GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

(University School Of Information Communication & Technology)

MOBILE ARCHITECTURE PROGRAMMING LAB
IT-765

SUBMITTED TO

Dr. M. Bala Krishna
Assistant Professor

SUBMITTED BY

Prateek
Enroll No.00416404522
MCA(SE)
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1. Layouts: Linear, Relative, Table, Grid View & Identify User Centric Design Process Features

LINEAR VIEW

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:paddingLeft="20dp"
   android:paddingRight="20dp"
   android:orientation="vertical" >
   <EditText android:id="@+id/txtTo"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="To"/>
   <EditText  android:id="@+id/txtSub"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="Subject"/>
   <EditText android:id="@+id/txtMsg"
      android:layout_width="match_parent"
      android:layout_height="0dp"
      android:layout_weight="1"
      android:gravity="top"
      android:hint="Message"/>
   <Button  android:layout_width="100dp"
      android:layout_height="wrap_content"
      android:layout_gravity="right"
      android:text="Send"/>
</LinearLayout>
```

MainActivity.java

```
package com.tutlane.linearlayout;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
   } }
```

RELATIVE VIEW

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:paddingLeft="10dp"
   android:paddingRight="10dp">
   <Button android:id="@+id/btn1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignParentLeft="true"
      android:text="Button1" />
   <Button  android:id="@+id/btn2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_alignParentRight="true"
```

```
        android:layout_centerVertical="true"
        android:text="Button2" />
    <Button android:id="@+id/btn3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentLeft="true"
        android:layout_centerVertical="true"
        android:text="Button3" />
    <Button android:id="@+id/btn4"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:text="Button4" />
    <Button android:id="@+id/btn5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBottom="@+id/btn2"
        android:layout_centerHorizontal="true"
        android:text="Button5" />
    <Button android:id="@+id/btn6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_above="@+id/btn4"
        android:layout_centerHorizontal="true"
        android:text="Button6" />
    <Button android:id="@+id/btn7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_toEndOf="@+id/btn1"
        android:layout_toRightOf="@+id/btn1"
        android:layout_alignParentRight="true"
        android:text="Button7" />
</RelativeLayout>
```

MainActivity.java

```
package com.tutlane.linearlayout;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
 @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    } }
```

TABLE VIEW

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="100dp"
    android:paddingLeft="10dp"
    android:paddingRight="10dp" >
    <TableRow android:background="#0079D6" android:padding="5dp">
        <TextView android:layout_width="wrap_content"
            android:layout_height="wrap_content"android:layout_weight="1"
            android:text="UserId" />
        <TextView android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="User Name" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="Location" />
  </TableRow>
  <TableRow android:background="#DAE8FC" android:padding="5dp">
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="1" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:layout_weight="1"
        android:text="Suresh Dasari" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="Hyderabad" />
  </TableRow>
  <TableRow android:background="#DAE8FC" android:padding="5dp">
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content" android:layout_weight="1"
        android:text="2" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="Rohini Alavala" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"android:text="Guntur" />
  </TableRow>
  <TableRow android:background="#DAE8FC" android:padding="5dp">
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="3" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"android:layout_weight="1"
        android:text="Trishika Dasari" />
      <TextView android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Guntur" />
  </TableRow>
</TableLayout>
```

MainActivity.java

```
package com.tutlane.linearlayout;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
  } }
```

GRID VIEW

activity_main.xml

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

```
    android:layout_height="match_parent"android:columnWidth="110dp"
    android:numColumns="auto_fit"android:verticalSpacing="10dp"
    android:horizontalSpacing="10dp"android:stretchMode="columnWidth"
    android:gravity="center" />
```

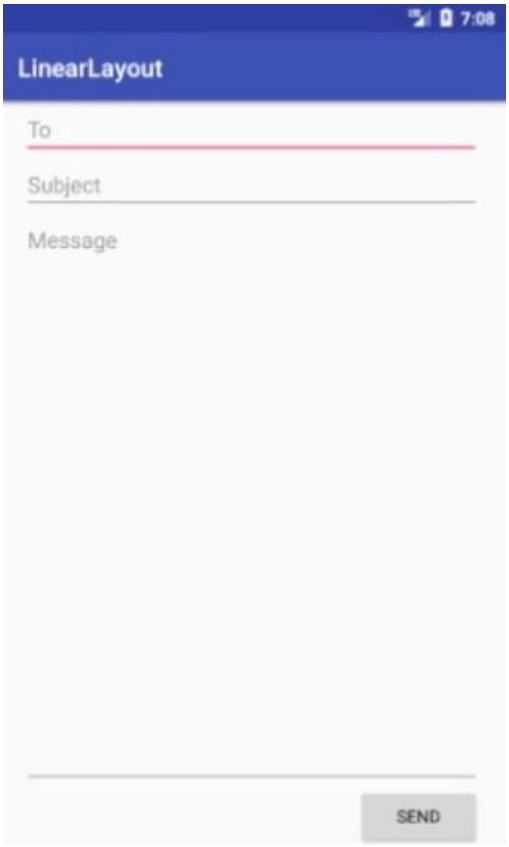
ImageAdapter.java

```
package com.tutlane.gridview;
import android.content.Context;
import android.view.View;
import android.view.ViewGroup;
import android.widget.BaseAdapter;
import android.widget.GridView;
import android.widget.ImageView;
public class ImageAdapter extends BaseAdapter {
    private Context mContext;
    public ImageAdapter(Context c) {
        mContext = c;}
    public int getCount() {
        return thumbImages.length;  }
    public Object getItem(int position) {
        return null;}
    public long getItemId(int position) {
        return 0; }
    // create a new ImageView for each item referenced by the Adapter
    public View getView(int position, View convertView, ViewGroup parent) {
            ImageView imageView = new ImageView(mContext);
            imageView.setLayoutParams(new GridView.LayoutParams(200, 200));
            imageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
            imageView.setPadding(8, 8, 8, 8);
            imageView.setImageResource(thumbImages[position]);
            return imageView;  }
    // Add all our images to arraylist
    public Integer[] thumbImages = {
            R.drawable.img1, R.drawable.img2,
            R.drawable.img3, R.drawable.img4,
            R.drawable.img5, R.drawable.img6,
            R.drawable.img7, R.drawable.img8,
            R.drawable.img1, R.drawable.img2,
            R.drawable.img3, R.drawable.img4,
            R.drawable.img5, R.drawable.img6,
            R.drawable.img7, R.drawable.img8,
            R.drawable.img1, R.drawable.img2,
            R.drawable.img3, R.drawable.img4,
            R.drawable.img5
    };  }
```

MainActivity.java

```
package com.tutlane.gridview
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.GridView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity { @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        GridView gv = (GridView) findViewById(R.id.gvDetails);
        gv.setAdapter(new ImageAdapter(this));
        gv.setOnItemClickListener(new AdapterView.OnItemClickListener() {
        public void onItemClick(AdapterView<?> parent, View v, int position, long id) {
              Toast.makeText(MainActivity.this, "Image Position: " + position, Toast.LENGTH_SHORT).show();
           }
        });
}
}
```

OUTPUT:


7:08
LinearLayout
To
Subject
Message
SEND


6:01
RelativeLayout
BUTTON1
BUTTON7
BUTTON3
BUTTON5
BUTTON2
BUTTON6
BUTTON4


11:23
TableLayout
User Name
Location
1
Suresh Dasari
Hyderabad
2
Rohini Alavala
Guntur
3
Trishika Dasari
Guntur


4:22
Gridview


4:24
Gridview
Image Position: 4

2. Asynchronous tasks in Android.Program to Illustrate Multithreading, Identify Collaborative UCD process features

Asynchronous tasks in Android

AndroidManifest.xml

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

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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:paddingBottom="@dimen/activity_vertical_margin"
   android:paddingLeft="@dimen/activity_horizontal_margin"
   android:paddingRight="@dimen/activity_horizontal_margin"
   android:paddingTop="@dimen/activity_vertical_margin"
   tools:context="com.legendblogs.asynctask.MainActivity">
   <TextView android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Welcome to Legend Blogs Exmpale"
      android:layout_alignParentTop="true"android:layout_centerHorizontal="true"
      android:textStyle="bold"android:textSize="20dp"
      android:id="@+id/textView2" />
   <TextView android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:textAppearance="?android:attr/textAppearanceLarge"
      android:text="Please enter a waiting Time"android:id="@+id/textView"
      android:layout_below="@+id/textView2"android:layout_centerHorizontal="true"
      android:layout_marginTop="64dp" />
   <EditText android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/editText"android:layout_below="@+id/textView"
      android:layout_marginTop="56dp"
      android:layout_alignEnd="@+id/textView"android:layout_alignStart="@+id/textView"   />
   <Button android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Run AsyncTask"android:id="@+id/button"
      android:layout_below="@+id/editText"android:layout_centerHorizontal="true"
      android:layout_marginTop="62dp" />
</RelativeLayout>
```

MainActivity.java

```
package com.legendblogs.asynctask;
import android.content.Context;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
   Context context; EditText editText;Button button;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main); this.context = this;
```

```
editText = (EditText) findViewById(R.id.editText);
button = (Button) findViewById(R.id.button);
button.setOnClickListener(new View.OnClickListener() {
   @Override
    public void onClick(View v) {
      if(editText != null && editText.length() > 0)
      new  MyAsyncTask(context).execute(editText.getText().toString());  }  });}}
```

