JAIPUR NATIONAL UNIVERSITY,JAIPUR
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B. TECH. (CSE) VIII SEMESTER

ANDROID PROGRAMMING LAB (8CS6)

SUBMITTED BY:

Student ERP – Id: R22188

Student Name:Vivek Chauhan

Student Class Roll No.: 8CS39

SUBMITTED TO:

Vikas Verma

Assist. Professor

SOET (CSE), JNU, Jaipur

JAIPUR NATIONAL UNIVERSITY, JAIPUR

Main Campus, Jagatpura, Jaipur

School of Engineering & Technology, SADTM Campus

B. Tech. (CS) – VIII Semester

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LAB MANUAL

Subject Name: Android Programming Lab
Subject Code : 8CS6

List of Experiments & Schedule

S. No.	Program Title	Date Issued	Date Submitted	Remarks/ Signature
1	Create “Hello World” application. That will display “Hello World” in the middle of the screen in the red color with white background.		6/7/21	
2	Create sample application with login module. (Check username and password) On successful login, go to next screen. on failing login, alert user. pass username to next screen.		6/7/21	
3	Create login application where you will have to validate Email-ID (Username). Till the username and password is not validated, login button should remain disabled.		6/7/21	
4	Create and Login application as above. On successful login, open browser with any URL.		6/7/21	
5	a. Create spinner with strings taken from resource folder(res >> value folder).b. On changing spinner value, change image.		6/7/21	
6	Understand Menu option.a. Create an application that will change color of the screen, based on selected options from the menu.		6/7/21	
7	Create an application that will display toast(Message) on specific interval of time.		6/7/21	
8	Understanding content providers and permissions:a. Read phonebook contacts using content providers and display in list.		6/7/21	
9	Read messages from the mobile and display it on the screen.		6/7/21	
10	Create an application to make Insert , update , Delete and retrieve operation on the database.		6/7/21	

11	Create an application to send message between two emulators.		6/7/21	

Program: - 1

// Create “Hello World” application. That will display “Hello World” in the middle of the screen in
the red color with white background.

```
//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:id="@+id/r1"
   android:gravity="center"
   tools:context=".MainActivity">
   <TextView
      android:id="@+id/textView1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Hello World!"
      />
</RelativeLayout>

//MainActivity.java
package com.example.helloworld;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color; import
android.os.Bundle;
import android.widget.RelativeLayout;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity
```

{ RelativeLayout rl;

```
    TextView tvmsg;

    @Override
    protected void onCreate(Bundle savedInstanceState)
        { super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        rl= findViewById(R.id.r1);
        tvmsg = findViewById(R.id.textView1);

        rl.setBackgroundColor(Color.WHITE);
        tvmsg.setTextColor(Color.RED);

    }
}
```

Program: - 2

//To understand Activity, Intent. Create sample application with login module.(Check username and password)b. On successful login, go to next screen. And on failing login, alert user using Toast. Also pass username to next screen.

//activity_home.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:gravity="center"
   android:layout_height="match_parent"
   tools:context=".Home">
   <TextView
      android:layout_width="200dp"
      android:layout_height="50dp"
      android:id="@+id/txtmsg"
      android:textSize="20sp"
      />
   <Button
      android:layout_below="@id/txtmsg"
      android:layout_width="150dp"
      android:layout_height="50dp"
      android:layout_marginTop="10dp"
      android:layout_marginLeft="20dp"
      android:id="@+id/btback"
      android:text="@string/back"
      android:layout_marginStart="20dp" />
</RelativeLayout>
```

//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:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <EditText
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:id="@+id/username"
        android:hint="@string/enter_username"
        android:importantForAutofill="no"
        android:inputType="text" />
    <EditText
        android:layout_below="@id/username"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:id="@+id/password"
        android:hint="@string/enter_password"
        android:importantForAutofill="no"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/btlogin"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_below="@id/password"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="20dp"
        android:text="@string/login"
        android:layout_marginStart="20dp" />
    <Button
```

```
        android:layout_below="@id/btlogin"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="20dp"
        android:id="@+id/btclear"
        android:text="@string/clear"
        android:layout_marginStart="20dp" />
</RelativeLayout>

//Home.java
package com.example.loginscreen;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent; import
android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class Home extends AppCompatActivity implements View.OnClickListener{
   TextView textmsg;
   Button btback;
   @Override
   protected void onCreate(Bundle savedInstanceState)
      { super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_home); textmsg=
      findViewById(R.id.txtmsg);
      btback= findViewById(R.id.btback);
      btback.setOnClickListener(this);
      Intent myintent=getIntent();
      textmsg.setText("welcome "+ myintent.getStringExtra("name"));
```

```
}
   @Override
   public void onClick(View v) {
      Intent i=new Intent(this,MainActivity.class);
      this.startActivity(i);
   }
}

//MainActivity.java
package com.example.loginscreen;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent; 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 implements View.OnClickListener
   { Button btlogin,btclear;
   EditText editusername,editpassword;
   TextView textmsg;
   @Override
   protected void onCreate(Bundle savedInstanceState)
      { super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      editusername= findViewById(R.id.username);
      editpassword= findViewById(R.id.password);
      btlogin= findViewById(R.id.btlogin);
      btclear= findViewById(R.id.btclear);
```

```
    btlogin.setOnClickListener(this);
    btclear.setOnClickListener(this);
}
@Override
public void onClick(View v) {
    Button action=(Button) v;
    String name,pass;
    boolean flagusername=false;
    boolean flagpassword=false;
    name=editusername.getText().toString();
    pass=editpassword.getText().toString();
    if(name.equals("")){
        flagusername=true;
    }
    if(pass.equals("")){
        flagpassword=true;
    }
    if(btlogin.getId()==action.getId()){
        if(!flagusername && !flagpassword) {
            if(pass.equals(name+"@123")){
                Toast.makeText(this,"Login success...", Toast.LENGTH_SHORT).show();
                Intent myintent=new Intent(this,Home.class);
                myintent.putExtra("name", name);
                this.startActivity(myintent);
            }
            else
                Toast.makeText(this,"Login faild...", Toast.LENGTH_SHORT).show();
        }
        else{
            if(flagusername)
                Toast.makeText(this,"Pls Enter Username...", Toast.LENGTH_SHORT).show();
```

```
            else if(flagpassword==true)
                Toast.makeText(this,"Pls Enter Password...", Toast.LENGTH_SHORT).show();
        }
    }
    else if(btclear.getId()==action.getId()){
        if(!flagusername || !flagpassword) {
            editusername.setText("");
            editpassword.setText("");
            Toast.makeText(this,"Field Cleared...", Toast.LENGTH_SHORT).show();
        }
        else{
            Toast.makeText(this,"Already Cleared...", Toast.LENGTH_SHORT).show();
        }
    }
  }
}
```

