COURSE OUTCOME-1

PROGRAM 1

AIM: Design a Login Form with username and password using Linear Layout and toast valid credentials.

PROGRAM CODE

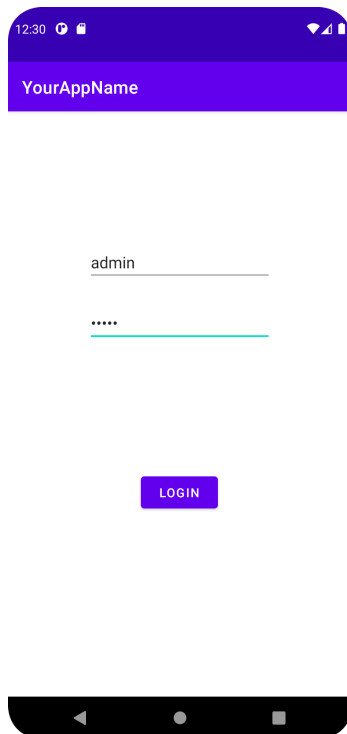| JAVA CODE | ```java
package com.example.admin.login1;
    import android.support.v7.app.AppCompatActivity;
    import android.os.Bundle;
    import android.view.View;
    import android.widget.Button;
    import android.widget.EditText;
    import android.widget.Toast;
    import java.util.Objects;
public class MainActivity extends AppCompatActivity {
  EditText username,password;
  Button login;
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    username=findViewById(R.id.username);
    password=findViewById(R.id.password);
    login=findViewById(R.id.login);
    login.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View view) {
        if(Objects.equals(username.getText().toString(),
"admin")&&Objects.equals(password.getText().toString(),"admin"))
        {
          Toast.makeText(MainActivity.this,"You have Authenticated
Successfully",Toast.LENGTH_LONG).show();
        }else
        {
          Toast.makeText(MainActivity.this,"Authentication
Failed",Toast.LENGTH_LONG).show();
        }
      }
    });
  }
``` |
|---|---|

	}

XML CODE	?xml version="1.0" encoding="utf-8"?>
	<android.support.linear.LinearLayout
	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">
	<Button
	android:id="@+id/login"
	android:layout_width="146dp"
	android:layout_height="53dp"
	android:layout_marginStart="8dp"
	android:layout_marginTop="8dp"
	android:layout_marginEnd="8dp"
	android:layout_marginBottom="8dp"
	android:text="login"
	app:layout_constraintBottom_toBottomOf="parent"
	app:layout_constraintEnd_toEndOf="parent"
	app:layout_constraintStart_toStartOf="parent"
	app:layout_constraintTop_toTopOf="parent"
	app:layout_constraintVertical_bias="0.639" />
	<EditText
	android:id="@+id/password"
	android:layout_width="wrap_content"
	android:layout_height="46dp"
	android:layout_marginStart="8dp"
	android:layout_marginTop="8dp"
	android:layout_marginEnd="8dp"
	android:layout_marginBottom="8dp"
	android:ems="10"
	android:inputType="textPassword"
	android:hint="password"
	app:layout_constraintBottom_toBottomOf="parent"
	app:layout_constraintEnd_toEndOf="parent"
	app:layout_constraintHorizontal_bias="0.503"
	app:layout_constraintStart_toStartOf="parent"
	app:layout_constraintTop_toTopOf="parent"
	app:layout_constraintVertical_bias="0.432" />

