MOBILE APPLICATION DEVELOPMENT LAB
ROUGH RECORD

SUBMITTED BY,

ANANYA B

S3-MCA

20MCA308

COURSE OUTCOME 1

PROGRAM NO:1

AIM: Design a Login Form with username and password using LinearLayout and toast valid credentials

PROGRAM CODE:

XML CODE:

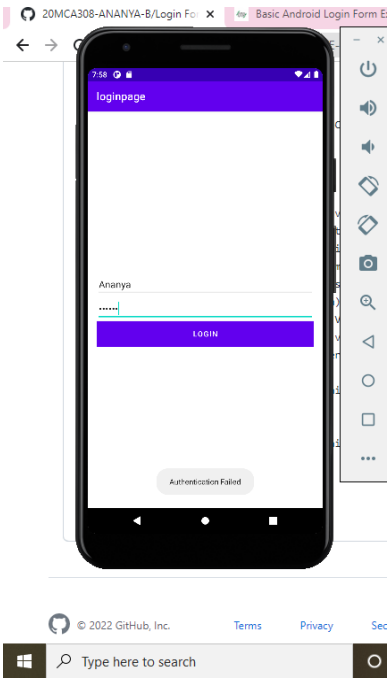
```
<?xml version="1.0" encoding="utf-8"?>
<android.widget.LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.loginpage.MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:layout_marginLeft="16dp"
        android:layout_marginRight="16dp"
        android:layout_centerInParent="true">
        <EditText
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="UserName"
            android:id="@+id/username"/>
        <EditText
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:hint="password"
            android:id="@+id/password"
            android:inputType="textPassword"
            />
        <Button
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Login"
            android:background="#3f76ff"
            android:textColor="#fff"
```

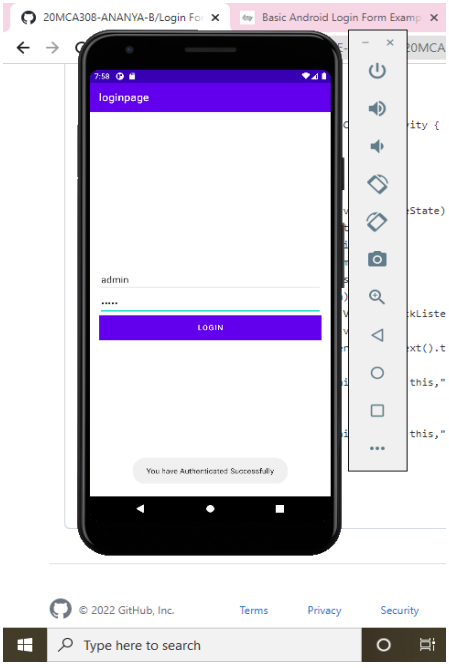
```
        android:id="@+id/login"/>

    </LinearLayout>
</android.widget.LinearLayout>
```

JAVA CODE:

```
package com.example.myapplication;

import androidx.appcompat.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;

    @Override
    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() {
            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();
                }
            }
        });
    }
}
```

OUTPUT





RESULT: The program is executed successfully and output is obtained

PROGRAM NO:2

AIM: Write a program that demonstrates Activity Lifecycle

PROGRAM CODE:

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">

    <TextView
        android:id="@+id/textView"
        android:layout_width="104dp"
        android:layout_height="45dp"
        android:text="TextView"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.236" />
```

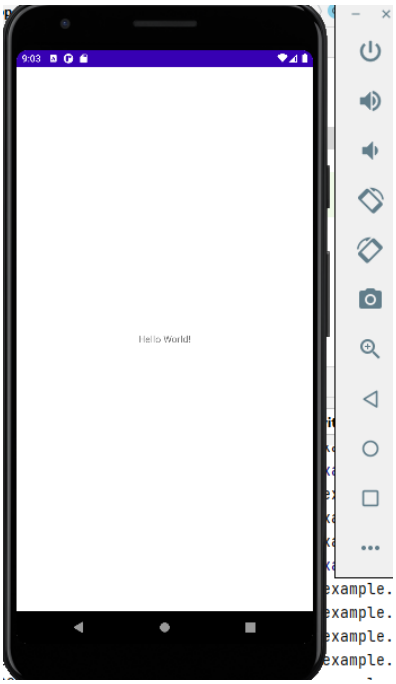
```
    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