Program: - 3

// Create login application where you will have to validate EmailID(UserName). Till the username and password is not validated, login button should remain disabled.

//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:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/txtuname"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:hint="@string/enter_username"
        android:importantForAutofill="no"
        android:inputType="text" />
    <EditText
        android:layout_below="@+id/txtuname"
        android:id="@+id/txtpass"
        android:hint="@string/enter_password"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:importantForAutofill="no"
        android:inputType="textPassword" />
    <Button
        android:layout_below="@id/txtpass"
        android:id="@+id/btnLogin"
        android:layout_marginLeft="20dp"
```

```
        android:text="@string/login"
        android:layout_marginTop="10dp"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="20dp" />
    <Button
        android:layout_below="@id/btnLogin"
        android:id="@+id/btnCancel"
        android:layout_marginLeft="20dp"
        android:text="@string/cancel"
        android:layout_marginTop="10dp"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="20dp" />
</RelativeLayout>

//MainActivity.java
package com.example.emaillogin;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.view.View; import
android.widget.Button; import
android.widget.EditText; import
android.widget.Toast;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener,TextWatcher{
    Button btnLogin,btnCancel;
    EditText txtuname,txtpass;
```

```
@Override
protected void onCreate(Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main); btnLogin=
    findViewById(R.id.btnLogin); btnCancel=
    findViewById(R.id.btnCancel); txtuname=
    findViewById(R.id.txtuname); txtpass=
    findViewById(R.id.txtpass);
    btnLogin.setOnClickListener(this);
    btnCancel.setOnClickListener(this);
    btnLogin.setEnabled(false);
    txtuname.addTextChangedListener(this);
    txtpass.addTextChangedListener(this);
}
@Override
public void beforeTextChanged(CharSequence s, int start, int count, int after)
{} @Override
public void onTextChanged(CharSequence s, int start, int before, int count)
{} @Override
public void afterTextChanged(Editable s) {
    int firstat_rat,lastat_rat,first_dot,last_dot;
    boolean flag_email=true,flag_pass,flag=false;
    String email,pass;
    email=txtuname.getText().toString();
    pass=txtpass.getText().toString();
    firstat_rat=email.indexOf("@");
    lastat_rat=email.lastIndexOf("@");
    first_dot=email.indexOf(".");
    last_dot=email.lastIndexOf(".");
    if(firstat_rat<=0) {
        flag_email=false;
```

```
}
else if(firstat_rat!=lastat_rat ) {
   flag_email=false;
}
else if(lastat_rat==email.length()-1) {
   flag_email=false;
}
 else if(first_dot<= 0) {
    flag_email=false;
}
else if('.'==email.charAt(lastat_rat-1) ||'.'==email.charAt(lastat_rat+1)) {
   flag_email=false;
}
else if(last_dot==email.length()-1) {
   flag_email=false;
}
else if(last_dot<lastat_rat) {
   flag_email=false;
}
else if(first_dot!=last_dot) {
   for(int i=first_dot; i<=last_dot; i++){
      if(email.charAt(i)=='.') {
         if(flag) {
            flag_email=false;
            break;
          }
         else
            flag=true;
      }
      else{
         flag=false;
```

