MOBILE APPLICATION DEVELOPMENT LAB ROUGH RECORD

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20MCA316

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
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:paddingLeft="16dp"
    android:paddingRight="16dp">
<EditText
    android:id="@+id/usr"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="User Name" />

    <EditText
    android:id="@+id/pass"
    android:layout_width="match_parent"
    android:layout_height="59dp"
    android:ems="10"
    android:hint="password"
    android:inputType="textPassword"/>

    <Button
    android:id="@+id/button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="LOGIN" />
</LinearLayout>
```

JAVA CODE:

```java
package com.example.login;

import androidx.appcompat.app.AppCompatActivity;
import android.widget.EditText;
import android.widget.Button;
import android.view.View;
import android.widget.Toast;
import android.os.Bundle;

import java.util.Objects;

public class MainActivity extends AppCompatActivity {
    EditText username,password;
    Button btn;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        username = (EditText) findViewById(R.id.usr);
        password = (EditText) findViewById(R.id.pass);
        btn = (Button) findViewById(R.id.button);
        btn.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v)
            {

                validate();
            }
        });

    }

    public void validate()
    {
        String name=username.getText().toString();
        String pass=password.getText().toString();
        int valid=1;

        if(name.length()==0)
        {
            username.getText().clear();
            username.requestFocus();
            username.setError("Enter  name ");
```

```java
            Toast.makeText(getApplicationContext(), "Enter valid name",
Toast.LENGTH_SHORT).show();
            valid++;
        }
        if(name.matches(namePattern))
        {
            username.getText().clear();
            username.requestFocus();
            username.setError("Name contains illegal characters");
            Toast.makeText(getApplicationContext(), "Enter valid name",
Toast.LENGTH_SHORT).show();
            valid++;
        }


        if(password.length()==0)
        {
            password.requestFocus();
            password.setError("Enter password");
            valid++;
        }



        if(valid==1)
        {
            Toast.makeText(getApplicationContext(), "VALIDATION SUCESSFULL",
Toast.LENGTH_SHORT).show();
        }
        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();
        }
    }