MyAsyncTask.java

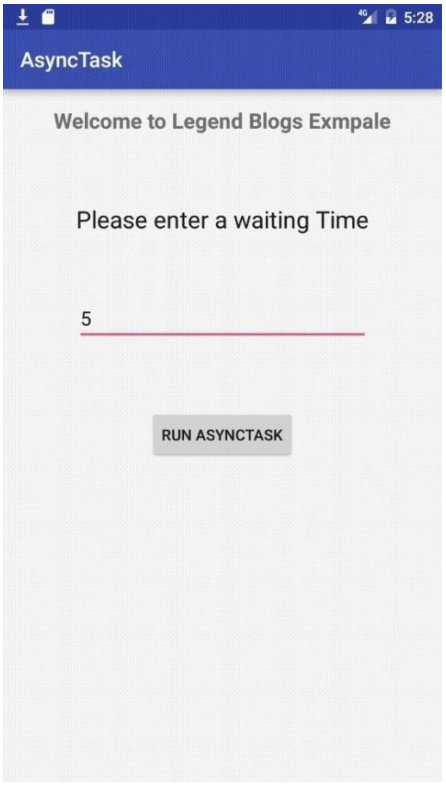
```
package com.legendblogs.asynctask;
import android.app.ProgressDialog;
import android.content.Context;
import android.os.AsyncTask;
import android.util.Log;
public class MyAsyncTask  extends AsyncTask<String, String, String> {
Context context; String result;
ProgressDialog progressDialog;
public MyAsyncTask (Context context) {
this.context = context; } @Override
protected void onPreExecute() {
super.onPreExecute();
progressDialog = ProgressDialog.show(context,
"Progress Dialog", null); } @Override
protected String doInBackground(String... args) {
int value = Integer.parseInt(args[0]);
for(int i = 0; i <= value ;i++){
try { Thread.sleep(1000); } catch (Exception e) {
Log.v("Error: ", e.toString());}
result = "Please wait for " + (value - i ) + " seconds";
publishProgress(result);   }
return null;  }  @Override
protected void onProgressUpdate(String... text) {
progressDialog.setMessage(text[0]); }
protected void onPostExecute(String result) {
progressDialog.dismiss(); }}
```

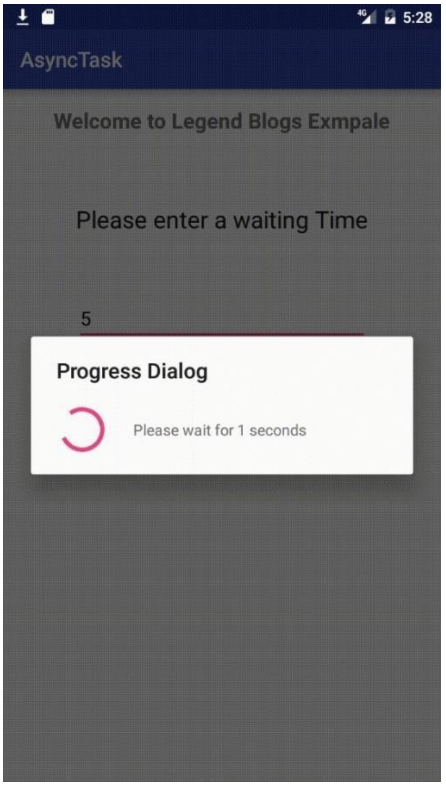
Multithreading

```
<LinearLayout  xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="match_parent"android:layout_height="match_parent"
android:orientation="vertical"android:id="@+id/info" >
<Button android:id="@+id/button1"android:layout_width="match_parent"
android:layout_height="wrap_content"android:onClick="fetchData"
android:text="Start MULTITHREAD" />
<TextView android:id="@+id/textView1"android:layout_width="wrap_content"
android:layout_height="wrap_content"android:text="Main thread" />
</LinearLayout>
package multi.threading;
import android.app.Activity;import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.TextView;
public class MultiThreadingActivity extends Activity {
private TextView tvOutput;
private static final int t1 = 1; private static final int t2 = 2;
private static final int t3 = 3;
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.main);
tvOutput = (TextView) findViewById(R.id.textView1); }
public void fetchData(View v) {
tvOutput.setText("Main thread");
thread1.start();thread2.start();thread3.start(); }
Thread thread1 = new Thread(new Runnable() {
@Override public void run() {
for (int i = 0; i < 5; i++) {
try {Thread.sleep(1000); } catch (InterruptedException e) {
```

```
e.printStackTrace(); }
handler.sendEmptyMessage(t1); } } });
Thread thread2 = new Thread(new Runnable() { @Override
public void run() { for (int i = 0; i < 5; i++) {
try { Thread.sleep(1000);
}catch (InterruptedException e) {
e.printStackTrace(); }
handler.sendEmptyMessage(t2);}} });
Thread thread3 = new Thread(new Runnable() { @Override
public void run() { for (int i = 0; i < 5; i++) {
try {Thread.sleep(1000);} catch (InterruptedException e) {
e.printStackTrace(); }
handler.sendEmptyMessage(t3);} } });
Handler handler = new Handler() {
public void handleMessage(android.os.Message msg) {
if(msg.what == t1) {tvOutput.append("\nIn thread 1");}
if(msg.what == t2) {tvOutput.append("\nIn thread 2");}
if(msg.what == t3) {tvOutput.append("\nIn thread 3");} } }; }
```

OUTPUT:





3. Simple Calculator Application using Android,Identify Multimodality features

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="fill_parent"
android:layout_height="fill_parent">
<LinearLayout android:layout_width="match_parent"
android:layout_height="wrap_content"android:id="@+id/linearLayout1"
android:layout_marginLeft="10pt"android:layout_marginRight="10pt"
android:layout_marginTop="3pt">
<EditText android:layout_weight="1"
android:layout_height="wrap_content"
android:layout_marginRight="5pt"android:id="@+id/etNum1"
android:layout_width="match_parent"
android:inputType="numberDecimal">
</EditText>
<EditText android:layout_height="wrap_content"
android:layout_weight="1"android:layout_marginLeft="5pt"
android:id="@+id/etNum2"android:layout_width="match_parent"
android:inputType="numberDecimal">
</EditText></LinearLayout>
<LinearLayoutandroid:layout_width="match_parent"
android:layout_height="wrap_content"android:id="@+id/linearLayout2"
android:layout_marginTop="3pt"android:layout_marginLeft="5pt"
android:layout_marginRight="5pt">
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"android:layout_weight="1"
android:text="+"android:textSize="15pt"
android:id="@+id/btnAdd"></Button>
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"android:layout_weight="1"
android:text="-"android:textSize="15pt"android:id="@+id/btnSub">
</Button>
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"android:layout_weight="1"
android:text="*"android:textSize="15pt"android:id="@+id/btnMult">
</Button>
<Button android:layout_height="wrap_content"
android:layout_width="match_parent"android:layout_weight="1"
android:text="/"android:textSize="15pt"android:id="@+id/btnDiv">
</Button>
</LinearLayout>
<TextView android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_marginLeft="5pt"android:layout_marginRight="5pt"
android:textSize="12pt"android:layout_marginTop="3pt"android:id="@+id/tvResult"
android:gravity="center_horizontal">
</TextView>
</LinearLayout>
```

MainActivity.java

```
package CALCU.CALU;
import android.app.Activity;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class CALCULATORActivity extends Activity implements OnClickListener {
```

```
EditText input1; EditText input2;
Button addition; Button subtraction;
Button multiplication; Button division;
TextView tvResult; String oper = "";
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.main);
input1 = (EditText) findViewById(R.id.etNum1);
input2 = (EditText) findViewById(R.id.etNum2);
addition = (Button) findViewById(R.id.btnAdd);
subtraction = (Button) findViewById(R.id.btnSub);
multiplication = (Button) findViewById(R.id.btnMult);
division = (Button) findViewById(R.id.btnDiv);
tvResult = (TextView) findViewById(R.id.tvResult);
// set a listener
addition.setOnClickListener(this);
subtraction.setOnClickListener(this);
multiplication.setOnClickListener(this);
division.setOnClickListener(this); }
@Override
public void onClick(View v) {
// TODO Auto-generated method stub
float num1 = 0;float num2 = 0;float result = 0;
// check if the fields are empty
if (TextUtils.isEmpty(input1.getText().toString())
|| TextUtils.isEmpty(input2.getText().toString())) {return; }
// read EditText and fill variables with numbers
num1 = Float.parseFloat(input1.getText().toString());
num2 = Float.parseFloat(input2.getText().toString());
// defines the button that has been clicked and performs the corresponding operation
// write operation into oper, we will use it later for output
switch (v.getId()) {
case R.id.btnAdd:
oper = "+";result = num1 + num2;break;
case R.id.btnSub:oper = "-";
result = num1 - num2;break;
case R.id.btnMult: oper = "*";
result = num1 * num2;break;
case R.id.btnDiv:oper = "/";
result = num1 / num2;break;
default:break; }
// form the output line
tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);} }
```

OUTPUT:

4. Program to Illustrate:Privacy,Trust and Group Communication Identify Group Awareness Function

```
public class RegistrationActivity extends AppCompatActivity {
    private TextInputEditText mobile;
    private TextInputEditText name;
    private MaterialButton createUserBtn;
    private ProgressBar progressBar;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);
        progressBar = findViewById(R.id.createUser_pb);
        mobile = findViewById(R.id.etMobile);
        name = findViewById(R.id.etName);
        createUserBtn = findViewById(R.id.create_user_btn);
        createUserBtn.setTextColor(getResources().getColor(R.color.textColorWhite));
        createUserBtn.setOnClickListener(v ->
                signUpTapped()
        );  }
    private void signUpTapped(){ User user = new User();
        user.setUid(mobile.getText().toString());
        user.setName(name.getText().toString());
        registerUser(user);}
    private void registerUser(User user) {
        progressBar.setVisibility(View.VISIBLE);
        CometChat.createUser(user, AppConfig.AppDetails.API_KEY, new CometChat.CallbackListener<User>() {
            @Override
            public void onSuccess(User user) {
                progressBar.setVisibility(View.GONE);
                login(user); }
            @Override
            public void onError(CometChatException e) {
                progressBar.setVisibility(View.GONE);
                createUserBtn.setClickable(true);
                Toast.makeText(RegistrationActivity.this,"Failed to create user",Toast.LENGTH_LONG).show();
            }});}
    private void login(User user) {
        progressBar.setVisibility(View.VISIBLE);
        CometChat.login(user.getUid(), AppConfig.AppDetails.API_KEY, new CometChat.CallbackListener<User>() {
            @Override
            public void onSuccess(User user) {
                progressBar.setVisibility(View.GONE);
                startActivity(new Intent(RegistrationActivity.this, ConversationsActivity.class));}
            @Override
            public void onError(CometChatException e) {
                progressBar.setVisibility(View.GONE);
                Toast.makeText(RegistrationActivity.this,e.getLocalizedMessage(),Toast.LENGTH_LONG).show();
            }}); }}
public class LoginActivity extends AppCompatActivity {
    private TextInputEditText mobile;
    private MaterialButton loginBtn;
    private MaterialButton signupBtn;
    private ProgressBar progressBar;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_login);
        progressBar = findViewById(R.id.createUser_pb);
        mobile = findViewById(R.id.etMobile);
        signupBtn = findViewById(R.id.create_user_btn);
        loginBtn = findViewById(R.id.login_user_btn);
        loginBtn.setTextColor(getResources().getColor(R.color.textColorWhite));
        loginBtn.setOnClickListener(v ->
                signInTapped());
        signupBtn.setOnClickListener(v ->
                startActivity(new Intent(LoginActivity.this, RegistrationActivity.class))
        ); }
    private void signInTapped(){
        User user = new User();
        user.setUid(mobile.getText().toString());
        login(user); }
    private void login(User user) {
        progressBar.setVisibility(View.VISIBLE);
        CometChat.login(user.getUid(), AppConfig.AppDetails.API_KEY, new CometChat.CallbackListener<User>() {
            @Override
            public void onSuccess(User user) {
                progressBar.setVisibility(View.GONE);
                startActivity(new Intent(LoginActivity.this, ConversationsActivity.class)); }
            @Override
            public void onError(CometChatException e) {
                progressBar.setVisibility(View.GONE);
            } });}}
```

ConversationsActivity.