```
            }
        }
    }
    else{
        flag_email=true;
    }
    if(pass.equals("")){
        flag_pass=false;
    }
    else{
        flag_pass=true;
    }
    if(flag_email && flag_pass)
        btnLogin.setEnabled(true);
    else
        btnLogin.setEnabled(false);
}
@Override
public void onClick(View v) {
    if(v.getId()==btnLogin.getId()){
        if(txtuname.getText().toString().equals("")){
            Toast.makeText(this,"Please Enter Use Name", Toast.LENGTH_SHORT).show();
        }
        else if(txtpass.getText().toString().equals("")){ Toast.makeText(this,"Please
            Enter Pass", Toast.LENGTH_SHORT).show();
        }
        else{
            Toast.makeText(this,"Login Success Fully", Toast.LENGTH_SHORT).show();
        }
    }
    else if(v.getId() == btnCancel.getId()){
```

```
        if(txtuname.getText().toString().equals("") && txtpass.getText().toString().equals("")){
            Toast.makeText(this,"Text is Already Empty...",Toast.LENGTH_SHORT).show();
        }
        else{
            txtuname.setText("");
            txtpass.setText("");
        }
      }
   }
}
```

Program: - 4

//Create and Login application as above. On successful login, open browser with any URL. //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:gravity="center"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <EditText
      android:id="@+id/txtuname"
      android:layout_width="200dp"
      android:layout_height="50dp"
      android:hint="@string/enter_email_id"
      android:importantForAutofill="no"
      android:inputType="text" />
   <EditText
      android:layout_below="@+id/txtuname"
      android:id="@+id/txtpass"
      android:hint="@string/enter_password"
      android:layout_width="200dp"
      android:layout_height="50dp"
      android:importantForAutofill="no"
      android:inputType="textPassword"
      tools:ignore="ObsoleteLayoutParam" />
   <Button
      android:layout_below="@id/txtpass"
      android:id="@+id/btnLogin"
```

```
        android:layout_marginLeft="20dp"
        android:text="@string/login"
        android:layout_marginTop="10dp"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="20dp"
        tools:ignore="ObsoleteLayoutParam" />
    <Button
        android:layout_below="@id/btnLogin"
        android:id="@+id/btnCancel"
        android:layout_marginLeft="20dp"
        android:text="@string/clear"
        android:layout_marginTop="10dp"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:layout_marginStart="20dp"
        tools:ignore="ObsoleteLayoutParam" />
</RelativeLayout>

//MainActivity.java
package com.example.urllogin;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent; import
android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {
```

```
Button btlogin,btclear;
EditText editemail,editpass;
@Override
protected void onCreate(Bundle savedInstanceState)
   { super.onCreate(savedInstanceState);
   setContentView(R.layout.activity_main); editemail=
   findViewById(R.id.txtuname); editpass=
   findViewById(R.id.txtpass);
   btlogin= findViewById(R.id.btnLogin);
   btclear= findViewById(R.id.btnCancel);
   btlogin.setOnClickListener(this);
   btclear.setOnClickListener(this);
}
@Override
public void onClick(View v) {
   Button action=(Button) v;
   if(action.getId()==btlogin.getId()){
      String email=editemail.getText().toString(); String
      pass=editpass.getText().toString();
      if(email.equals("pankaj@gmail.com") && pass.equals("pankaj")){
         Intent myintent=new Intent(Intent.ACTION_VIEW, Uri.parse("http://www.google.com"));
         this.startActivity(myintent);
      }
      else{
         Toast.makeText(this,"Sorry", Toast.LENGTH_SHORT).show();
      }
   }
   else if(action.getId()==btclear.getId()){
      if(!editemail.getText().toString().equals("") || !editpass.getText().toString().equals("")){
         editemail.setText("");
         editpass.setText("");
```

```
            }
            else{
                Toast.makeText(this,"Already Cleared...", Toast.LENGTH_SHORT).show();
            }
        }
    }
}
```

Program: - 5

// Understand resource folders :a. Create spinner with strings taken from resource folder(res
>> value folder).b. On changing spinner value, change image.