```
        <EditText
            android:id="@+id/username"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="8dp"
            android:layout_marginTop="8dp"
            android:layout_marginEnd="8dp"
            android:layout_marginBottom="8dp"
            android:ems="10"
            android:inputType="textPersonName"
            android:hint="Username"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintHorizontal_bias="0.503"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent"
            app:layout_constraintVertical_bias="0.271" />
    </android.support.linear.LinearLayout>
```

OUTPUT

RESULT: The above program is successfully executed and obtained.

PROGRAM 2

AIM: Write a program that demonstrates Activity Lifecycle.

PROGRAM CODE

| JAVA CODE | ```
import android.widget.EditText; import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity { Button button;
TextView name,number,password,mail,addr; EditText
ename,enumber,epassword,email,address;

@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
button = findViewById(R.id.button);
name = findViewById(R.id.textView1); number =
findViewById(R.id.textView2); mail = findViewById(R.id.textView3);
password = findViewById(R.id.textView4);
addr=findViewById(R.id.adr);
ename= findViewById(R.id.editText); enumber=
findViewById(R.id.editText2); email= findViewById(R.id.editText3);
epassword= findViewById(R.id.editText4); address=
findViewById(R.id.addr);
button.setOnClickListener(new View.OnClickListener() { @Override
public void onClick(View v) { login();
}
});
}
public void login() {
if (ename.getText().toString().length() == 0) {
ename.requestFocus(); ename.setError("Name is required"); return;
}
String namePattern="^[0-9!@#$%^&*]+$";
if(ename.getText().toString().matches(namePattern))
{       ename.requestFocus(); ename.setError("Enter valid name");
return;
}
``` |
| --- | --- |

```
String
fPattern="^[A-Za-z!@#$%^&*]+[0-9!@#$%^&*]+[A-Za-z!@#$%^&*
]+$";
if(ename.getText().toString().matches(fPattern))
{        ename.requestFocus(); ename.setError("Enter valid name");
 return;
}
String namPattern="^[A-Za-z!@#$%^&*]+[0-9!@#$%^&*]+$";
if(ename.getText().toString().matches(namPattern))
{        ename.requestFocus(); ename.setError("Enter valid name");
return;
}
String naPattern="^[0-9!@#$%^&*]+[A-Za-z!@#$%^&*]++$";
if(ename.getText().toString().matches(naPattern))
{        ename.requestFocus(); ename.setError("Enter valid name");
return;
}
if (address.getText().toString().length() == 0) { address.requestFocus();
address.setError("Address is required"); return;
}
String noPattern="^[A-Za-z!@#$%^&*]+$";
if(enumber.getText().toString().matches(noPattern))
{        enumber.requestFocus(); enumber.setError("Enter valid
number"); return;
}
String numPattern="^[A-Za-z]+[0-9]+[!@#$%^&*]+$";
if(enumber.getText().toString().matches(numPattern))
{        enumber.requestFocus(); enumber.setError("Enter valid
number"); return;
}
String nuPattern="^[A-Za-z]+[0-9]+$";
if(enumber.getText().toString().matches(nuPattern))
{        enumber.requestFocus(); enumber.setError("Enter valid
number"); return;
}
String nPattern="^[0-9]+[A-Za-z]+$";
if(enumber.getText().toString().matches(nPattern))
{        enumber.requestFocus(); enumber.setError("Enter valid
number"); return;
}
String numberPattern="^[0-9]+[!@#$%^&*]+$";
if(enumber.getText().toString().matches(numberPattern))
{        enumber.requestFocus();
 enumber.setError("Enter valid number");
```

	return; }

XML CODE	```xml
	<?xml version="1.0" encoding="utf-8"?>
	<android.support.linear.LinearLayout
	xmlns:android="http://schemas.android.com/apk/res/android"
	xmlns:app="http://schemas.android.com/apk/res-auto"
	xmlns:tools="http://schemas.android.com/tools"
	android:layout_width="match_parent"
	android:layout_height="match_parent"
	tools:context=".MainActivity">
	
	<TextView
	android:id="@+id/textView4"
	android:layout_width="wrap_content"
	android:layout_height="wrap_content"
	android:text="PASSWORD"
	app:layout_constraintBottom_toBottomOf="parent"
	app:layout_constraintEnd_toEndOf="parent"
	app:layout_constraintHorizontal_bias="0.145"
	app:layout_constraintStart_toStartOf="parent"
	app:layout_constraintTop_toTopOf="parent"
	app:layout_constraintVertical_bias="0.519" />
	