```
public class ConversationsActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_conversations);}}
CometChatConversationListScreen.setItemClickListener(new OnItemClickListener<Conversation>() {
    @Override
    public void OnItemClick(Conversation var, int position) {
        User user = (User)var.getConversationWith();
        Intent intent = new Intent(ConversationsActivity.this,CometChatMessageScreen.class);
        intent.putExtra(StringContract.IntentStrings.UID, user.getUid());
        intent.putExtra(StringContract.IntentStrings.NAME, user.getName());
        intent.putExtra(StringContract.IntentStrings.AVATAR, user.getAvatar());
        intent.putExtra(StringContract.IntentStrings.TYPE, CometChatConstants.RECEIVER_TYPE_USER);
        startActivity(intent); }
    @Override
    public void OnItemLongClick(Conversation var, int position) {
        super.OnItemLongClick(var, position);
    }});
```

ConversationsActivity.java

```
public class ConversationsActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_conversations);
        CometChatConversationListScreen.setItemClickListener(new OnItemClickListener<Conversation>() {
            @Override
            public void OnItemClick(Conversation var, int position) {
                User user = User.fromJson(var.getConversationWith().toString());
                Intent intent = new Intent(ConversationsActivity.this,CometChatMessageScreen.class);
                intent.putExtra(StringContract.IntentStrings.UID, user.getUid());
                intent.putExtra(StringContract.IntentStrings.NAME, user.getName());
                intent.putExtra(StringContract.IntentStrings.AVATAR, user.getAvatar());
                intent.putExtra(StringContract.IntentStrings.TYPE, CometChatConstants.RECEIVER_TYPE_USER);
                startActivity(intent); }
            @Override
            public void OnItemLongClick(Conversation var, int position) {
```

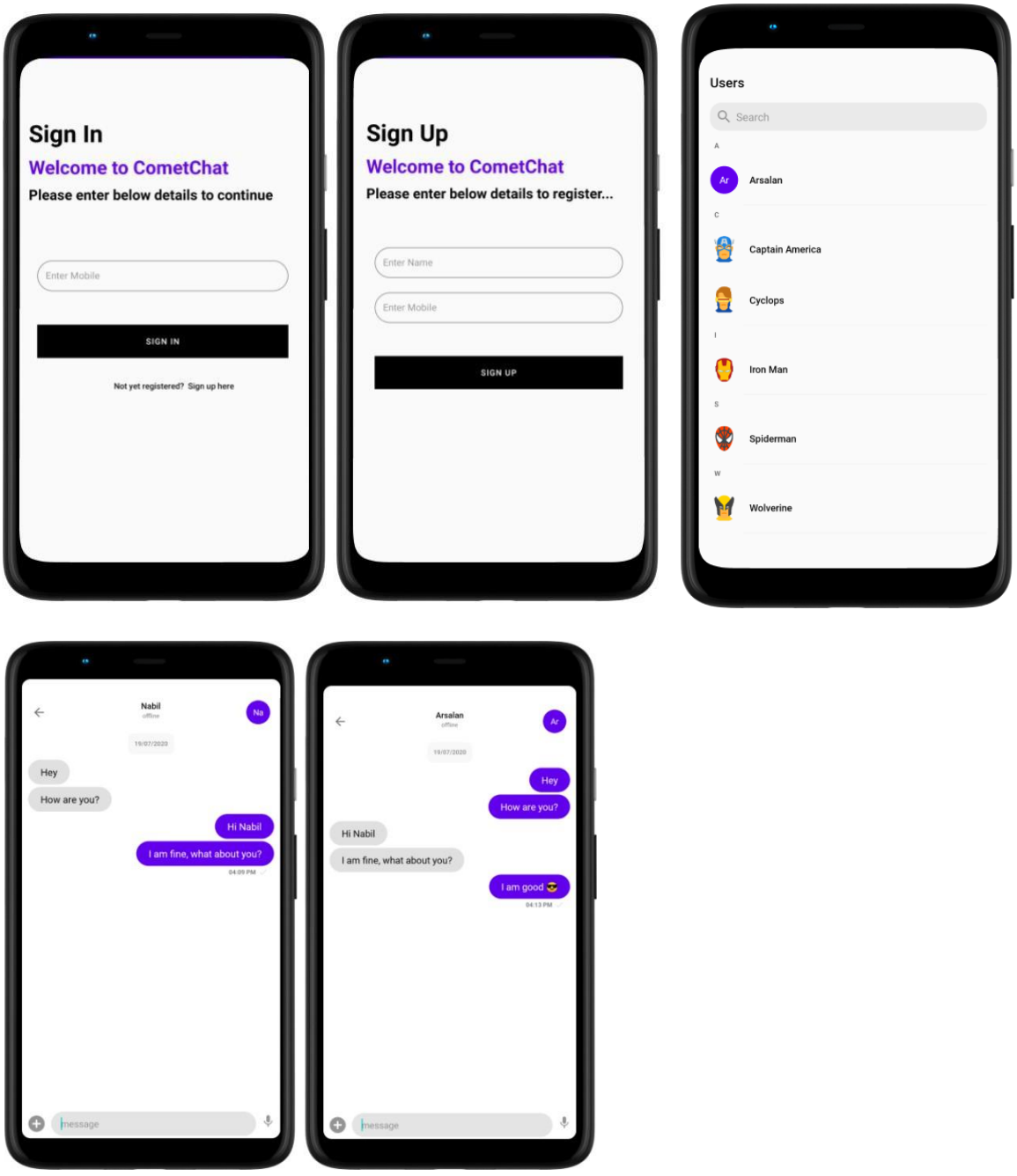
```
            super.OnItemLongClick(var, position);
        }});}
    public void newChatTapped(View view) {
        startActivity(new Intent(ConversationsActivity.this, ContactsActivity.class));}}
```

activity_conversations.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=".ConversationsActivity">
    <fragment
        android:id="@+id/conversationList"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        class="screen.CometChatConversationListScreen" />
    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/fab"
        android:layout_marginEnd="32dp"
        android:layout_marginBottom="32dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintBottom_toBottomOf="parent"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@android:drawable/ic_menu_add"
        android:layout_gravity="bottom|end"
        app:elevation="6dp"
        android:onClick="newChatTapped"
        app:pressedTranslationZ="12dp"/>
</androidx.constraintlayout.widget.ConstraintLayout>


CometChatUserListScreen.setItemClickListener(new OnItemClickListener<User>() {
    @Override
    public void OnItemClick(User var, int position) {
        Intent intent = new Intent(ContactsActivity.this,CometChatMessageScreen.class);
        intent.putExtra(StringContract.IntentStrings.UID, var.getUid());
        intent.putExtra(StringContract.IntentStrings.NAME, var.getName());
        intent.putExtra(StringContract.IntentStrings.AVATAR, var.getAvatar());
        intent.putExtra(StringContract.IntentStrings.TYPE, CometChatConstants.RECEIVER_TYPE_USER);
        startActivity(intent);
    }
    @Override
    public void OnItemLongClick(User var, int position) {
        super.OnItemLongClick(var, position);
    }
});
Intent intent = new Intent(ContactsActivity.this, CometChatMessageScreen.class);
intent.putExtra(StringContract.IntentStrings.UID, var.getUid());
intent.putExtra(StringContract.IntentStrings.NAME, var.getName());
intent.putExtra(StringContract.IntentStrings.AVATAR, var.getAvatar());
intent.putExtra(StringContract.IntentStrings.TYPE, CometChatConstants.RECEIVER_TYPE_USER);
startActivity(intent);
```

OUTPUT:


Sign In
Welcome to CometChat
Please enter below details to continue
Enter Mobile
SIGN IN
Not yet registered? Sign up here
Sign Up
Welcome to CometChat
Please enter below details to register...
Enter Name
Enter Mobile
SIGN UP
Users
Search
A
Ar
Arsalan
C
Captain America
Cyclops
I
Iron Man
S
Spiderman
W
Wolverine
Nabil
offline
Na
19/07/2020
Hey
How are you?
Hi Nabil
I am fine, what about you?
04:09 PM
message
Arsalan
offline
Ar
19/07/2020
Hey
How are you?
Hi Nabil
I am fine, what about you?
I am good
04:13 PM
message

5. Android Native Application that uses GPS Location Info.Identify SOA for Mobile Services

MainActivity.java.

```
package com.example.tutorialspoint7.myapplication;
import android.Manifest;
import android.app.Activity;
import android.os.Bundle;
import android.support.v4.app.ActivityCompat;
import android.test.mock.MockPackageManager;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
public class MainActivity extends Activity {
  Button btnShowLocation;
  private static final int REQUEST_CODE_PERMISSION = 2;
  String mPermission = Manifest.permission.ACCESS_FINE_LOCATION;
  // GPSTracker class
  GPSTracker gps; @Override
  public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    try {
      if (ActivityCompat.checkSelfPermission(this, mPermission)
        != MockPackageManager.PERMISSION_GRANTED) {
        ActivityCompat.requestPermissions(this, new String[]{mPermission},
          REQUEST_CODE_PERMISSION);
        // If any permission above not allowed by user, this condition will
          execute every time, else your else part will work}
    } catch (Exception e) {  e.printStackTrace(); }
    btnShowLocation = (Button) findViewById(R.id.button);
    // show location button click event
    btnShowLocation.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View arg0) {
        gps = new GPSTracker(MainActivity.this);
        // check if GPS enabled
        if(gps.canGetLocation()){
          double latitude = gps.getLatitude();
          double longitude = gps.getLongitude();
          Toast.makeText(getApplicationContext(), "Your Location is - \nLat: "
            + latitude + "\nLong: " + longitude, Toast.LENGTH_LONG).show();
        }else{
          gps.showSettingsAlert();  }  } }); } }
```