//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:gravity="center"
   tools:context=".MainActivity">
   <Spinner
      android:id="@+id/spinner"
      android:layout_width="200dp"
      android:layout_height="50dp"
      />
   <ImageView
      android:layout_marginTop="20dp"
      android:layout_below="@id/spinner"
      android:id="@+id/imageView1"
      android:layout_width="200dp"
      android:layout_height="200dp"
      tools:ignore="ContentDescription" />
</RelativeLayout>
```

//strings.xml

```
<resources>
```

<string name="app_name">SpinnerImage</string>

```
</resources>


//MainActivity.java

package com.example.spinnerimage;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.AdapterView;

import android.widget.ArrayAdapter;

import android.widget.ImageView;

import android.widget.Spinner;

public class MainActivity extends AppCompatActivity implements
AdapterView.OnItemSelectedListener {

   Spinner spin;

   ImageView img;

   String[] names = { "None", "AMI", "MEHUL", "PANKAJ", "JIGNESH", "VIJAY",

   "SATISH"}; @Override

   protected void onCreate(Bundle savedInstanceState)

      { super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);

      spin= findViewById(R.id.spinner);

      img= findViewById(R.id.imageView1);

      spin.setOnItemSelectedListener(this);

      ArrayAdapter<String> aa = new
ArrayAdapter<>(this,android.R.layout.simple_spinner_item,names);

      aa.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);

      spin.setAdapter(aa);

   }

   @Override

   public void onItemSelected(AdapterView<?> parent, View view, int position, long id)

      { String name=spin.getSelectedItem().toString();

      switch (name) {
```

```
            case "AMI":
                img.setImageResource(R.drawable.ami);
                break;
            case "MEHUL":
                img.setImageResource(R.drawable.mehul);
                break;
            case "PANKAJ":
                img.setImageResource(R.drawable.pankaj);
                break;
            case "JIGNESH":
                img.setImageResource(R.drawable.jignesh);
                break;
            case "VIJAY":
                img.setImageResource(R.drawable.vijay);
                break;
            case "SATISH":
                img.setImageResource(R.drawable.satish);
                break;
                default:
                    img.setImageResource(R.drawable.ic_launcher_background);
        }
    }
    @Override
    public void onNothingSelected(AdapterView<?> parent) {}
}
```

Program: - 6

//Understand Menu option.a. Create an application that will change color of the screen, based on selected options from the menu.

```
//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"
   tools:context=".MainActivity">
   <AbsoluteLayout
      android:id="@+id/alayout"
      android:layout_width="fill_parent"
      android:layout_height="fill_parent"/>
</RelativeLayout>

//MainActivity.java
package com.example.menucolor;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color; import
android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.AbsoluteLayout;
import android.widget.Toast;
@SuppressWarnings("deprecation")
public class MainActivity extends AppCompatActivity
   { AbsoluteLayout al;
   @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.activity_main);
   al = findViewById(R.id.alayout);
   al.setOnCreateContextMenuListener(this);
}
@Override
public boolean onCreateOptionsMenu(Menu menu)
   { getMenuInflater().inflate(R.menu.menu, menu);
   return true;
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
   int id = item.getItemId();
   switch (id){
      case R.id.item1:
         Toast.makeText(getApplicationContext(),"RED Selected",Toast.LENGTH_SHORT).show();
         al.setBackgroundColor(Color.RED);
         return true;
      case R.id.item2:
         Toast.makeText(getApplicationContext(),"GREEN Selected",Toast.LENGTH_SHORT).show();
         al.setBackgroundColor(Color.GREEN);
         return true;
      case R.id.item3:
         Toast.makeText(getApplicationContext(),"BLUE Selected",Toast.LENGTH_SHORT).show();
         al.setBackgroundColor(Color.BLUE);
         return true;
      default:
         return super.onOptionsItemSelected(item);
   }}}
```

Program: - 7

//Create an application that will display toast(Message)
on specific interval of time.

```
 //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:gravity="center"
   tools:context=".MainActivity">
   <TextView
      android:id="@+id/tv"
      android:gravity="center"
      android:layout_width="250dp"
      android:layout_height="100dp"
      android:textSize="20sp"
      />
   <Chronometer
      android:layout_below="@id/tv"
      android:layout_marginTop="10dp"
      android:id="@+id/cnm"
      android:gravity="center"
      android:textSize="30sp"
      android:layout_width="250dp"
      android:layout_height="50dp"
      android:format="Timer : %s"/>
</RelativeLayout>
```

```
//MainActivity.java

package com.example.toastinterval;
```

```
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint; import
android.os.Bundle;
import android.widget.Chronometer;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity
  { Chronometer c;
  int i=0;
  int duration=10;
  TextView tv;
  @Override
  protected void onCreate(Bundle savedInstanceState)
    { super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    c = findViewById(R.id.cnm);
    tv = findViewById(R.id.tv);
    c.start();
    c.setOnChronometerTickListener(new Chronometer.OnChronometerTickListener()
      { @SuppressLint("SetTextI18n")
      @Override
      public void onChronometerTick(Chronometer arg0) {
        tv.setText("Message will be displayed after " + (duration - (i)) + " seconds");
        if (i >= duration) {
          Toast.makeText(getApplicationContext(), "Message " + (i /
10), Toast.LENGTH_LONG).show();
          duration = duration + 10;
        }
        i++;
      }
    });}}
```

Program: - 8

//Understanding content providers and permissions:a. Read phonebook contacts using content providers and display in list.

//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:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
   <ListView
       android:id="@+id/lv"
       android:layout_margin="10dp"
       android:layout_width="match_parent"
       android:layout_height="match_parent"
       />
</RelativeLayout>
```