JAVA CODE:

```
package example.activitylifecycle;

import android.app.Activity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d("lifecycle","onCreate invoked");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d("lifecycle","onStart invoked");
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d("lifecycle","onResume invoked");
```

```
    }
    @Override
    protected void onPause() {
        super.onPause();
        Log.d("lifecycle","onPause invoked");
    }
    @Override
    protected void onStop() {
        super.onStop();
        Log.d("lifecycle","onStop invoked");
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d("lifecycle","onRestart invoked");
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d("lifecycle","onDestroy invoked");
    }
}
```

OUTPUT




```
2022-01-21 21:00:27.384 4443-4443/com.example.activity D/lifecycle: onPause invoked
2022-01-21 21:00:27.576 4443-4443/com.example.activity D/lifecycle: onStop invoked
2022-01-21 21:00:48.527 4443-4443/com.example.activity D/lifecycle: onRestart invoked
2022-01-21 21:00:48.529 4443-4443/com.example.activity D/lifecycle: onStart invoked
2022-01-21 21:00:48.530 4443-4443/com.example.activity D/lifecycle: onResume invoked
```

```
2022-01-21 21:00:03.720 4443-4467/com.example.activity D/libEGL: loaded /vendor/lib/egl/libGLESv2_emulation.so
2022-01-21 21:00:03.832 4443-4443/com.example.activity D/lifecycle: onCreate invoked
2022-01-21 21:00:03.848 4443-4443/com.example.activity D/lifecycle: onStart invoked
2022-01-21 21:00:03.854 4443-4443/com.example.activity D/lifecycle: onResume invoked
2022-01-21 21:00:03.997 4443-4465/com.example.activity D/HostConnection: HostConnection::get() New Host Connection established 0xeb320d10, tid 4465
```

RESULT: The program is executed successfully and output is obtained

PROGRAM NO:3

AIM: Implementing basic arithmetic operations of a simple calculator

PROGRAM CODE:

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/number1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="number1"
        android:textColor="#FF5722"
        android:textColorHint="#3F51B5"
        android:textColorLink="#E91E63"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.173" />

    <EditText
        android:id="@+id/number2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        android:hint="number2"
        android:textColor="#FF5722"
        android:textColorHint="#3F51B5"
        android:textColorLink="#E91E63"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.279" />

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="TextView"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.47"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.415" />

<Button
    android:id="@+id/add"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="add"
    android:textColor="#3F51B5"
    app:backgroundTint="#8BC34A"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/sub"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="sub"
    android:textColor="#3F51B5"
    app:backgroundTint="#8BC34A"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.492"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.584" />

<Button
    android:id="@+id/mul"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="mul"
    android:textColor="#3F51B5"
    app:backgroundTint="#8BC34A"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintHorizontal_bias="0.492"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.68" />

    <Button
        android:id="@+id/div"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="div"
        android:textColor="#3F51B5"
        app:backgroundTint="#8BC34A"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.482"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.774" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