GPSTracker.java.

```
package com.example.tutorialspoint7.myapplication;
import android.app.AlertDialog;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.location.Location;
import  android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import          android.os.IBinder;
import android.provider.Settings;
```

```
import android.util.Log;
public class GPSTracker extends Service implements LocationListener {
   private final Context mContext;
   boolean isGPSEnabled = false;
   boolean isNetworkEnabled = false;
   boolean canGetLocation = false;
   Location location; // location
   double latitude; // latitude
   double longitude; // longitude
   private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10; // 10 meters
   private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1; // 1 minute
   protected LocationManager locationManager;
   public GPSTracker(Context context) {
     this.mContext = context; getLocation();  }
   public Location getLocation() {
     try {
       locationManager = (LocationManager) mContext.getSystemService(LOCATION_SERVICE);
       isGPSEnabled = locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);
       isNetworkEnabled = locationManager
         .isProviderEnabled(LocationManager.NETWORK_PROVIDER);
       if (!isGPSEnabled && !isNetworkEnabled) {
         // no network provider is enabled } else {  this.canGetLocation = true;
         // First get location from Network Providerif (isNetworkEnabled) {
           locationManager.requestLocationUpdates(
             LocationManager.NETWORK_PROVIDER,
             MIN_TIME_BW_UPDATES,
             MIN_DISTANCE_CHANGE_FOR_UPDATES, this);
           Log.d("Network", "Network"); if (locationManager != null) {
             location = locationManager
               .getLastKnownLocation(LocationManager.NETWORK_PROVIDER);
             if (location != null) { latitude = location.getLatitude();
               longitude = location.getLongitude();} } }
         if (isGPSEnabled) {if (location == null) {
             locationManager.requestLocationUpdates(
               LocationManager.GPS_PROVIDER,
               MIN_TIME_BW_UPDATES,MIN_DISTANCE_CHANGE_FOR_UPDATES,  this);
             Log.d("GPS Enabled", "GPS Enabled");
             if (locationManager != null) {  location = locationManager
                 .getLastKnownLocation(LocationManager.GPS_PROVIDER);
               if (location != null) {  latitude = location.getLatitude();
                 longitude = location.getLongitude();   } } } } }
     } catch (Exception e) { e.printStackTrace();  } return location;}
   public void stopUsingGPS(){if(locationManager != null){
       locationManager.removeUpdates(GPSTracker.this);} }
   public double getLatitude(){  if(location != null){
       latitude = location.getLatitude(); } return latitude; }
   public double getLongitude(){if(location != null){
       longitude = location.getLongitude();  }return longitude;}
   public boolean canGetLocation() {return this.canGetLocation;}
   public void showSettingsAlert(){
     AlertDialog.Builder alertDialog = new AlertDialog.Builder(mContext);
     alertDialog.setTitle("GPS is settings");
     alertDialog.setMessage("GPS is not enabled. Do you want to go to settings menu?");
     alertDialog.setPositiveButton("Settings", new DialogInterface.OnClickListener() {
       public void onClick(DialogInterface dialog,int which) {
         Intent intent = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
         mContext.startActivity(intent);   }});
     alertDialog.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
       public void onClick(DialogInterface dialog, int which) {
         dialog.cancel(); }});
     alertDialog.show(); }
   @Override
   public void onLocationChanged(Location location) {
```

```
   }@Override
   public void onProviderDisabled(String provider) {
   }@Override
   public void onProviderEnabled(String provider) {
   }@Override
   public void onStatusChanged(String provider, int status, Bundle extras) {
   } @Override
   public IBinder onBind(Intent arg0) {  return null; }}
```

res/layout/activity_main.xml file −

```
<?xml version = "1.0" encoding = "utf-8"?>
<LinearLayout xmlns:android = "http://schemas.android.com/apk/res/android"
   android:layout_width = "fill_parent"android:layout_height = "fill_parent"
   android:orientation = "vertical" >
   <Button android:id = "@+id/button"android:layout_width = "fill_parent"
      android:layout_height = "wrap_content" android:text = "getlocation"/>
</LinearLayout>
```

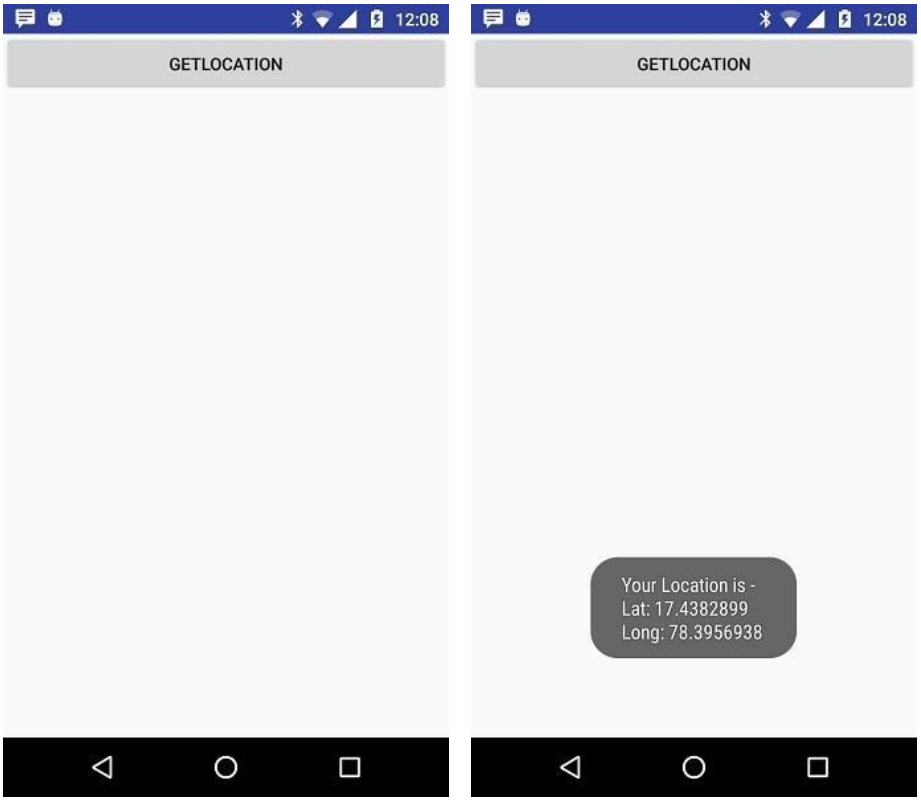
res/values/strings.xml

```
<?xml version = "1.0" encoding = "utf-8"?><resources>
   <string name = "app_name">Tutorialspoint</string></resources>
```

AndroidManifest.xml −

```
<?xml version = "1.0" encoding = "utf-8"?>
<manifest xmlns:android = "http://schemas.android.com/apk/res/android"
   package = "com.example.tutorialspoint7.myapplication">
   <uses-permission android:name = "android.permission.ACCESS_FINE_LOCATION" />
   <uses-permission android:name = "android.permission.INTERNET" />
   <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></manifest>
```

OUTPUT



6. Program for Phone Dialer with CALL and SAVE Buttons.Identify the Personalization features

open *res/values/strings.xml* and edit it to read

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
  <string name="app_name">SimpleDialer</string>
  <string name="action_settings">Settings</string>
  <string name="hello_world">Hello world!</string>
  <string name="hello">SimpleDialer</string>
  <string name="main_label">My Friends</string></resources>
```

Then edit *res/layout/activity_main.xml* to read

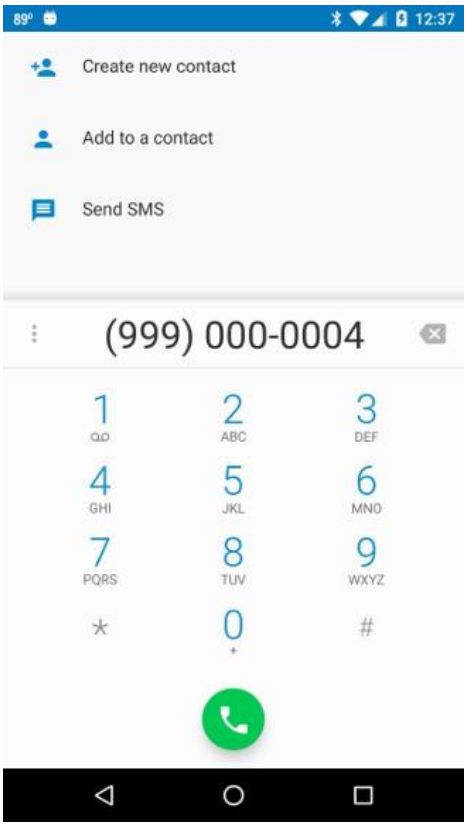
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="fill_parent"android:layout_height="fill_parent"
  android:orientation="vertical" android:padding="15dip" >
  <TextView android:layout_width="wrap_content"
    android:layout_height="wrap_content"android:layout_gravity="center"
    android:layout_marginBottom="25dip"android:text="@string/main_label"
    android:textColor="@color/colorPrimary"android:textSize="22sp" />
  <Button android:id="@+id/button1"android:layout_width="fill_parent"
    android:layout_height="wrap_content"android:textSize="18sp" />
  <Button android:id="@+id/button2"android:layout_width="fill_parent"
    android:layout_height="wrap_content"android:textSize="18sp" />
  <Button android:id="@+id/button3"android:layout_width="fill_parent"
    android:layout_height="wrap_content" android:textSize="18sp" />
  <Button android:id="@+id/button4"android:layout_width="fill_parent"
    android:layout_height="wrap_content"android:textSize="18sp" />
  <Button android:id="@+id/button5"android:layout_width="fill_parent"
    android:layout_height="wrap_content" android:textSize="18sp" />
  <Button android:id="@+id/button6"android:layout_width="fill_parent"
    android:layout_height="wrap_content"android:textSize="18sp" />
</LinearLayout>
```