//MainActivity.java

```
package com.example.contactdisplay;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
```

```
import android.content.ContentResolver;

import android.content.pm.PackageManager;

import android.database.Cursor;

import android.net.Uri;

import android.os.Bundle;

import android.provider.Contacts;

import android.provider.ContactsContract;

import android.widget.ArrayAdapter;

import android.widget.ListView;

import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {

    public static final int REQUEST_READ_CONTACTS =

    79; ListView list;

    ArrayList mobileArray;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        if (ActivityCompat.checkSelfPermission(this,
android.Manifest.permission.READ_CONTACTS)==

  PackageManager.PERMISSION_GRANTED) {

            mobileArray = getAllContacts();

        } else {

            requestPermission();

        }

        list = findViewById(R.id.lv);
```

```
        ArrayAdapter adapter = new ArrayAdapter<String>(this,

                android.R.layout.simple_list_item_1, android.R.id.text1, mobileArray);

        list.setAdapter(adapter);

    }

    private void requestPermission() {

        if (ActivityCompat.shouldShowRequestPermissionRationale(this,
android.Manifest.permission.READ_CONTACTS)) {

        } else {

            ActivityCompat.requestPermissions(this, new
  String[]{android.Manifest.permission.READ_CONTACTS},

                    REQUEST_READ_CONTACTS);

        }

    }

    @Override

    public void onRequestPermissionsResult(int requestCode, String permissions[], int[]
grantResults) {

        switch (requestCode) {

            case REQUEST_READ_CONTACTS: {

                if (grantResults.length > 0 && grantResults[0]
== PackageManager.PERMISSION_GRANTED) {

                    mobileArray = getAllContacts();

                } else {

                }

                return;

            }

        }

    }
```

```
private ArrayList getAllContacts() {
    ArrayList<String> nameList = new ArrayList<>();
    ContentResolver cr = getContentResolver();
    Cursor cur = cr.query(ContactsContract.Contacts.CONTENT_URI,
            null, null, null, null);
    if (!(cur.equals(null))){
        while (cur.moveToNext()) {
            String id = cur.getString(
                    cur.getColumnIndex(ContactsContract.Contacts._ID));
            String name = cur.getString(cur.getColumnIndex( ContactsContract.Contacts.DISPLAY_NAME));


            nameList.add(name);
            if (cur.getInt(cur.getColumnIndex(
ContactsContract.Contacts.HAS_PHONE_NUMBER)) > 0) {
                Cursor pCur = cr.query(
                        ContactsContract.CommonDataKinds.Phone.CONTENT_URI,null,
                        ContactsContract.CommonDataKinds.Phone.CONTACT_ID + " = ?",
                        new String[]{id}, null);
                while (pCur.moveToNext()) {
                    String phoneNo = pCur.getString(pCur.getColumnIndex(
                            ContactsContract.CommonDataKinds.Phone.NUMBER));
                }
                pCur.close();
            }
        }
    }
```

```
        if (!cur.equals(null)) {
            cur.close();
        }
        return nameList;
    }
}
```

Program: - 9

//Read messages from the mobile and display it on the screen.

//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:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <ListView
        android:id="@+id/listViewSMS"
        android:layout_margin="10dp"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent" >
    </ListView>
</RelativeLayout>
```

//MainActivity.java

```
package com.example.messagedisplay;
import androidx.appcompat.app.AppCompatActivity;
import android.app.ListActivity;
```

```
import android.content.ContentResolver;

import android.database.Cursor;

import android.net.Uri;

import android.os.Bundle;

import android.provider.BaseColumns;

import android.provider.ContactsContract;

import android.util.Log;

import android.view.View;

import android.widget.ArrayAdapter;

import android.widget.ListView;

import android.widget.TextView;

import java.util.ArrayList;

import java.util.List;

public class MainActivity extends

   AppCompatActivity{ TextView lt;

 @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);

      ListView lViewSMS = (ListView)

      findViewById(R.id.listViewSMS); if(fetchInbox()!=null){

         ArrayAdapter adapter = new ArrayAdapter(this,
android.R.layout.simple_list_item_1, fetchInbox());

         lViewSMS.setAdapter(adapter);

      }

   }
```

```
    public ArrayList fetchInbox(){

        ArrayList sms = new ArrayList();

        Uri uriSms = Uri.parse("content://sms/inbox");

        Cursor cursor = getContentResolver().query(uriSms, new String[]{"_id",
"address", "date", "body"},null,null,null);

        cursor.moveToFirst();

        while (cursor.moveToNext()){

            String address = cursor.getString(1);

            String body = cursor.getString(3);

            System.out.println(" Mobile number "+address);

            System.out.println(" SMS Text "+body);

            sms.add("Address : "+address+"\n SMS : "+body);

        }

        return sms;