    }
```
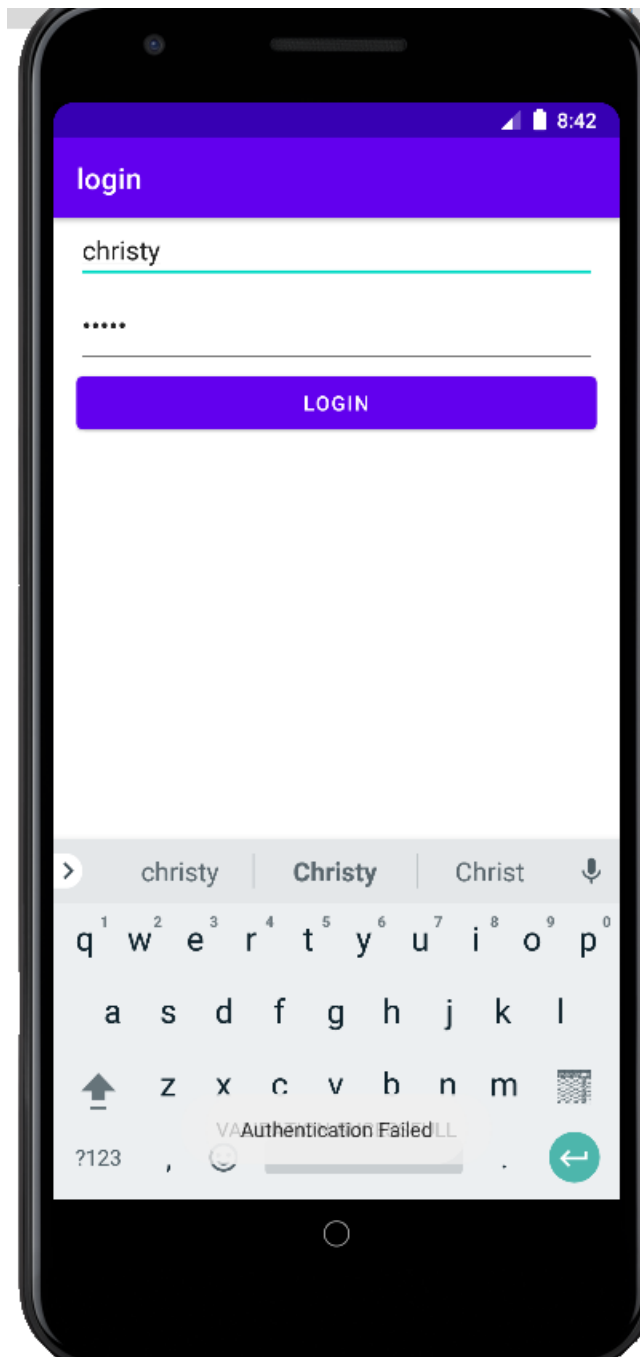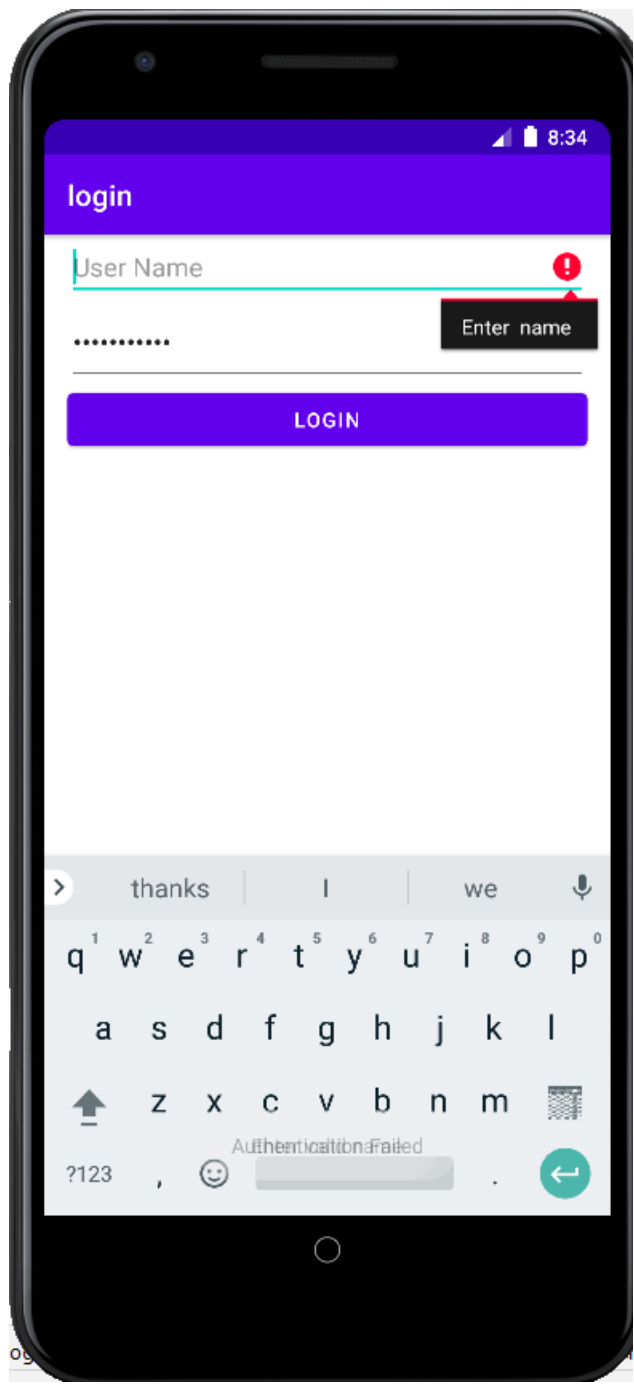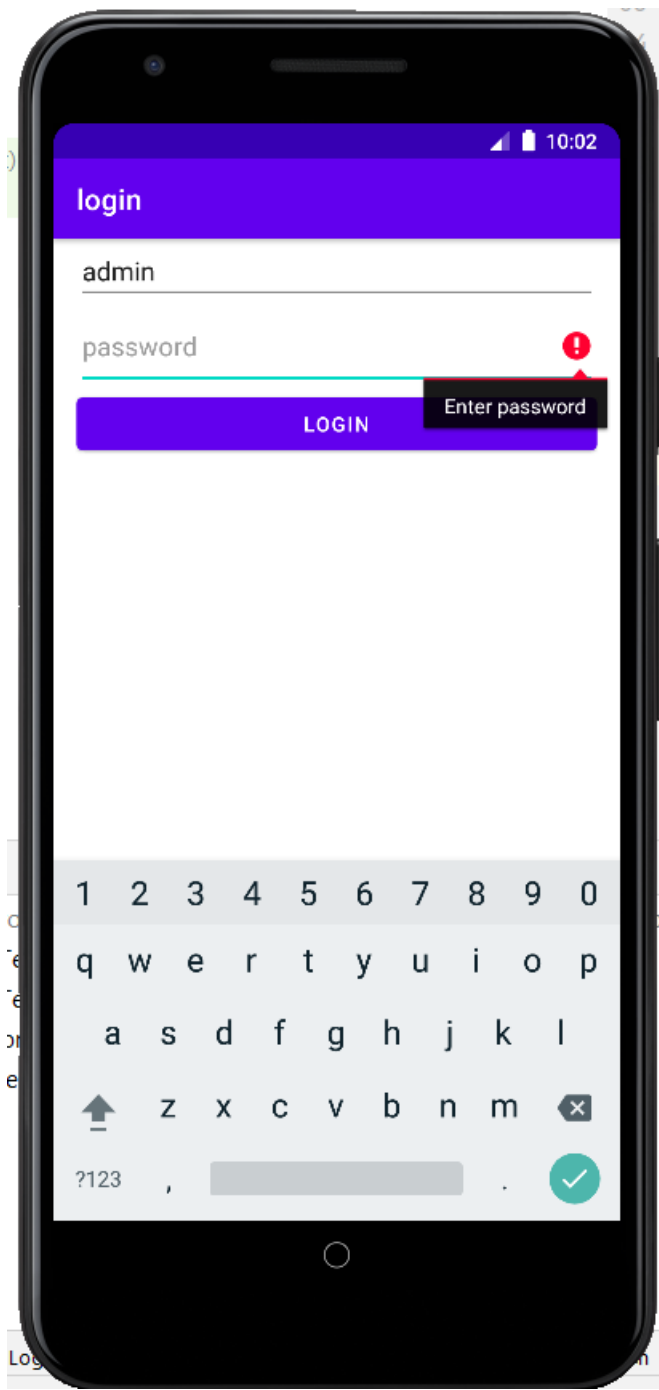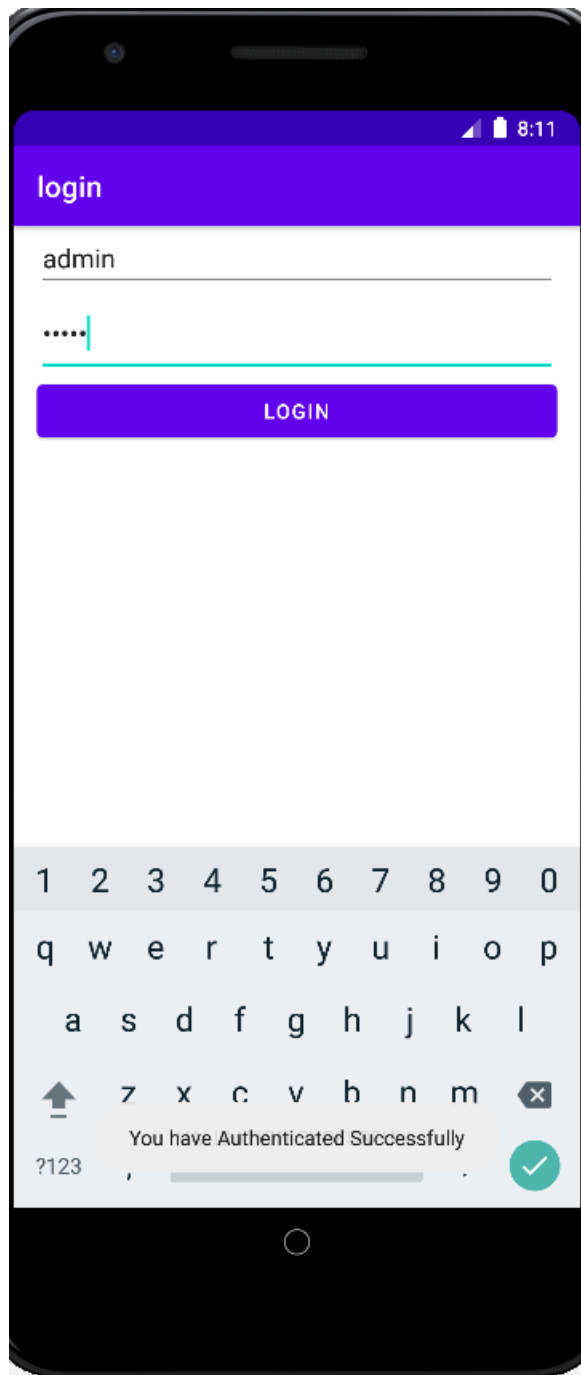
OUTPUT

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
<?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/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="HELLOOOO"
        android:textColor="#9C27B0"
        android:textColorHighlight="#F44336"
        android:textColorLink="#F44336"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

JAVA CODE:

```java
package com.example.myactivity;

import androidx.appcompat.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);

        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");

    }
```

```java
    @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

```
Run:    app
        D/lifecycle: onPause invoked
        D/EGL_emulation: eglMakeCurrent: 0xe789784@: ver 3 1 (tinfo 0xf01b1cd0)
        D/lifecycle: onStop invoked
        D/lifecycle: onRestart invoked
        D/lifecycle: onStart invoked
        D/lifecycle: onResume invoked
        D/EGL_emulation: eglMakeCurrent: 0xe789784@: ver 3 1 (tinfo 0xf01b1cd0)
        D/lifecycle: onPause invoked
        D/EGL_emulation: eglMakeCurrent: 0xe789784@: ver 3 1 (tinfo 0xf01b1cd0)
        D/lifecycle: onStop invoked
        D/lifecycle: onRestart invoked
        D/lifecycle: onStart invoked
        D/lifecycle: onResume invoked
        D/EGL_emulation: eglMakeCurrent: 0xe789784@: ver 3 1 (tinfo 0xf01b1cd0)
        D/lifecycle: onPause invoked
        D/EGL_emulation: eglMakeCurrent: 0xe789784@: ver 3 1 (tinfo 0xf01b1cd0)
        D/lifecycle: onStop invoked
        D/lifecycle: onDestroy invoked
```

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
<?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"
```

```xml
        android:inputType="textPersonName"

        app:layout_constraintBottom_toTopOf="@+id/sn"

        app:layout_constraintEnd_toEndOf="parent"

        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"
```

```xml
        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" />

    <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"
```

```xml
        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"
```

```xml
        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>
```

JAVA CODE:

```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);
```

```java
        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);