Finally, open *src/<YourNamespace>.simpledialer/MainActivity.java* and edit it to read

```
package <YourNamespace>.simpledialer;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.content.Intent;import android.net.Uri;
import android.view.View;import android.view.View.OnClickListener;
import android.widget.Button;
public class MainActivity extends AppCompatActivity implements OnClickListener {
    private int entries = 6;
    private String phoneNum[];private String buttonLabels[];
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        phoneNum = new String[entries];
        buttonLabels = new String[entries];
        populateArrays();
        // Set up buttons and attach click listeners
        Button button1 = (Button)findViewById(R.id.button1);
        button1.setText(buttonLabels[0]);
        button1.setOnClickListener(this);
        Button button2 = (Button)findViewById(R.id.button2);
        button2.setText(buttonLabels[1]);
        button2.setOnClickListener(this);
        Button button3 = (Button)findViewById(R.id.button3);
        button3.setText(buttonLabels[2]);
        button3.setOnClickListener(this);
        Button button4 = (Button)findViewById(R.id.button4);
        button4.setText(buttonLabels[3]);
        button4.setOnClickListener(this);
```

```
        Button button5 = (Button)findViewById(R.id.button5);
        button5.setText(buttonLabels[4]);
        button5.setOnClickListener(this);
        Button button6 = (Button)findViewById(R.id.button6);
        button6.setText(buttonLabels[5]);
        button6.setOnClickListener(this);}
    // Launch the phone dialer
    public void launchDialer(String number){
        String numberToDial = "tel:"+number;
        startActivity(new Intent(Intent.ACTION_DIAL, Uri.parse(numberToDial)));}
    /** Method to populate the data arrays */
    public void populateArrays(){
phoneNum[0] = "999-000-0001"; phoneNum[1] = "999-000-0002";
 phoneNum[2] = "999-000-0003"; phoneNum[3] = "999-000-0004";
 phoneNum[4] = "999-000-0005";phoneNum[5] = "999-000-0006";
 buttonLabels[0] = "Jane D. Arc";buttonLabels[1] = "John Doe";
 buttonLabels[2] = "Jane Doe";buttonLabels[3] = "Abraham Linking";
 buttonLabels[4] = "Mona Liza";buttonLabels[5] = "Issac Nuton"; }
    /** Process button events */ @Override
    public void onClick(View v) {
        switch (v.getId()) {
        case R.id.button1:
            launchDialer(phoneNum[0]); break;
        case R.id.button2:
            launchDialer(phoneNum[1]);break;
        case R.id.button3:
            launchDialer(phoneNum[2]); break;
        case R.id.button4:
            launchDialer(phoneNum[3]);break;
        case R.id.button5:
            launchDialer(phoneNum[4]);break;
        case R.id.button6:
            launchDialer(phoneNum[5]);
            break; }} }
```

OUTPUT



7. Program to Create Address Book and Contacts.Identify Context Management Framework features

Adding Permission in Manifest.xml file-

```
<!--permissions to read contacts-->
<uses-permission  android:name="android.permission.READ_CONTACTS"  />
<!--permissions to write contacts-->
<uses-permission  android:name="android.permission.WRITE_CONTACTS"  />
<!--permissions to make a call-->
<uses-permission  android:name="android.permission.CALL_PHONE"/>
<!--permissions to send sms-->
<uses-permission  android:name="android.permission.SEND_SMS"  />
<!--permissions to write sms-->
<uses-permission android:name="android.permission.WRITE_SMS"/>
```

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
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=".MainActivity">
<!--Recycler view for displaying list of contacts-->
<androidx.recyclerview.widget.RecyclerView
android:id="@+id/idRVContacts"android:layout_width="match_parent"
android:layout_height="match_parent" />
<!--progress bar for displaying loading-->
<ProgressBar android:id="@+id/idPBLoading"
android:layout_width="wrap_content"android:layout_height="wrap_content"
android:layout_centerInParent="true" />
<!--fab for adding a new contact-->
<com.google.android.material.floatingactionbutton.FloatingActionButton
android:id="@+id/idFABadd"android:layout_width="wrap_content"
android:layout_height="wrap_content"android:layout_alignParentEnd="true"
android:layout_alignParentBottom="true" android:layout_margin="20dp"
android:src="@drawable/ic_account"app:fabCustomSize="40dp"
app:tint="@color/white" /></RelativeLayout>
```

Creating java class for storing contacts

```
public class ContactsModal {
private String userName;private String contactNumber;
public ContactsModal(String userName, String contactNumber) {
this.userName = userName;this.contactNumber = contactNumber;
}
public String getUserName() { return userName;}
public void setUserName(String userName) {this.userName = userName;}
public String getContactNumber() {return contactNumber;}
public void setContactNumber(String contactNumber) {this.contactNumber = contactNumber;}}
```

Creating a new menu resource file for adding search view in the toolbar

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto">
<!--creating an item for our search view-->
<item android:id="@+id/app_bar_search"android:icon="@drawable/ic_account"
android:title="Search"app:actionViewClass="android.widget.SearchView"
app:showAsAction="ifRoom|withText" />    </menu>
```

MainActivity.java file

```
import android.Manifest;
import android.content.DialogInterface;
import android.content.Intent;
import android.database.Cursor;
import android.net.Uri;
```

```
import android.os.Bundle;
import android.provider.ContactsContract;
import android.provider.Settings;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.widget.ProgressBar;
import android.widget.SearchView;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.view.MenuItemCompat;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import com.google.android.material.floatingactionbutton.FloatingActionButton;
import com.karumi.dexter.Dexter;
import com.karumi.dexter.MultiplePermissionsReport;
import com.karumi.dexter.PermissionToken;
import com.karumi.dexter.listener.DexterError;
import com.karumi.dexter.listener.PermissionRequest;
import com.karumi.dexter.listener.PermissionRequestErrorListener;
import com.karumi.dexter.listener.multi.MultiplePermissionsListener;
import java.util.ArrayList;
import java.util.List;
public class MainActivity extends AppCompatActivity {
private ArrayList<ContactsModal> contactsModalArrayList;
private RecyclerView contactRV;
private ContactRVAdapter contactRVAdapter;
private ProgressBar loadingPB;
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);setContentView(R.layout.activity_main);
contactsModalArrayList = new ArrayList<>();
contactRV = findViewById(R.id.idRVContacts);
FloatingActionButton addNewContactFAB = findViewById(R.id.idFABadd);
loadingPB = findViewById(R.id.idPBLoading);
prepareContactRV();requestPermissions();
addNewContactFAB.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View v) {
Intent i = new Intent(MainActivity.this, CreateNewContactActivity.class);
startActivity(i);}});}
public boolean onCreateOptionsMenu(Menu menu) {
MenuInflater inflater = getMenuInflater();
inflater.inflate(R.menu.search_menu, menu);
MenuItem searchViewItem = menu.findItem(R.id.app_bar_search);
final SearchView searchView = (SearchView) MenuItemCompat.getActionView(searchViewItem);
searchView.setOnQueryTextListener(new SearchView.OnQueryTextListener() {
@Override
public boolean onQueryTextSubmit(String query) {
// on query submit we are clearing the focus for our search view.
searchView.clearFocus(); return false;}
@Override
public boolean onQueryTextChange(String newText) {
// on changing the text in our search view we are calling
// a filter method to filter our array list.
filter(newText.toLowerCase());return false;  }});
return super.onCreateOptionsMenu(menu);}
private void filter(String text) { ArrayList<ContactsModal> filteredlist = new ArrayList<>();
for (ContactsModal item : contactsModalArrayList) {
if  (item.getUserName().toLowerCase().contains(text.toLowerCase()))  {
// on below line we are adding item to our filtered array list.
filteredlist.add(item);}
                                                }
```

```
                if (filteredlist.isEmpty()) {
                        Toast.makeText(this, "No Contact Found",
Toast.LENGTH_SHORT).show();
                } else {
                        // passing this filtered list to our adapter with filter list method.
                        contactRVAdapter.filterList(filteredlist);
                }
        }
        private void prepareContactRV() {
                contactRVAdapter = new ContactRVAdapter(this, contactsModalArrayList);
                contactRV.setLayoutManager(new LinearLayoutManager(this));
                contactRV.setAdapter(contactRVAdapter);
        }
        private void requestPermissions() {
                Dexter.withActivity(this)
                                .withPermissions(Manifest.permission.READ_CONTACTS,
                                                Manifest.permission.CALL_PHONE,
                                                Manifest.permission.SEND_SMS,
Manifest.permission.WRITE_CONTACTS)
                                .withListener(new MultiplePermissionsListener() {
                                        @Override
                                        public void
 onPermissionsChecked(MultiplePermissionsReport multiplePermissionsReport) {
                                                if
(multiplePermissionsReport.areAllPermissionsGranted()) {
                                                        getContacts();
                                                        Toast.makeText(MainActivity.this,
"All the permissions are granted..", Toast.LENGTH_SHORT).show();
                                                }
                                                if
(multiplePermissionsReport.isAnyPermissionPermanentlyDenied()) {
                                                        showSettingsDialog();
                                                }
                                        }

                                        @Override
                                        public void
 onPermissionRationaleShouldBeShown(List<PermissionRequest> list, PermissionToken permissionToken) {
                                                permissionToken.continuePermissionRequest();
                                        }
                                }).withErrorListener(new PermissionRequestErrorListener() {
                        @Override
                        public void onError(DexterError error) {
                                Toast.makeText(getApplicationContext(), "Error occurred! ",
Toast.LENGTH_SHORT).show();
                        }
                }).onSameThread().check();
        private void getContacts() {
                String contactId = "";
                String displayName = "";
                Cursor cursor =
getContentResolver().query(ContactsContract.Contacts.CONTENT_URI, null, null, null,
ContactsContract.CommonDataKinds.Phone.DISPLAY_NAME + " ASC");
                if (cursor.getCount() > 0) {
                        while (cursor.moveToNext()) {
                                int hasPhoneNumber =
Integer.parseInt(cursor.getString(cursor.getColumnIndex(ContactsContract.Contacts.HAS_PHONE_NUMBER)));
                                if (hasPhoneNumber > 0) {
                                        contactId =
cursor.getString(cursor.getColumnIndex(ContactsContract.Contacts._ID));
                                        displayName =
cursor.getString(cursor.getColumnIndex(ContactsContract.Contacts.DISPLAY_NAME));
                                        Cursor phoneCursor = getContentResolver().query(
```

```
                ContactsContract.CommonDataKinds.Phone.CONTENT_URI,
                                null,

                ContactsContract.CommonDataKinds.Phone.CONTACT_ID + " = ?",
                                new String[]{contactId},
                                null);
                        if (phoneCursor.moveToNext()) {
                                // on below line we are getting the phone number for our users and then adding the name along with phone number in array list.
                                String phoneNumber = phoneCursor.getString(phoneCursor.getColumnIndex(ContactsContract.CommonDataKinds.Phone.NUMBER));
                                contactsModalArrayList.add(new ContactsModal(displayName, phoneNumber));
                        }
                        phoneCursor.close();
                    }
                }
            }
            cursor.close();
            loadingPB.setVisibility(View.GONE);
            contactRVAdapter.notifyDataSetChanged();
        }}
```