    }

}
```

Program: - 10

//Create an application to call specific entered number by user in the EditText.

//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:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <EditText android:id="@+id/et1"
        android:layout_width="200dp"
        android:layout_height="50dp"
        android:inputType="number"
        android:importantForAutofill="no"
        tools:ignore="LabelFor" />
    <Button
        android:id="@+id/call"
        android:layout_below="@id/et1"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="20dp"
        android:layout_width="150dp"
```

```
        android:layout_height="50dp"
        android:text="@string/call"
        android:layout_marginStart="20dp" />
</RelativeLayout>
//MainActivity.java
package com.example.callno;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent; import android.net.Uri;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity implements View.OnClickListener
    { EditText num;
    Button dial;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        num= findViewById(R.id.et1);
        dial= findViewById(R.id.call);
        dial.setOnClickListener(this);
    }
    @Override
```

```
    public void onClick(View v) {
        if(v.getId()==dial.getId()){
            Intent myintent=new Intent(Intent.ACTION_DIAL, Uri.parse("tel:"+num.getText()));
            startActivity(myintent);
        }
    }
}
```

Program: - 11

//Create an application to read file from asset folder and copy it in memory card. //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:gravity="center"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView android:id="@+id/t1"
        android:layout_width="200dp"
        android:layout_height="60dp"
        android:textSize="20sp"
        />
    <TextView
        android:id="@+id/t2"
        android:layout_below="@id/t1"
        android:layout_marginTop="20dp"
        android:layout_width="200dp"
        android:layout_height="60dp"
        android:textSize="20sp"
        />
```

```
</RelativeLayout>

//MainActivity.java
package com.example.filecopy;
import androidx.appcompat.app.AppCompatActivity;
import android.content.res.AssetManager; import
android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.OutputStream;
public class MainActivity extends AppCompatActivity
   { TextView tvmsgfromasset,tvmsgfromsdcard;
   @Override
   public void onCreate(Bundle savedInstanceState)
      { super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      try{
         tvmsgfromasset= findViewById(R.id.t1);
         tvmsgfromsdcard= findViewById(R.id.t2);
         //--------reading from asset folder-----------
```

```
InputStream is1=null;
is1=getResources().getAssets().open("hello.txt");
if(is1!=null){
   Toast.makeText(this, "File Exists", Toast.LENGTH_LONG).show();
   String myMsg1="";
   while(is1.available()>0){
      myMsg1=myMsg1+(char)is1.read();
   }
   is1.close();
   tvmsgfromasset.setText("From Asset: "+myMsg1);
   //--------writing to sdcard              byte
   b[]=myMsg1.getBytes();
   File myFile = new File("/sdcard/hello.txt");
   OutputStream os=new FileOutputStream(myFile);
   os.write(b);
   os.close();
   Toast.makeText(this, "write Success.", Toast.LENGTH_LONG).show();
   //--------read file from sdcard--------
   InputStream is2=null;
   is2=new FileInputStream(myFile);
   String myMsg2="";
   while(is2.available()>0){
      myMsg2=myMsg2+(char)is2.read();
   }
```

```
            is2.close();
            tvmsgfromsdcard.setText("From SD Card: "+myMsg2+"");
        }
    }
    catch (IOException e){
        Toast.makeText(this, e.toString(), Toast.LENGTH_LONG).show();
    }
  }
}
```

Program: - 12

//Create an application to make Insert , update , Delete and retrieve operation on the database.

//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:gravity="center"

    tools:context=".MainActivity"> <TextView

        android:text="@string/username"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_alignParentTop="true"

        android:layout_marginTop="12dp"

        android:id="@+id/textView"

        android:textSize="18sp"

        android:textStyle="bold|italic"

        android:layout_alignParentLeft="true"

        android:layout_alignParentStart="true"

        android:gravity="center" />

    <EditText
```