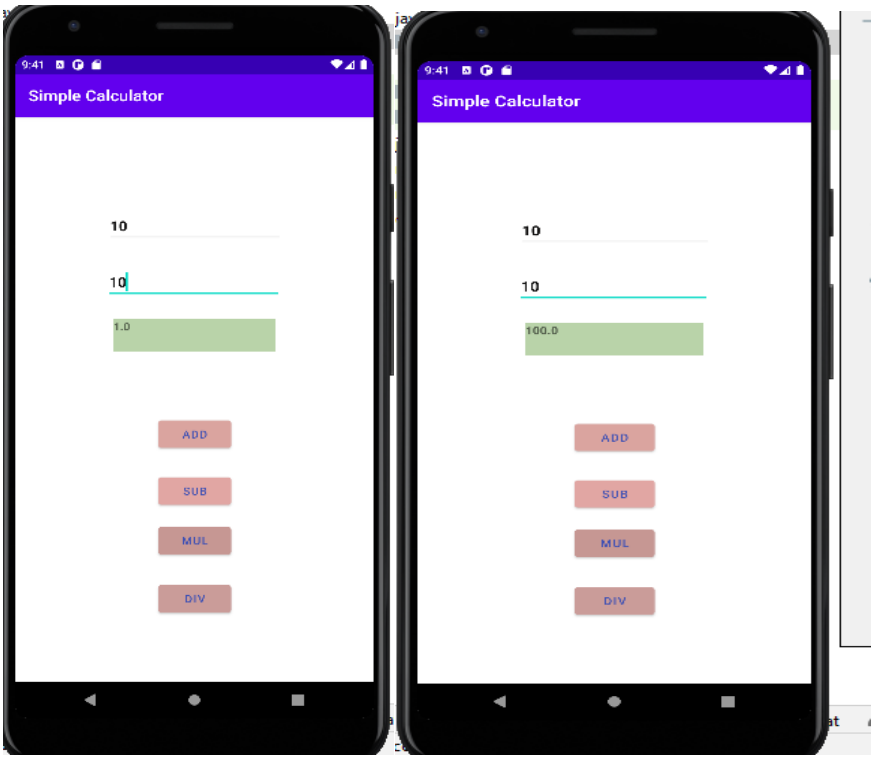
JAVA CODE:

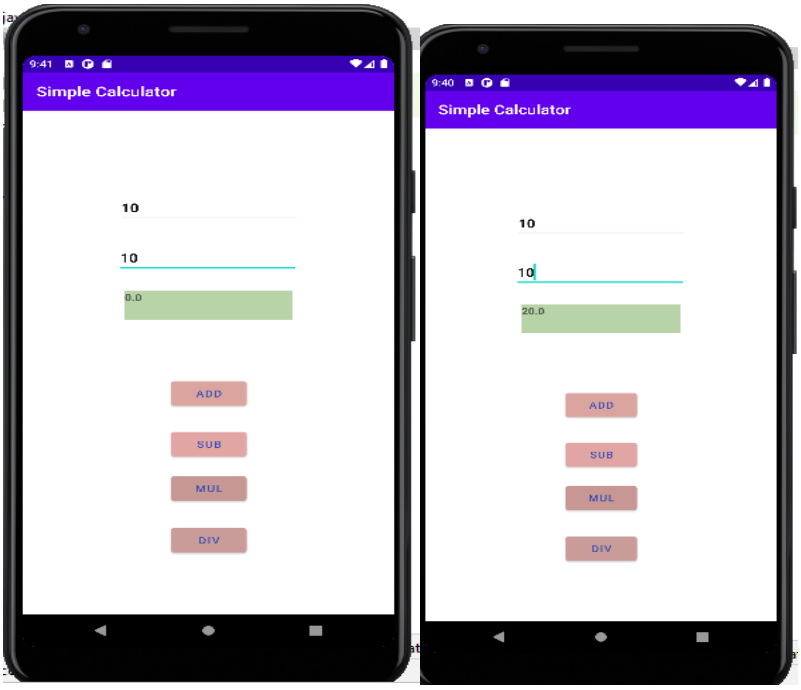
```
package com.example.myapplication;

import androidx.appcompat.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 EditText number1;
    private EditText number2;
    private Button add;
    private Button sub;
    private Button mul;
    private Button div;
    private TextView textView;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        number1 = (EditText) findViewById(R.id.number1);
        number2 = (EditText) findViewById(R.id.number2);
        add = (Button) findViewById(R.id.add);
        sub = (Button) findViewById(R.id.sub);
        mul = (Button) findViewById(R.id.mul);
```

```
        div = (Button) findViewById(R.id.div);
        textView = (TextView) findViewById(R.id.textView);
        // Addition
        add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if ((number1.getText().length() > 0) && (number2.getText().length() > 0)) {
                    double oper1 = Double.parseDouble(number1.getText().toString());
                    double oper2 = Double.parseDouble(number2.getText().toString());
                    double result = oper1 + oper2;
                    textView.setText(Double.toString(result));
                } else {
                    Toast toast = Toast.makeText(MainActivity.this, "Enter The Required Numbers",
Toast.LENGTH_LONG);
                    toast.show();
                }
            }
        });
        //Subtraction
        sub.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if ((number1.getText().length() > 0) && (number2.getText().length() > 0)) {
                    double oper1 = Double.parseDouble(number1.getText().toString());
                    double oper2 = Double.parseDouble(number2.getText().toString());
                    double result = oper1 - oper2;
                    textView.setText(Double.toString(result));
                } else {
                    Toast toast = Toast.makeText(MainActivity.this, "Enter The Required Numbers",
Toast.LENGTH_LONG);
                    toast.show();
                }

            }
        });
        // Multiplication
        mul.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if ((number1.getText().length() > 0) && (number2.getText().length() > 0)) {
                    double oper1 = Double.parseDouble(number1.getText().toString());
                    double oper2 = Double.parseDouble(number2.getText().toString());
                    double result = oper1 * oper2;
                    textView.setText(Double.toString(result));
                } else {
                    Toast toast = Toast.makeText(MainActivity.this, "Enter The Required Numbers",
Toast.LENGTH_LONG);
                    toast.show();
                }
            }
        });
        // Division
        div.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            if ((number1.getText().length() > 0) && (number2.getText().length() > 0)) {
                double oper1 = Double.parseDouble(number1.getText().toString());
                double oper2 = Double.parseDouble(number2.getText().toString());
                double result = oper1 / oper2;
                textView.setText(Double.toString(result));
            } else {
                Toast toast = Toast.makeText(MainActivity.this, "Enter The Required Numbers",
Toast.LENGTH_LONG);
                toast.show();
            }
        }
    });
  }
}
```