	<TextView
	android:id="@+id/textView1"
	android:layout_width="wrap_content"
	android:layout_height="wrap_content"
	android:text="NAME"
	app:layout_constraintBottom_toBottomOf="parent"
	app:layout_constraintEnd_toEndOf="parent"
	app:layout_constraintHorizontal_bias="0.167"
	app:layout_constraintStart_toStartOf="parent"
	app:layout_constraintTop_toTopOf="parent"
	app:layout_constraintVertical_bias="0.14" />
	
	<TextView
	android:id="@+id/textView2"
	android:layout_width="wrap_content"
	android:layout_height="wrap_content"
	android:text="MOB NO"
	app:layout_constraintBottom_toBottomOf="parent"
	app:layout_constraintEnd_toEndOf="parent"
	``

```xml
        app:layout_constraintHorizontal_bias="0.167"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.327" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="EMAIL"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.194"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.431" />

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="Name"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.757"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.125" />

    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Number"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.757"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.319" />
```

```xml
<EditText
android:id="@+id/editText3"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textEmailAddress"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.757"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.425" />

<EditText
android:id="@+id/editText4"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:ems="10"
android:inputType="textPassword"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.757"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.523" />

<Button
android:id="@+id/button"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:background="#00BCD4"
android:text="submit"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.464"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.67" />

<EditText
android:id="@+id/addr"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
```

<table>
<tr><td></td><td>

android:ems="10"
android:inputType="textPersonName"
android:hint="Address"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.757"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.221" />

<TextView
android:id="@+id/adr"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Address"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.17"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.233" />

</android.support.constraint.ConstraintLayout>

</td></tr>
</table>

OUTPUT

HELLOOOO

```
D/libEGL: Loaded /vendor/lib/egl/libGLESv2_emulation.so
D/lifecycle: onCreate invoked
D/lifecycle: onStart invoked
D/lifecycle: onResume invoked
D/HostConnection: HostConnection::get() New Host Connection established 0xea2e3400, tid 6625
D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_EMU_native_sync_v3 ANDROID_EMU_native_sync_v4 ANDROID_EMU_dma_v1 ANDROID_EMU_direct_mem
  ANDROID_EMU_host_composition_v1 ANDROID_EMU_host_composition_v2 ANDROID_EMU_YUV_Cache ANDROID_EMU_async_unmap_buffer ANDROID_EMU_has_shared_slots_host_memory_allocator ANDROID_EMU_sync_buffer_data
  GL_OES_EGL_image_external_essl3 GL_OES_vertex_array_object GL_KHR_texture_compression_astc_ldr ANDROID_EMU_host_side_tracing ANDROID_EMU_async_frame_commands ANDROID_EMU_gles_max_version_3_0
W/OpenGLRenderer: Failed to choose config with EGL_SWAP_BEHAVIOR_PRESERVED, retrying without...
D/EGL_emulation: eglCreateContext: 0xea2e6340: maj 3 min 0 rcv 3
D/EGL_emulation: eglMakeCurrent: 0xea2e6340: ver 3 0 (tinfo 0xea62e010) (first time)
I/Gralloc4: mapper 4.x is not supported
D/HostConnection: createUnique: call
D/HostConnection: HostConnection::get() New Host Connection established 0xea2e5620, tid 6625
D/goldfish-address-space: allocate: Ask for block of size 0x100
D/goldfish-address-space: allocate: ioctl allocate returned offset 0x3f7ffe000 size 0x2000
D/HostConnection: HostComposition ext ANDROID_EMU_CHECKSUM_HELPER_v1 ANDROID_EMU_native_sync_v2 ANDROID_EMU_native_sync_v3 ANDROID_EMU_native_sync_v4 ANDROID_EMU_dma_v1 ANDROID_EMU_direct_mem
  ANDROID_EMU_host_composition_v1 ANDROID_EMU_host_composition_v2 ANDROID_EMU_YUV_Cache ANDROID_EMU_async_unmap_buffer ANDROID_EMU_has_shared_slots_host_memory_allocator ANDROID_EMU_sync_buffer_data
  GL_OES_EGL_image_external_essl3 GL_OES_vertex_array_object GL_KHR_texture_compression_astc_ldr ANDROID_EMU_host_side_tracing ANDROID_EMU_async_frame_commands ANDROID_EMU_gles_max_version_3_0
D/lifecycle: onPause invoked
D/lifecycle: onStop invoked
D/lifecycle: onRestart invoked
D/lifecycle: onStart invoked
D/lifecycle: onResume invoked
D/lifecycle: onPause invoked
D/lifecycle: onStop invoked
D/lifecycle: onDestroy.. invoked
```

RESULT: The above program is successfully executed and obtained the output.

