()));
            i.putExtra("sms_body",txtMessage.getText().toString());
            startActivity(Intent.createChooser(i, "Send sms via:"));
        }
        catch(Exception e){
            Toast.makeText(MainActivity.this, "SMS Failed to Send, Please try again",
             Toast.LENGTH_SHORT).show();
        }
    }      });
```

THANKS