OUTPUT





RESULT: The program is executed successfully and output is obtained

PROGRAM NO:4

AIM: Implement validations on various UI controls

PROGRAM CODE:

XML CODE:

```
<?xml version="1.0" encoding="utf-8"?>
<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"
    android:background="#F6C7D7"
    android:orientation="vertical"
    tools:context=".MainActivity">


    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#00BCD4"
        android:ems="10"
        android:hint="Name"
        android:inputType="textPersonName" />

    <EditText
        android:id="@+id/address"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#00BCD4"
        android:ems="10"
        android:hint="Address"
        android:inputType="textPersonName"
        android:minHeight="48dp" />

    <EditText
        android:id="@+id/email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#00BCD4"
        android:ems="10"
        android:hint="Email"
```

```
    android:inputType="textEmailAddress" />

<EditText
    android:id="@+id/password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:backgroundTint="#00BCD4"
    android:ems="10"
    android:hint="Password"
    android:inputType="textPassword" />

<EditText
    android:id="@+id/phno"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:backgroundTint="#00BCD4"
    android:ems="10"
    android:hint="Phone"
    android:inputType="phone" />

<TextView
    android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="35dp"
    android:backgroundTint="#00BCD4"
    android:text="Gender"
    android:textAppearance="@style/TextAppearance.AppCompat.Body2"
    android:textSize="16sp" />

<RadioGroup
    android:id="@+id/gender"
    android:layout_width="match_parent"
    android:layout_height="99dp">

    <RadioButton
        android:id="@+id/male"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#00BCD4"
        android:text="Male" />

    <RadioButton
        android:id="@+id/female"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#00BCD4"
        android:text="Female" />

    <Button
        android:id="@+id/validate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="SUBMIT" />
```

```
    </RadioGroup>

    <Button
        android:id="@+id/validate1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:backgroundTint="#009688"
        android:text="SUBMIT"
        android:textSize="20sp" />

</LinearLayout>
```