PROGRAM 3

AIM: Implementing basic arithmetic operations of a simple calculator.

PROGRAM CODE

JAVA CODE	package com.example.calculator;

```java
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
EditText num1,num2,result;
int n1,n2;
String s1,s2,s3;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}
  public void getNum()
  {
    num1 = (EditText) findViewById(R.id.fn);
    num2 = (EditText) findViewById(R.id.sn);
    result = (EditText) findViewById(R.id.res);
    s1 = num1.getText().toString();
    s2 = num2.getText().toString();
}
  public void sum(View v)
  {
    getNum();
    n1 = Integer.parseInt(s1);
    n2 = Integer.parseInt(s2);
    s3 = String.valueOf(n1+n2);
    result.setText(s3);
}
  public void sub(View v)
  {
    getNum();
    n1 = Integer.parseInt(s1);
    n2 = Integer.parseInt(s2);
```

| | ```
      s3 = String.valueOf(n1-n2);
      result.setText(s3);
    }
    public void mul(View v)
    {
      getNum();
      n1 = Integer.parseInt(s1);
      n2 = Integer.parseInt(s2);
      s3 = String.valueOf(n1*n2);
      result.setText(s3);
    }
    public void div(View v)
    {
      getNum();
      n1 = Integer.parseInt(s1);
      n2 = Integer.parseInt(s2);
      s3 = String.valueOf(n1/n2);
      result.setText(s3);
    }
};
``` |

| XML CODE | ```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
      android:id="@+id/fn"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginStart="99dp"
      android:layout_marginTop="68dp"
      android:layout_marginEnd="102dp"
      android:layout_marginBottom="32dp"
      android:ems="10"
      android:hint="First number"
      android:inputType="textPersonName"
      app:layout_constraintBottom_toTopOf="@+id/sn"
      app:layout_constraintEnd_toEndOf="parent"
``` |

```xml
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.0" />

    <Button
        android:id="@+id/mul"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="36dp"
        android:layout_marginTop="44dp"
        android:onClick="mul"
        android:text="*"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/add" />

    <Button
        android:id="@+id/div"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="130dp"
        android:layout_marginTop="48dp"
        android:layout_marginEnd="62dp"
        android:onClick="div"
        android:text="/"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.285"
        app:layout_constraintStart_toEndOf="@+id/mul"
        app:layout_constraintTop_toBottomOf="@+id/sub" />

    <Button
        android:id="@+id/sub"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="129dp"
        android:layout_marginTop="106dp"
        android:layout_marginEnd="65dp"
        android:onClick="sub"