android:layout_width="match_parent"

```
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:ems="10"
    android:id="@+id/editName"
    android:textStyle="bold|italic"
    android:layout_below="@+id/textView"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:hint="@string/enter_name"
    android:gravity="center_vertical|center"
    android:importantForAutofill="no" />
<TextView
    android:text="@string/password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="13dp"
    android:id="@+id/textView2"
    android:textStyle="bold|italic"
    android:textSize="18sp"
    android:layout_below="@+id/editName"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true"
    android:gravity="center"
    android:hint="@string/enter_password" />
<Button
```

```
    android:text="@string/view_data"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button2"
    android:textSize="18sp"
    android:onClick="viewdata"
    android:textStyle="bold|italic"
    android:layout_alignBaseline="@+id/button"
    android:layout_alignBottom="@+id/button"
    android:layout_alignRight="@+id/button4"
    android:layout_alignEnd="@+id/button4" />
<Button
    android:text="@string/add_user"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button"
    android:textStyle="bold|italic"
    android:textSize="18sp"
    android:onClick="addUser"
    android:layout_marginLeft="28dp"
    android:layout_marginStart="28dp"
    android:layout_below="@+id/editPass"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:layout_marginTop="23dp" />
```

```
<Button
    android:text="@string/update"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/button3"
    android:onClick="update"
    android:textStyle="normal|bold"
    android:layout_below="@+id/editText3"
    android:layout_alignLeft="@+id/button4"
    android:layout_alignStart="@+id/button4"
    android:layout_marginTop="13dp" />
<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:ems="10"
    android:id="@+id/editText6"
    android:layout_alignTop="@+id/button4"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:freezesText="false"
    android:hint="@string/enter_name_to_delete_data"
    android:layout_toLeftOf="@+id/button2"
    android:layout_toStartOf="@+id/button2"
    android:importantForAutofill="no" />
```

```
<Button
    android:text="@string/delete"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginRight="21dp"
    android:layout_marginEnd="21dp"
    android:id="@+id/button4"
    android:onClick="delete"
    android:textStyle="normal|bold"
    tools:ignore="RelativeOverlap"
    android:layout_marginBottom="41dp"
    android:layout_alignParentBottom="true"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true" />
<EditText
    android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:inputType="textPersonName"
   android:ems="10"
   android:layout_marginTop="47dp"
   android:id="@+id/editText3"
   android:textStyle="bold|italic"
   android:textSize="14sp"
   android:layout_below="@+id/button"
   android:layout_alignParentLeft="true"
```

```
    android:layout_alignParentStart="true"
    android:layout_marginLeft="7dp"
    android:layout_marginStart="7dp"
    android:hint="@string/current_name"
    android:importantForAutofill="no" />
<EditText
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:inputType="textPassword"
    android:ems="10"
    android:layout_marginTop="11dp"
    android:id="@+id/editPass"
    android:hint="@string/enter_password"
    android:gravity="center_vertical|center"
    android:textSize="18sp"
    android:layout_below="@+id/textView2"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true"
    android:textAllCaps="false"
    android:textStyle="normal|bold"
    android:importantForAutofill="no" />
<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
```

```
        android:ems="10"
        android:id="@+id/editText5"
        android:textStyle="bold|italic"
        android:textSize="14sp"
        android:hint="@string/new_name"
        android:layout_alignTop="@+id/button3"
        android:layout_alignLeft="@+id/editText3"
        android:layout_alignStart="@+id/editText3"
        android:layout_marginTop="32dp"
        android:importantForAutofill="no" />
</RelativeLayout>

//myDBAdapter.java
package com.example.dboperation;
import android.annotation.SuppressLint;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
class myDbAdapter {
    private myDbHelper myhelper;
    myDbAdapter(Context context) {
        myhelper = new myDbHelper(context);
    }
```

```
    long insertData(String name, String pass){ SQLiteDatabase

        dbb = myhelper.getWritableDatabase(); ContentValues

        contentValues = new ContentValues();

        contentValues.put(myDbHelper.NAME, name);

        contentValues.put(myDbHelper.MyPASSWORD, pass);

        return dbb.insert(myDbHelper.TABLE_NAME, null , contentValues);

    }

    String getData(){
        SQLiteDatabase db = myhelper.getWritableDatabase();

        String[] columns =

{myDbHelper.UID,myDbHelper.NAME,myDbHelper.MyPASSWORD};

        @SuppressLint("Recycle") Cursor cursor
=db.query(myDbHelper.TABLE_NAME,columns,null,null,null,null,null);

        StringBuilder buffer= new StringBuilder();

        while (cursor.moveToNext()){

            int cid =cursor.getInt(cursor.getColumnIndex(myDbHelper.UID));

            String name =cursor.getString(cursor.getColumnIndex(myDbHelper.NAME));

            String password
=cursor.getString(cursor.getColumnIndex(myDbHelper.MyPASSWORD));

            buffer.append(cid).append(" ").append(name).append("
").append(password).append(" \n");

        }

        return buffer.toString();

    }

    int delete(String uname){

        SQLiteDatabase db = myhelper.getWritableDatabase();
```

```
        String[] whereArgs ={uname};

        return db.delete(myDbHelper.TABLE_NAME ,myDbHelper.NAME+"
= ?",whereArgs);

    }

    int updateName(String oldName, String newName){

        SQLiteDatabase db = myhelper.getWritableDatabase();

        ContentValues contentValues = new ContentValues();

        contentValues.put(myDbHelper.NAME,newName);

        String[] whereArgs= {oldName};

        return db.update(myDbHelper.TABLE_NAME,contentValues, myDbHelper.NAME+"
= ?",whereArgs );

    }

    static class myDbHelper extends SQLiteOpenHelper{

        private static final String DATABASE_NAME = "myDatabase";    // Database Name

        private static final String TABLE_NAME = "myTable"; // Table Name

        private static final int DATABASE_Version = 1; // Database Version

        private static final String UID="_id"; // Column I (Primary Key) private

        static final String NAME = "Name"; //Column II

        private static final String MyPASSWORD= "Password";    // Column III

        private static final String CREATE_TABLE = "CREATE TABLE "+TABLE_NAME+

                " ("+UID+" INTEGER PRIMARY KEY AUTOINCREMENT,
"+NAME+" VARCHAR(255) ,"+ MyPASSWORD+" VARCHAR(225));";

        private static final String DROP_TABLE ="DROP TABLE IF
EXISTS "+TABLE_NAME;

        private Context context;

        myDbHelper(Context context) {

            super(context, DATABASE_NAME, null, DATABASE_Version);
```

```
        this.context=context;
    }
    public void onCreate(SQLiteDatabase db) {
        try {
            db.execSQL(CREATE_TABLE);
        } catch (Exception e) {
            Message.message(context,""+e);
        }
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion)
        { try {
            Message.message(context,"OnUpgrade");
            db.execSQL(DROP_TABLE);
            onCreate(db);
        }catch (Exception e) {
            Message.message(context,""+e);
        }
    }
  }
}

//Message.java
package com.example.dboperation;
import android.content.Context;
```

```
import android.widget.Toast;
class Message {
    static void message(Context context, String message) {
        Toast.makeText(context, message, Toast.LENGTH_LONG).show();
    }
}

//MainActivity.java
package com.example.dboperation;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity
    { EditText Name, Pass , updateold, updatenew,
    delete; myDbAdapter helper;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Name= findViewById(R.id.editName);
        Pass= findViewById(R.id.editPass);
        updateold= findViewById(R.id.editText3);
        updatenew= findViewById(R.id.editText5);
        delete = findViewById(R.id.editText6);
```

```
    helper = new myDbAdapter(this);
}
public void addUser(View view){ String
    t1 = Name.getText().toString(); String
    t2 = Pass.getText().toString();{
          Message.message(getApplicationContext(),"Enter Both Name and Password");
    }
    else{
        long id = helper.insertData(t1,t2);
        if(id<=0){
            Message.message(getApplicationContext(),"Insertion Unsuccessful");
            Name.setText("");
            Pass.setText("");
        } else{
            Message.message(getApplicationContext(),"Insertion Successful");
            Name.setText("");
            Pass.setText("");
        }
    }
}
public void viewdata(View view){
    String data = helper.getData();
    Message.message(this,data);
}
```

```
public void update( View view){
    String u1 = updateold.getText().toString();
    String u2 = updatenew.getText().toString();
    if(u1.isEmpty() || u2.isEmpty()){
        Message.message(getApplicationContext(),"Enter Data");
    }
    else{
        int a= helper.updateName( u1, u2);
        if(a<=0){
            Message.message(getApplicationContext(),"Unsuccessful");
            updateold.setText("");
            updatenew.setText("");
        } else {
            Message.message(getApplicationContext(),"Updated");
            updateold.setText("");
            updatenew.setText("");
        }
    }
}
public void delete( View view){
    String uname = delete.getText().toString();
    if(uname.isEmpty()){
        Message.message(getApplicationContext(),"Enter Data");
    }
    else{
```

```
            int a= helper.delete(uname);
            if(a<=0){
                Message.message(getApplicationContext(),"Unsuccessful");
                delete.setText("");
            }
            else{
                Message.message(this, "DELETED");
                delete.setText("");
            }
        }
    }
}
```