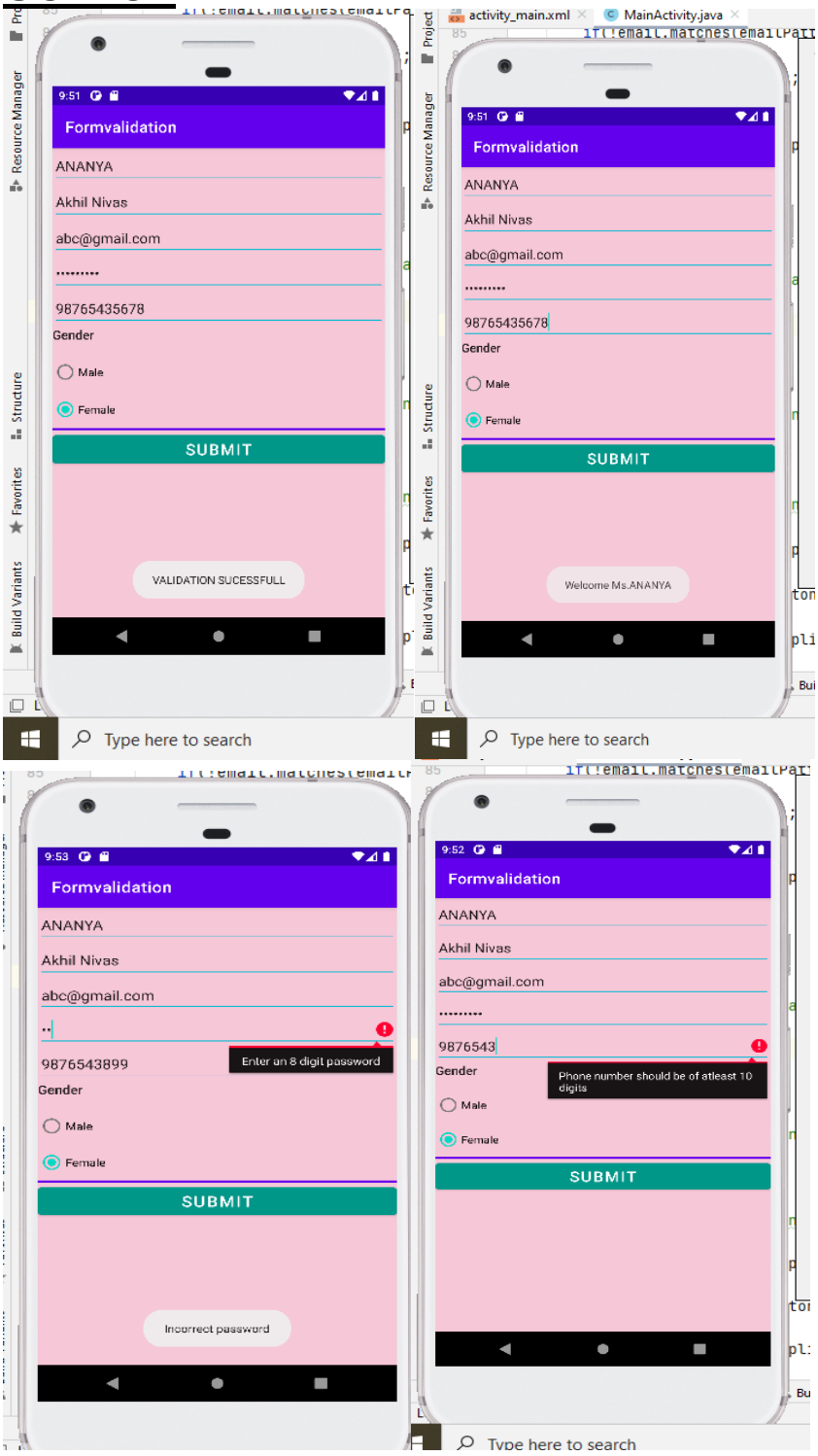
JAVA CODE:

```
package com.example.formvalidation;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText e1,e2,e3,e4,e5;
    Button b1;
    RadioButton r1,r2;
    RadioGroup r;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1=(EditText)findViewById(R.id.name);
        e2=(EditText)findViewById(R.id.address);
        e3=(EditText)findViewById(R.id.email);
        e4=(EditText)findViewById(R.id.password);
        e5=(EditText)findViewById(R.id.phno);
        b1=(Button)findViewById(R.id.validate1);
        r=(RadioGroup)findViewById(R.id.gender);
        r1=(RadioButton)findViewById(R.id.male);
        r2=(RadioButton)findViewById(R.id.female);
        b1.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v)
            {
                validate();
            }
        });
```

```
}

public void validate()
{
   String name=e1.getText().toString();
   String email=e3.getText().toString().trim();
   String address=e2.getText().toString();
   String password=e4.getText().toString();
   String namePattern="[0-9!@#$%^&*]";
   String emailPattern="[a-zA-Z0-9._-]+@[a-z]+\\.+[a-z]+";
   String pno=e5.getText().toString();
   int valid=1;

   if(name.length()==0)
   {
      e1.getText().clear();
      e1.requestFocus();
      e1.setError("Enter  name ");
      Toast.makeText(getApplicationContext(), "Enter valid name", Toast.LENGTH_SHORT).show();
      valid++;
   }
   if(name.matches(namePattern))
   {
      e1.getText().clear();
      e1.requestFocus();
      e1.setError("Name contains illegal characters");
      Toast.makeText(getApplicationContext(), "Enter valid name", Toast.LENGTH_SHORT).show();
      valid++;
   }
   if(address.length()==0)
   {
      e2.getText().clear();
      e2.requestFocus();
      e2.setError("Enter address");
      Toast.makeText(getApplicationContext(), "Enter valid address", Toast.LENGTH_SHORT).show();