Working with the ContactDetailActivity

```
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.ImageView;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
public class ContactDetailActivity extends AppCompatActivity {
    private String contactName, contactNumber;
    private TextView contactTV, nameTV;
    private ImageView contactIV, callIV, messageIV;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_contact_detail);
        contactName = getIntent().getStringExtra("name");
        contactNumber = getIntent().getStringExtra("contact");
        nameTV = findViewById(R.id.idTVName);
        contactIV = findViewById(R.id.idIVContact);
        contactTV = findViewById(R.id.idTVPhone);
        nameTV.setText(contactName);
        contactTV.setText(contactNumber);
        callIV = findViewById(R.id.idIVCall);
        messageIV = findViewById(R.id.idIVMessage);
        callIV.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // calling a method to make a call.
                makeCall(contactNumber);
            }
        });
        messageIV.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // calling a method to send message
                sendMessage(contactNumber);
```

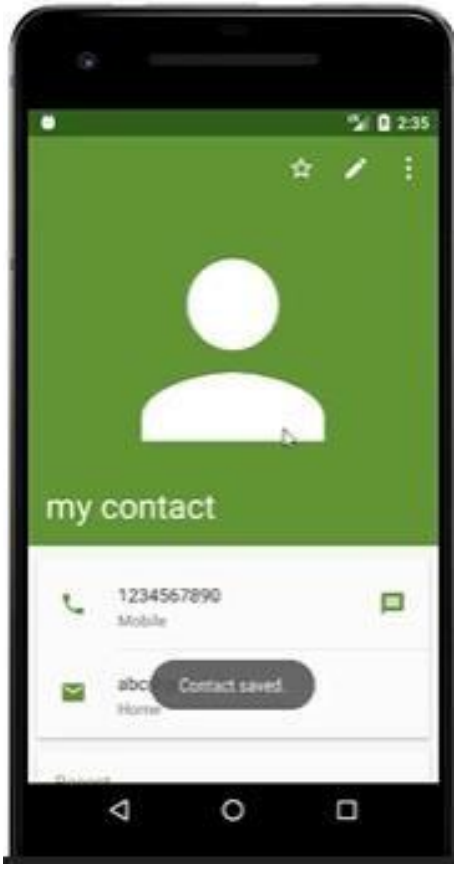
```
                        }
                    });
                }
                private void sendMessage(String contactNumber) {
                    Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse("sms:" +
contactNumber));
                    intent.putExtra("sms_body", "Enter your messaage");
                    startActivity(intent);
                }
                private void makeCall(String contactNumber) {
                    Intent callIntent = new Intent(Intent.ACTION_CALL);
                    callIntent.setData(Uri.parse("tel:" + contactNumber));
                    if (ActivityCompat.checkSelfPermission(ContactDetailActivity.this,
                            Manifest.permission.CALL_PHONE) !=
PackageManager.PERMISSION_GRANTED) {
                        return;
                    }
                    startActivity(callIntent);
                }
}
```

Working with the CreateNewContactActivity

```
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
public class CreateNewContactActivity extends AppCompatActivity {
                private EditText nameEdt, phoneEdt, emailEdt;
                private Button addContactEdt;
                protected void onCreate(Bundle savedInstanceState) {
                    super.onCreate(savedInstanceState);
                    setContentView(R.layout.activity_create_new_contact);
                    nameEdt = findViewById(R.id.idEdtName);
                    phoneEdt = findViewById(R.id.idEdtPhoneNumber);
                    emailEdt = findViewById(R.id.idEdtEmail);
                    addContactEdt = findViewById(R.id.idBtnAddContact);
                    addContactEdt.setOnClickListener(new View.OnClickListener() {
                        public void onClick(View v) {
                            String name = nameEdt.getText().toString();
                            String phone = phoneEdt.getText().toString();
                            String email = emailEdt.getText().toString();
                            if (TextUtils.isEmpty(name) && TextUtils.isEmpty(email) &&
TextUtils.isEmpty(phone)) {
                                Toast.makeText(CreateNewContactActivity.this, "Please
enter the data in all fields. ", Toast.LENGTH_SHORT).show();
                            } else {
                                addContact(name, email, phone);
                            }
                        }
                    });
                }
                private void addContact(String name, String email, String phone) {
                    Intent contactIntent = new Intent(ContactsContract.Intents.Insert.ACTION);
                    contactIntent.setType(ContactsContract.RawContacts.CONTENT_TYPE);
                    contactIntent
                            .putExtra(ContactsContract.Intents.Insert.NAME, name)
```

```
                                        .putExtra(ContactsContract.Intents.Insert.PHONE,  phone)
                                        .putExtra(ContactsContract.Intents.Insert.EMAIL, email);
                        startActivityForResult(contactIntent, 1);
                }
                protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {
                        super.onActivityResult(requestCode, resultCode, data);
                        if (requestCode == 1) {
                                if (resultCode == Activity.RESULT_OK) {
                                        Toast.makeText(this, "Contact has been added.",
Toast.LENGTH_SHORT).show();
                                        Intent i = new Intent(CreateNewContactActivity.this,
MainActivity.class);
                                        startActivity(i);
                                }
                                if (resultCode == Activity.RESULT_CANCELED) {
                                        Toast.makeText(this, "Cancelled Added Contact",
                                                        Toast.LENGTH_SHORT).show();
}}}}
```

OUTPUT:



8. Program to Illustrate: Send SMS,Receive SMS,Send e-mail and Receive e-mail.Identify Service Discovery Framework

Send/Receive SMS

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

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;
    @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,txtMessage.getText().toString(),null,null);
                    Toast.makeText(MainActivity.this, "SMS Sent Successfully", Toast.LENGTH_SHORT).show();
                }
                catch (Exception e){
                    Toast.makeText(MainActivity.this, "SMS Failed to Send, Please try again", Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

Send/Receive Email

activity_main.xml file

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Relative Layout -->
<RelativeLayout 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"
            tools:context=".MainActivity">
            <EditText android:id="@+id/editText1"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_alignParentTop="true"
                        android:layout_alignParentRight="true"
                        android:layout_marginTop="18dp"
                        android:layout_marginRight="22dp" />
            <EditText android:id="@+id/editText2"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_below="@+id/editText1"
                        android:layout_alignLeft="@+id/editText1"
                        android:layout_marginTop="20dp" />
            <EditText android:id="@+id/editText3"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_below="@+id/editText2"
                        android:layout_alignLeft="@+id/editText2"
                        android:layout_marginTop="30dp" />
            <TextView android:id="@+id/textView1"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_alignBaseline="@+id/editText1"
                        android:layout_alignBottom="@+id/editText1"
```

```
                android:layout_alignParentLeft="true"
                android:text="Send To:"
                android:textColor="#0F9D58" />
        <TextView android:id="@+id/textView2"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_alignBaseline="@+id/editText2"
                android:layout_alignBottom="@+id/editText2"
                android:layout_alignParentLeft="true"
                android:text="Email Subject:"
                android:textColor="#0F9D58" />
        <TextView android:id="@+id/textView3"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_alignBaseline="@+id/editText3"
                android:layout_alignBottom="@+id/editText3"
                android:text="Email Body:"
                android:textColor="#0F9D58" />
        <Button android:id="@+id/button"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_below="@+id/editText3"
                android:layout_alignLeft="@+id/editText3"
                android:layout_marginLeft="76dp"
                android:layout_marginTop="20dp"
                android:text="Send email!!" />
</RelativeLayout>
```

MainActivity.java

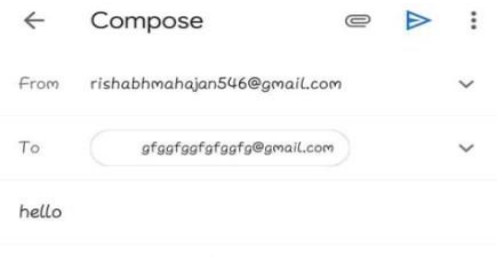
```
import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
        Button button;
        EditText sendto, subject, body;
        protected void onCreate(Bundle savedInstanceState) {
                super.onCreate(savedInstanceState);
                setContentView(R.layout.activity_main);
                sendto = findViewById(R.id.editText1);
                subject = findViewById(R.id.editText2);
                body = findViewById(R.id.editText3);
                button = findViewById(R.id.button);
                button.setOnClickListener(view -> {
                        String emailsend = sendto.getText().toString();
                        String emailsubject = subject.getText().toString();
                        String emailbody = body.getText().toString();
                        Intent intent = new Intent(Intent.ACTION_SEND);
                        intent.putExtra(Intent.EXTRA_EMAIL, new String[]{emailsend});
                        intent.putExtra(Intent.EXTRA_SUBJECT, emailsubject);
                        intent.putExtra(Intent.EXTRA_TEXT, emailbody);
                        intent.setType("message/rfc822");
                        startActivity(Intent.createChooser(intent, "Choose an Email client :"));
                });
}}
```

OUTPUT


SendSMSExample
Mobile No
Message
SEND SMS


SendSMSExample
Mobile No
9137656720
Message
Welcome to Tutlane
SEND SMS
SMS Sent Successfully


Send To:
gfggfggfgfggfg@gmail.com
Email Subject:
hello
Email Body:
geeks for geeks is best
SEND EMAIL!!


Compose
From
rishabhmahajan546@gmail.com
To
gfggfggfgfggfg@gmail.com
hello
geeks for geeks is best

9. Program to Register for the App using SQLite & MySQL Database. Program to Login to The App using Databases.Identify Mobile Web Services

Android Manifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   package="com.example.vamsi.login">
    <uses-permission  android:name="android.permission.INTERNET"  />
   <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"
         android:windowSoftInputMode="stateHidden">
         <intent-filter>
            <action  android:name="android.intent.action.MAIN"  />
            <category  android:name="android.intent.category.LAUNCHER"  />
         </intent-filter></activity>
      <activity android:name=".RegisterActivity"
         android:label="Registration"android:windowSoftInputMode="stateHidden" />
      <activity android:name=".LoginSucess"></activity>
   </application></manifest>
```