Program: - 13

//Create an application to send message between two emulators.

//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:gravity="center"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
   <EditText
      android:id="@+id/editTextnumber"
      android:layout_width="200dp"
      android:layout_height="50dp"
      android:hint="@string/enter_number"
      android:importantForAutofill="no"
      android:inputType="number" />
    <EditText
       android:layout_below="@id/editTextnumber"
       android:layout_marginTop="10dp"
       android:id="@+id/EditTextmsg"
       android:layout_width="200dp"
       android:layout_height="50dp"
       android:hint="@string/enter_message"
```

android:importantForAutofill="no"

```
        android:inputType="text" />
    <Button
        android:layout_below="@id/EditTextmsg"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="20dp"
        android:id="@+id/buttonsend"
        android:layout_width="150dp"
        android:layout_height="50dp"
        android:text="@string/send_now"
        android:layout_marginStart="20dp" />
</RelativeLayout>

//MainActivity.java
package com.example.sendmessage;
import androidx.appcompat.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 implements View.OnClickListener
    { EditText ednumber, edmsg;
    Button btsend;
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ednumber= findViewById(R.id.editTextnumber);
        edmsg= findViewById(R.id.EditTextmsg);
        btsend= findViewById(R.id.buttonsend);
        btsend.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        sendsms(ednumber.getText().toString(),edmsg.getText().toString());
    }
    private void sendsms(String num,String msg){
        SmsManager sms= SmsManager.getDefault();
        sms.sendTextMessage(num, null, msg, null, null);
        Toast.makeText(MainActivity.this,"Sucessfully
Message Send",Toast.LENGTH_LONG).show();
    }
}
```