      valid++;
   }
   if(email.length()==0)
   {
      e3.getText().clear();
      e3.requestFocus();
      e3.setError("Enter email address");
      Toast.makeText(getApplicationContext(), "Enter valid email", Toast.LENGTH_SHORT).show();
      valid++;
   }
   if(!email.matches(emailPattern))
   {
      e3.getText().clear();
      e3.requestFocus();
      e3.setError("Invalid email address");
      Toast.makeText(getApplicationContext(), "Enter valid email ", Toast.LENGTH_SHORT).show();
      valid++;
```

```
        }
        if(password.length()==0)
        {
           e4.requestFocus();
           e4.setError("Enter password");
           valid++;
        }
        if(password.length()<5)
        {
           e4.requestFocus();
           e4.setError("Enter an 8 digit password");
           valid++;

        }
        if(!password.equals("Ananya123"))
        {
           Toast.makeText(getApplicationContext(), "Incorrect password", Toast.LENGTH_SHORT).show();
        }
        if (r.getCheckedRadioButtonId() == -1)
        {
           Toast.makeText(getApplicationContext(), "Please select any gender",
Toast.LENGTH_SHORT).show();
           valid++;
        }
        else
        {
           if(r1.isChecked())
           {
              Toast.makeText(getApplicationContext(), "Welcome Mr."+name, Toast.LENGTH_SHORT).show();
           }
           if(r2.isChecked())
           {
              Toast.makeText(getApplicationContext(), "Welcome Ms."+name,
Toast.LENGTH_SHORT).show();
           }
        }
        if(pno.length()<10)
        {
           e5.setError("Phone number should be of atleast 10 digits");
           valid++;
        }
        if(valid==1)
        {
           Toast.makeText(getApplicationContext(), "VALIDATION SUCESSFULL",
Toast.LENGTH_SHORT).show();
        }
     }
}
```

OUTPUT



RESULT: The program is executed successfully and output is obtained