MainActivity.java

```
package com.example.vamsi.login;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
   private TextView tvRegister;
   private EditText etLoginGmail,etLoginPassword;
   private Button loginButton;
   private SQLiteDatabase db;
   private SQLiteOpenHelper openHelper;
   private Cursor cursor;
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      openHelper = new DatabaseHelper(this);
      db = openHelper.getReadableDatabase();
      tvRegister = findViewById(R.id.tvRegister);
      etLoginGmail = findViewById(R.id.etLogGmail);
      etLoginPassword = findViewById(R.id.etLoginPassword);
      loginButton = findViewById(R.id.btnLogin);
      loginButton.setOnClickListener(new View.OnClickListener() {
         public void onClick(View v) {
            String email = etLoginGmail.getText().toString().trim();
            String password = etLoginPassword.getText().toString().trim();
            if (email.isEmpty() || password.isEmpty()) {
               Toast.makeText(MainActivity.this, "Enter your Email and Password to login", Toast.LENGTH_SHORT).show();
            } else {
               cursor = db.rawQuery("SELECT *FROM " + DatabaseHelper.TABLE_NAME + " WHERE " +
DatabaseHelper.COL_4 + "=? AND " + DatabaseHelper.COL_5 + "=?", new String[]{email, password});
               if (cursor != null) {
                  if (cursor.getCount() > 0) {
                     startActivity(new Intent(MainActivity.this, LoginSucess.class));
                     Toast.makeText(getApplicationContext(), "Login sucess", Toast.LENGTH_SHORT).show();
                  } else {
```

```
 Toast.makeText(getApplicationContext(), "Login error", Toast.LENGTH_SHORT).show();
                    } }}}
        });
        tvRegister.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                startActivity(new Intent(MainActivity.this,RegisterActivity.class));
                finish();
            }
        });
    }
}
```

ConfigurDatabase.java

```
package com.example.vamsi.login;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class DatabaseHelper extends SQLiteOpenHelper {
        public static final String DATABASE_NAME="register.db";
        public static final String TABLE_NAME="registration";
        public static final String COL_1="ID";
        public static final String COL_2="Name";
        public static final String COL_3="Phone";
        public static final String COL_4="Gmail";
        public static final String COL_5="Password";
        public DatabaseHelper(Context context) {
            super(context, DATABASE_NAME, null, 1);
        }
        public void onCreate(SQLiteDatabase db) {
            db.execSQL("CREATE TABLE " + TABLE_NAME + " (ID INTEGER PRIMARY KEY AUTOINCREMENT,Name
TEXT,Phone TEXT,Gmail TEXT,Password TEXT)");
        }
        public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
            db.execSQL("DROP TABLE IF EXISTS " +TABLE_NAME);
            onCreate(db);
        }
  }
```

Login.java

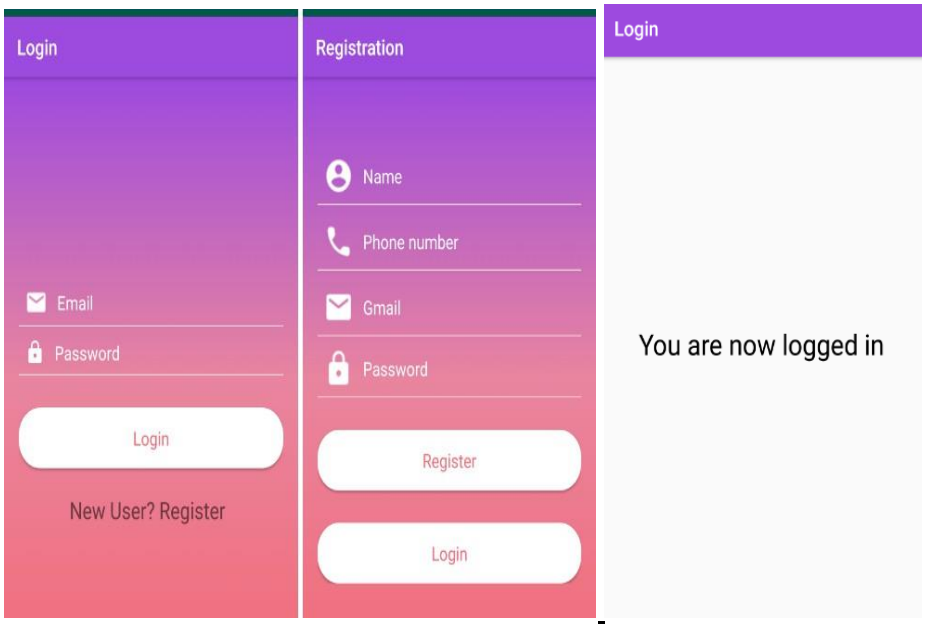
```
package com.example.vamsi.login;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class LoginSucess extends AppCompatActivity {
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login_sucess);
    }
}
```

Registration.java

```
package com.example.vamsi.login;
import android.content.ContentValues;
import android.content.Intent;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class RegisterActivity extends AppCompatActivity {
    private Button registerBtn,gotoLoginBtn;
    private SQLiteOpenHelper openHelper;
    private SQLiteDatabase db;
    private EditText regName,regPhone,regGmail,regPassword;
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_register);
        openHelper = new DatabaseHelper(this);
        registerBtn = findViewById(R.id.btnRegLogin);
        gotoLoginBtn = findViewById(R.id.btnGotoLogin);
        regName = findViewById(R.id.etRegName);
        regPhone = findViewById(R.id.etRegPhone);
        regGmail = findViewById(R.id.etRegGmail);
        regPassword = findViewById(R.id.etRegPassword);
        registerBtn.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                db = openHelper.getWritableDatabase();
                String fname = regName.getText().toString().trim();
                String fPhone = regPhone.getText().toString().trim();
                String fGmail = regGmail.getText().toString().trim();
                String fPassword = regPassword.getText().toString().trim();
                if (fname.isEmpty() || fPassword.isEmpty() || fGmail.isEmpty() || fPhone.isEmpty()) {
                    Toast.makeText(RegisterActivity.this, "Please fill all the details", Toast.LENGTH_SHORT).show();
                } else {
                insertData(fname,fPhone,fGmail,fPassword);
                Toast.makeText(RegisterActivity.this, "Registration Successful", Toast.LENGTH_SHORT).show();
            }
            }
        });
        gotoLoginBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                startActivity(new Intent(RegisterActivity.this,MainActivity.class));
                finish();
            }
        });
    }
    public void insertData(String fname,String fPhone,String fGmail,String fPassword){
        ContentValues contentValues = new ContentValues();
        contentValues.put(DatabaseHelper.COL_2,fname);
        contentValues.put(DatabaseHelper.COL_3,fPhone);
        contentValues.put(DatabaseHelper.COL_4,fGmail);
        contentValues.put(DatabaseHelper.COL_5,fPassword);
        long id = db.insert(DatabaseHelper.TABLE_NAME,null,contentValues);
    }}
```

OUTPUT:



10. Create Student or Employee Database. WAP to Read,Write & Delete From SQLite Database.Identify Agent Security Development

ActivityMain.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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="net.simplifiedlearning.sqlitecrudexample.MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_centerVertical="true"
        android:orientation="vertical"
        android:padding="16dp">
        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginBottom="12dp"
            android:text="Add a new Employee"
            android:textAlignment="center"
            android:textAppearance="@style/Base.TextAppearance.AppCompat.Large"   />
        <EditText
            android:id="@+id/editTextName"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="Enter Employee Name" />
        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="10dp"
            android:paddingLeft="6dp"
            android:text="Select Department" />
        <Spinner
            android:id="@+id/spinnerDepartment"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:entries="@array/departments" />
        <EditText
            android:id="@+id/editTextSalary"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:digits="0123456789"
            android:hint="Enter Employee Salary"
            android:inputType="number" />
        <Button
            android:id="@+id/buttonAddEmployee"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Add Employee" />
        <TextView
            android:id="@+id/textViewViewEmployees"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:padding="16dp"
            android:text="View Employees"
            android:textAlignment="center"
            android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"
            android:textStyle="bold" />
    </LinearLayout>
</RelativeLayout>
```

MainActivity.java

```
package net.simplifiedlearning.sqlitecrudexample;
import android.content.Intent;
import android.database.sqlite.SQLiteDatabase;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    public static final String DATABASE_NAME = "myemployeedatabase";
    TextView textViewViewEmployees;
    EditText editTextName, editTextSalary;
    Spinner spinnerDepartment;
    SQLiteDatabase mDatabase;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        textViewViewEmployees = (TextView) findViewById(R.id.textViewViewEmployees);
        editTextName = (EditText) findViewById(R.id.editTextName);
        editTextSalary = (EditText) findViewById(R.id.editTextSalary);
        spinnerDepartment = (Spinner) findViewById(R.id.spinnerDepartment);
        findViewById(R.id.buttonAddEmployee).setOnClickListener(this);
        textViewViewEmployees.setOnClickListener(this);
        mDatabase = openOrCreateDatabase(DATABASE_NAME, MODE_PRIVATE, null);
    }
    private boolean inputsAreCorrect(String name, String salary) {
        if (name.isEmpty()) {
            editTextName.setError("Please enter a name");
            editTextName.requestFocus();
            return false;
        }
        if (salary.isEmpty() || Integer.parseInt(salary) <= 0) {
            editTextSalary.setError("Please enter salary");
            editTextSalary.requestFocus();
            return false;
        }
        return true;
    }
    public void onClick(View view) {
        switch (view.getId()) {
            case R.id.buttonAddEmployee:

                addEmployee();

                break;
            case R.id.textViewViewEmployees:

                startActivity(new Intent(this, EmployeeActivity.class));