        android:text="-"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toEndOf="@+id/add"
        app:layout_constraintTop_toBottomOf="@+id/res" />
```
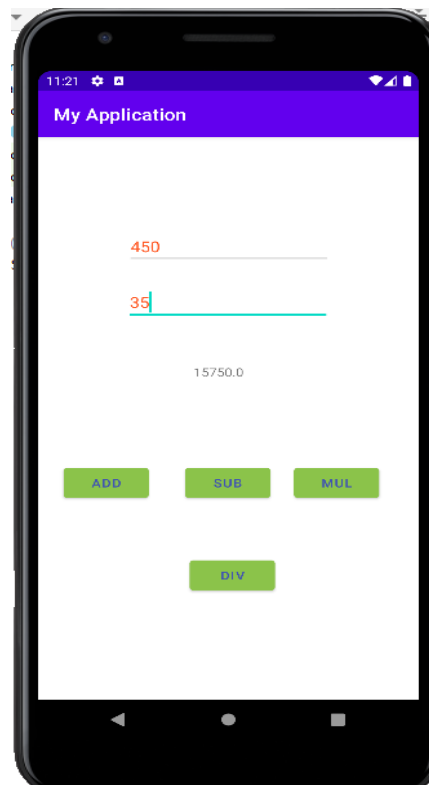
```xml
<Button
    android:id="@+id/add"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="36dp"
    android:layout_marginTop="108dp"
    android:onClick="sum"
    android:text="+"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/res" />

<EditText
    android:id="@+id/sn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="101dp"
    android:layout_marginTop="27dp"
    android:layout_marginEnd="100dp"
    android:ems="10"
    android:hint="Second number"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/fn" />

<EditText
    android:id="@+id/res"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="100dp"
    android:layout_marginTop="25dp"
    android:layout_marginEnd="101dp"
    android:ems="10"
    android:hint="Result"
    android:inputType="textPersonName"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/sn" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

OUTPUT

RESULT: The above program is successfully executed and obtained the output.

PROGRAM 4

AIM: Implement validations on various UI controls.

PROGRAM CODE:

| JAVA CODE | ```java
package com.example.admin.myapplication;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActivity {

  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
  }
  @Override
  protected void onStart() {
    super.onStart();
    Log.d( "Activity Lifecycle", "onStart invoked");
  }
  @Override
  protected void onResume(){
    super.onResume();
    Log.d("Activity Lifecycle","onResume invoked");
  }
  @Override
  protected void onPause(){
    super.onPause();
    Log.d("Activity Lifecycle","onPause invoked");
  }
  @Override
  protected void onStop(){
    super.onStop();
    Log.d("Activity Lifecycle","onStop invoked");
  }
  @Override
  protected void onRestart(){
    super.onRestart();
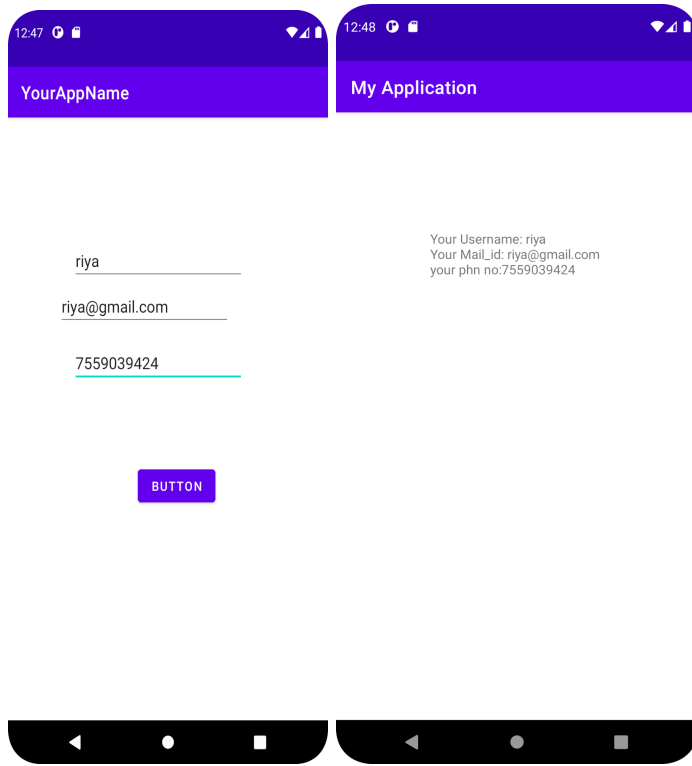    Log.d("Activity Lifecycle","onRestart invoked");
``` |

| | ```
    }
    @Override
    protected void onDestroy(){
        super.onDestroy();
        Log.d("Activity Lifecycle","onDestroy invoked");
    }
}
``` |

| XML CODE | ```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:autoText="false"
        android:background="#03A9F4"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</android.support.constraint.ConstraintLayout>
``` |

OUTPUT

Screen 1 (12:47 YourAppName):

riya

riya@gmail.com

7559039424

BUTTON

Screen 2 (12:48 My Application):

Your Username: riya
Your Mail_id: riya@gmail.com
your phn no:7559039424

RESULT: The above program is successfully executed and obtained the output.