                break;
        }
    }
}
    private void createEmployeeTable() {
        mDatabase.execSQL(
                "CREATE TABLE IF NOT EXISTS employees (\n" +
                        "    id int NOT NULL CONSTRAINT employees_pk PRIMARY KEY,\n" +
                        "    name varchar(200) NOT NULL,\n" +
                        "    department varchar(200) NOT NULL,\n" +
                        "    joiningdate datetime NOT NULL,\n" +
                        "    salary double NOT NULL\n" +
                        ");"
        );
    }
```

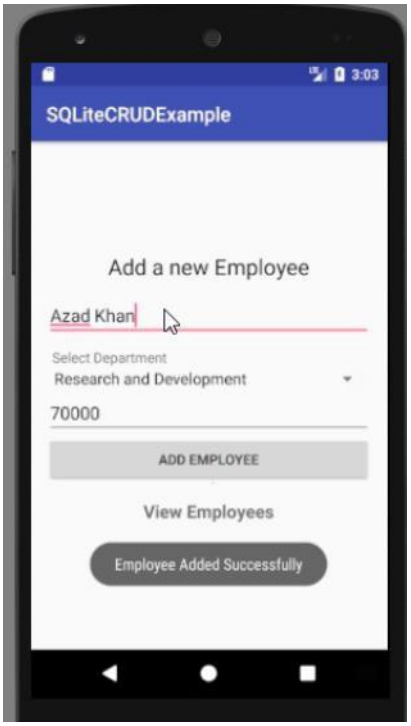
```
    private void addEmployee() {
        String name = editTextName.getText().toString().trim();
        String salary = editTextSalary.getText().toString().trim();
        String dept = spinnerDepartment.getSelectedItem().toString();
        Calendar cal = Calendar.getInstance();
        SimpleDateFormat sdf = new SimpleDateFormat("yyyy-mm-dd hh:mm:ss");
        String joiningDate = sdf.format(cal.getTime());
        if (inputsAreCorrect(name, salary)) {
            String insertSQL = "INSERT INTO employees \n" +
                    "(name, department, joiningdate, salary)\n" +
                    "VALUES \n" +
                    "(?, ?, ?, ?);";
            mDatabase.execSQL(insertSQL, new String[]{name, dept, joiningDate, salary});
            Toast.makeText(this, "Employee Added Successfully", Toast.LENGTH_SHORT).show();
        }
    }
```

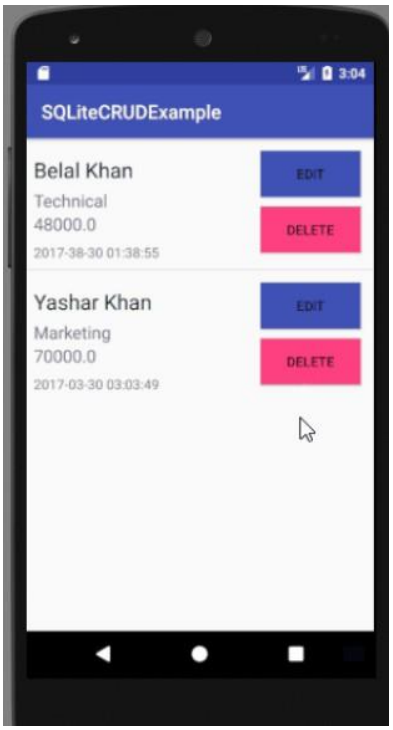
EmployeeAdapter.java

```
package net.simplifiedlearning.sqlitecrudexample;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.support.annotation.NonNull;
import android.support.annotation.Nullable;
import android.support.v7.app.AlertDialog;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;
import java.util.List;
public class EmployeeAdapter extends ArrayAdapter<Employee> {
    Context mCtx;
    int listLayoutRes;
    List<Employee> employeeList;
    SQLiteDatabase mDatabase;
    public EmployeeAdapter(Context mCtx, int listLayoutRes, List<Employee> employeeList, SQLiteDatabase mDatabase) {
        super(mCtx, listLayoutRes, employeeList);
        this.mCtx = mCtx;
        this.listLayoutRes = listLayoutRes;
        this.employeeList = employeeList;
        this.mDatabase = mDatabase;
    }
    public View getView(int position, @Nullable View convertView, @NonNull ViewGroup parent) {
        LayoutInflater inflater = LayoutInflater.from(mCtx);
        View view = inflater.inflate(listLayoutRes, null);
        Employee employee = employeeList.get(position);
        TextView textViewName = view.findViewById(R.id.textViewName);
        TextView textViewDept = view.findViewById(R.id.textViewDepartment);
        TextView textViewSalary = view.findViewById(R.id.textViewSalary);
        TextView textViewJoiningDate = view.findViewById(R.id.textViewJoiningDate);
        textViewName.setText(employee.getName());
        textViewDept.setText(employee.getDept());
        textViewSalary.setText(String.valueOf(employee.getSalary()));
        textViewJoiningDate.setText(employee.getJoiningDate());
        Button buttonDelete = view.findViewById(R.id.buttonDeleteEmployee);
        Button buttonEdit = view.findViewById(R.id.buttonEditEmployee);
        return view;
    }
    public View getView(int position, @Nullable View convertView, @NonNull ViewGroup parent) {
        LayoutInflater inflater = LayoutInflater.from(mCtx);
```

```
        View view = inflater.inflate(listLayoutRes, null);
        final Employee employee = employeeList.get(position);
        TextView textViewName = view.findViewById(R.id.textViewName);
        TextView textViewDept = view.findViewById(R.id.textViewDepartment);
        TextView textViewSalary = view.findViewById(R.id.textViewSalary);
        TextView textViewJoiningDate = view.findViewById(R.id.textViewJoiningDate);
        textViewName.setText(employee.getName());
        textViewDept.setText(employee.getDept());
        textViewSalary.setText(String.valueOf(employee.getSalary()));
        textViewJoiningDate.setText(employee.getJoiningDate());
        Button buttonDelete = view.findViewById(R.id.buttonDeleteEmployee);
        Button buttonEdit = view.findViewById(R.id.buttonEditEmployee);
        buttonEdit.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view) {
                updateEmployee(employee);
            }
        });
        buttonDelete.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view) {
                AlertDialog.Builder builder = new AlertDialog.Builder(mCtx);
                builder.setTitle("Are you sure?");
                builder.setPositiveButton("Yes", new DialogInterface.OnClickListener() {
                    public void onClick(DialogInterface dialogInterface, int i) {
                        String sql = "DELETE FROM employees WHERE id = ?";
                        mDatabase.execSQL(sql, new Integer[]{employee.getId()});
                        reloadEmployeesFromDatabase();
                    }
                });
                builder.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
                    public void onClick(DialogInterface dialogInterface, int i) {
                    }
                });
                AlertDialog dialog = builder.create();
                dialog.show();
            }
        });
        return view;
    }
}
```

OUTPUT





11. Program to Show How to Make a SOCKET Connection from a J2ME Phone.Show How to Make a SOCKET Connection from the Phone To Port 80.

```
import javax.microedition.midlet.*;
import javax.microedition.io.*;
import javax.microedition.lcdui.*;
import java.io.*;
public class socket extends MIDlet {
// StreamConnection allows bidirectional communication
private StreamConnection streamConnection = null;
// use OutputStream to send requests
private OutputStream outputStream = null;
private DataOutputStream dataOutputStream = null;
// use InputStream to receive responses from Web server
private InputStream inputStream = null;
private DataInputStream dataInputStream = null;
// specify the connect string
private String connectString = "socket://www.java-samples.com:80";
// use a StrignBuffer to store the retrieved page contents
private StringBuffer results;
// define GUI components
private Display myDisplay = null;
private Form resultScreen;
private StringItem resultField;
public socket() {
 // initializing GUI display
results = new StringBuffer();
myDisplay = Display.getDisplay(this);
resultScreen = new Form("Page Content:");
}
public void startApp() {
try {
 // establish a socket connection with remote server
streamConnection = (StreamConnection) Connector.open(connectString);
// create DataOuputStream on top of the socket connection
outputStream = streamConnection.openOutputStream();
dataOutputStream = new DataOutputStream(outputStream);
// send the HTTP request
dataOutputStream.writeChars("GET /index.htm HTTP/1.0 \n");
dataOutputStream.flush();
// create DataInputStream on top of the socket connection
inputStream = streamConnection.openInputStream();
dataInputStream = new DataInputStream(inputStream);
// retrieve the contents of the requested page from Web server
int inputChar;
while ( (inputChar = dataInputStream.read()) != -1) {
results.append((char) inputChar);       }
// display the page contents on the phone screen
resultField = new StringItem(null, results.toString());
resultScreen.append(resultField);
myDisplay.setCurrent(resultScreen);
} catch (IOException e) {
System.err.println("Exception caught:" + e);
}
finally {       // free up I/O streams and close the socket connection
try {
if (dataInputStream != null)
dataInputStream.close();
} catch (Exception ignored) {}
try {
if (dataOutputStream != null)
dataOutputStream.close();
} catch (Exception ignored) {}
try {
```

```
if (outputStream != null)
outputStream.close();
} catch (Exception ignored) {}
try {
if (inputStream != null)
inputStream.close();
} catch (Exception ignored) {}
try {
if (streamConnection != null)
streamConnection.close();
} catch (Exception ignored) {}
} }
public void pauseApp() {   }
public void destroyApp(boolean unconditional) {   } }
```

OUTPUT

12. Program to Illustrate Mobile Agents & Services Offered by Agents.

GoSNMP:

```
// Default is a pointer to a GoSNMP struct that contains sensible defaults
// eg port 161, community public, etc
g.Default.Target = "192.168.1.10"
err := g.Default.Connect()
if err != nil {
    log.Fatalf("Connect() err: %v", err)
}
defer g.Default.Conn.Close()

oids := []string{"1.3.6.1.2.1.1.4.0", "1.3.6.1.2.1.1.7.0"}
result, err2 := g.Default.Get(oids) // Get() accepts up to g.MAX_OIDS
if err2 != nil {
    log.Fatalf("Get() err: %v", err2)
}

for i, variable := range result.Variables {
    fmt.Printf("%d: oid: %s ", i, variable.Name)

    // the Value of each variable returned by Get() implements
    // interface{}. You could do a type switch...
    switch variable.Type {
    case g.OctetString:
        bytes := variable.Value.([]byte)
        fmt.Printf("string: %s\n", string(bytes))
    default:
        // ... or often you're just interested in numeric values.
        // ToBigInt() will return the Value as a BigInt, for plugging
        // into your calculations.
        fmt.Printf("number: %d\n", g.ToBigInt(variable.Value))
    }
}
```

Running this example gives the following output (from my printer):

```
% go run example.go
0: oid: 1.3.6.1.2.1.1.4.0 string: Administrator
1: oid: 1.3.6.1.2.1.1.7.0 number: 104
```