    }
```

OUTPUT

Calc

1500

5

1505

+   -

*   /
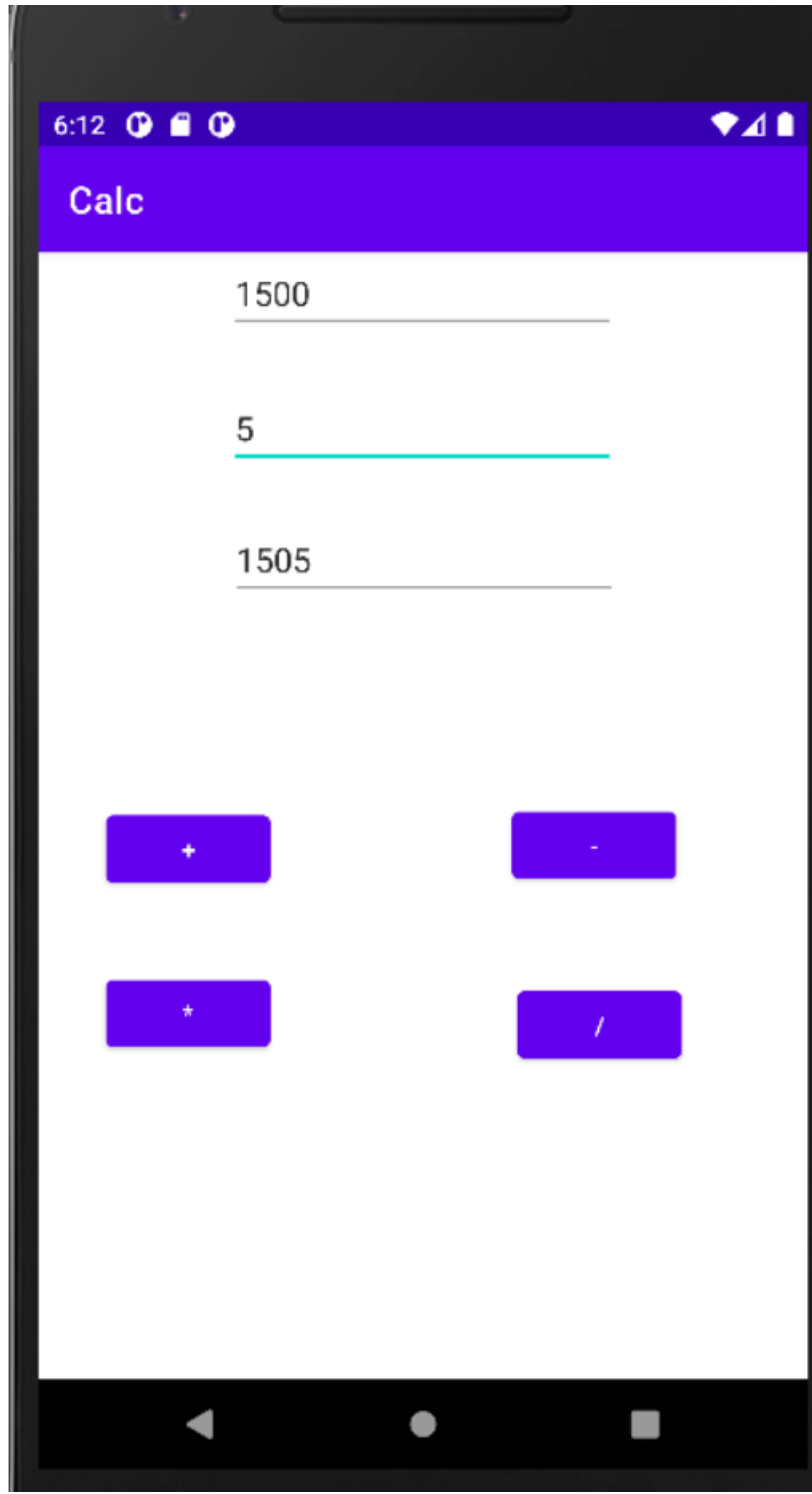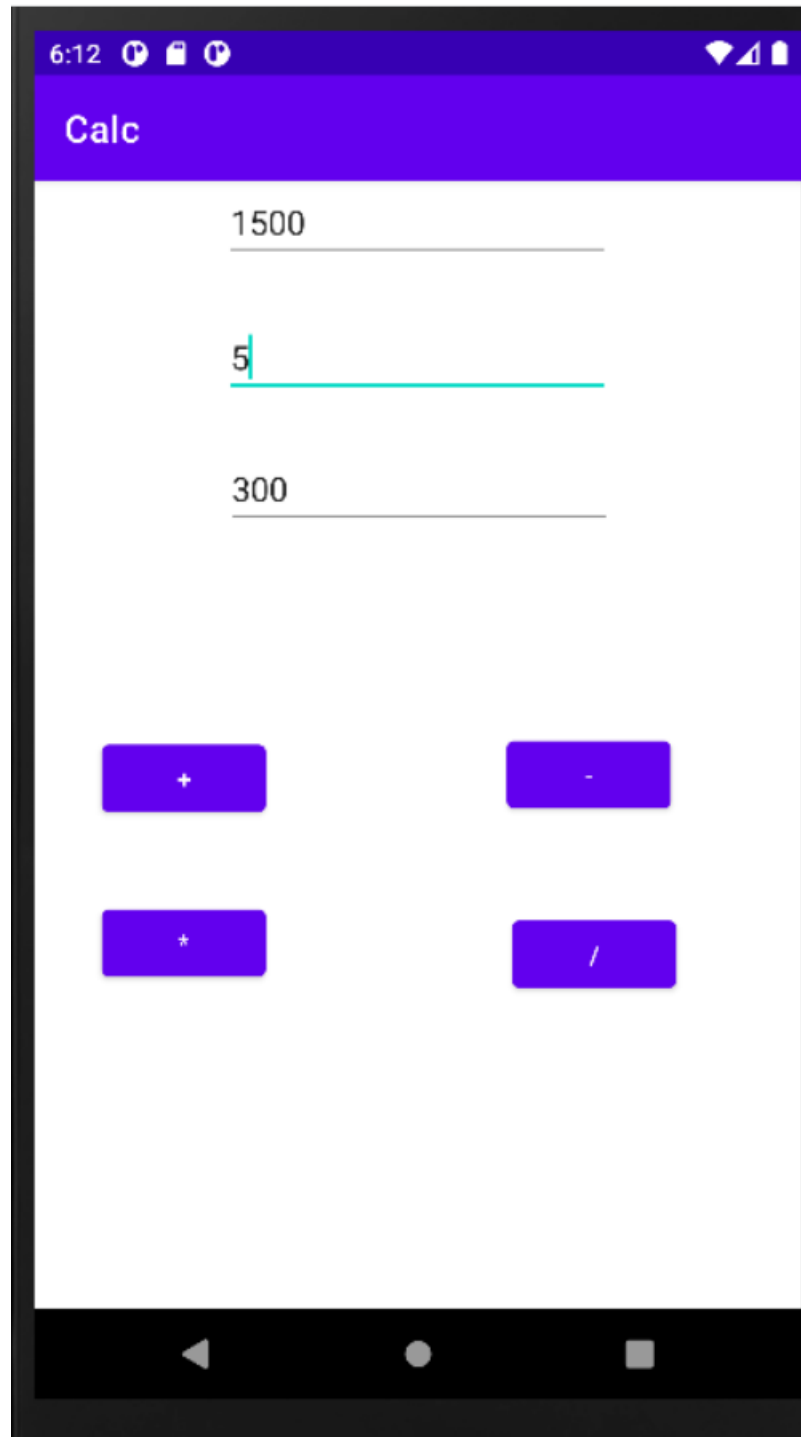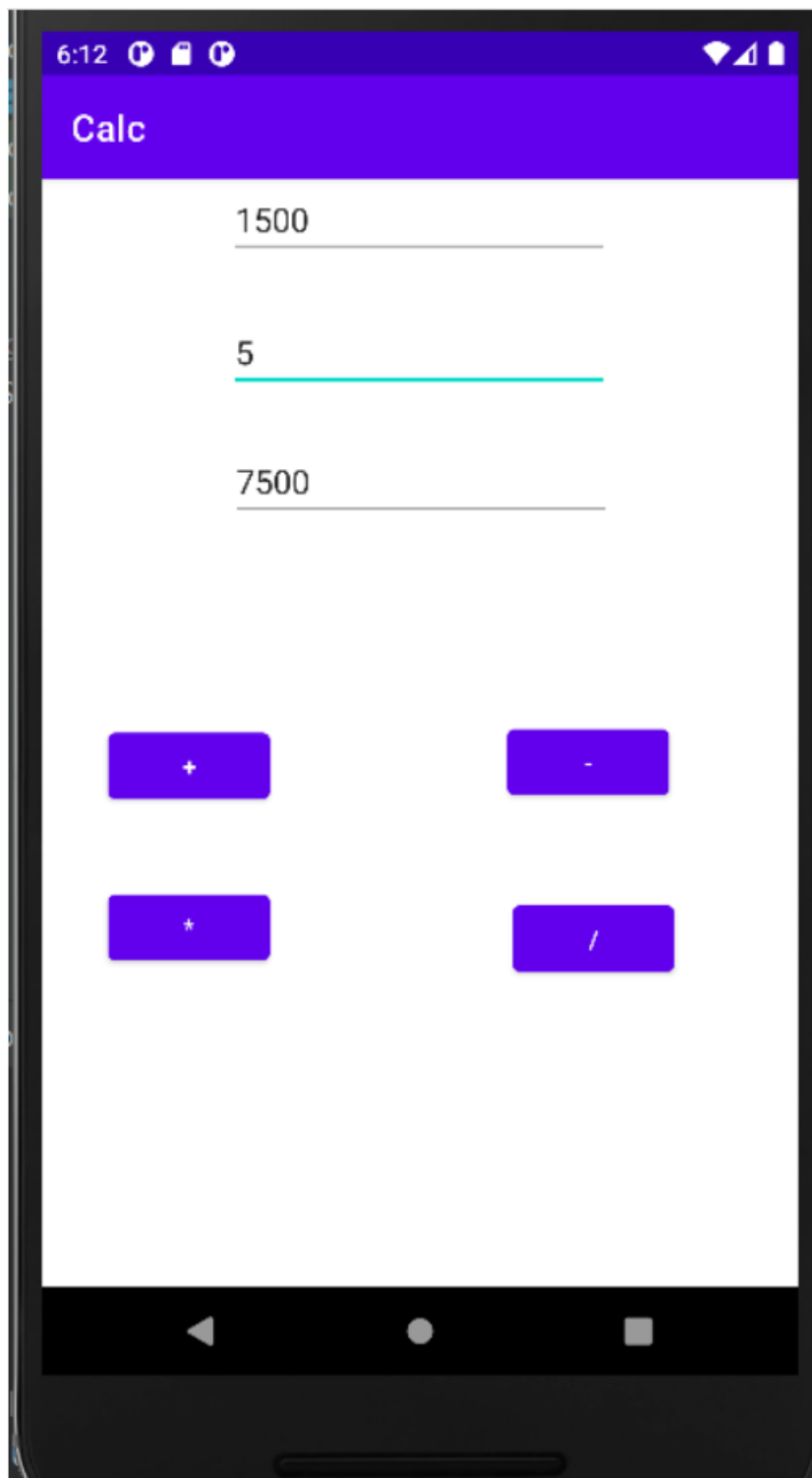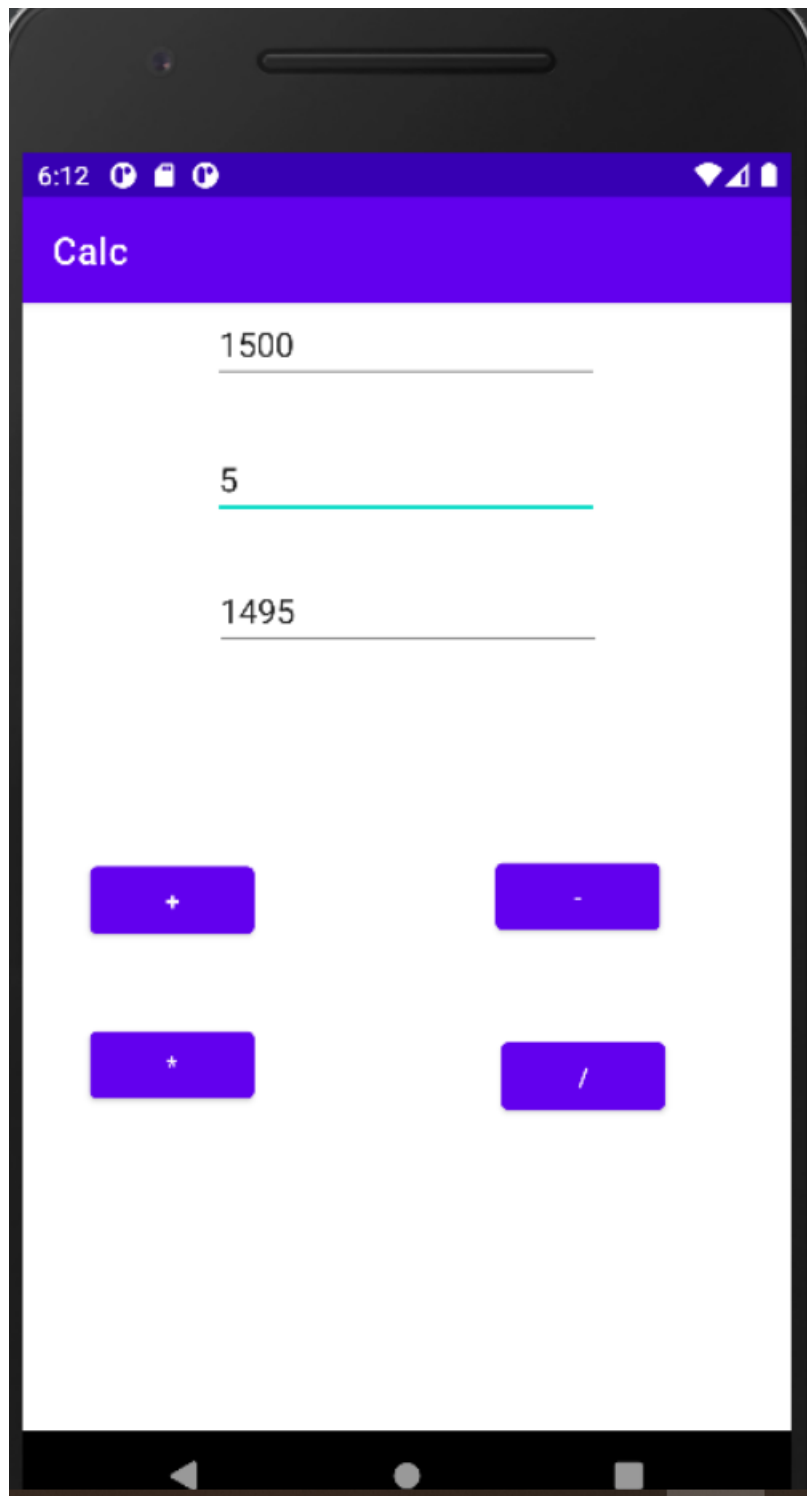
RESULT: The program is executed successfully and output is obtained

PROGRAM NO:4

AIM: Implement validations on various UI controls

PROGRAM CODE:

XML CODE:

```xml
<?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"
```

```xml
        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" />
```

```xml
    <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" />
```

JAVA CODE:

```java
package com.example.validation;

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);
```

```java
            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");
```
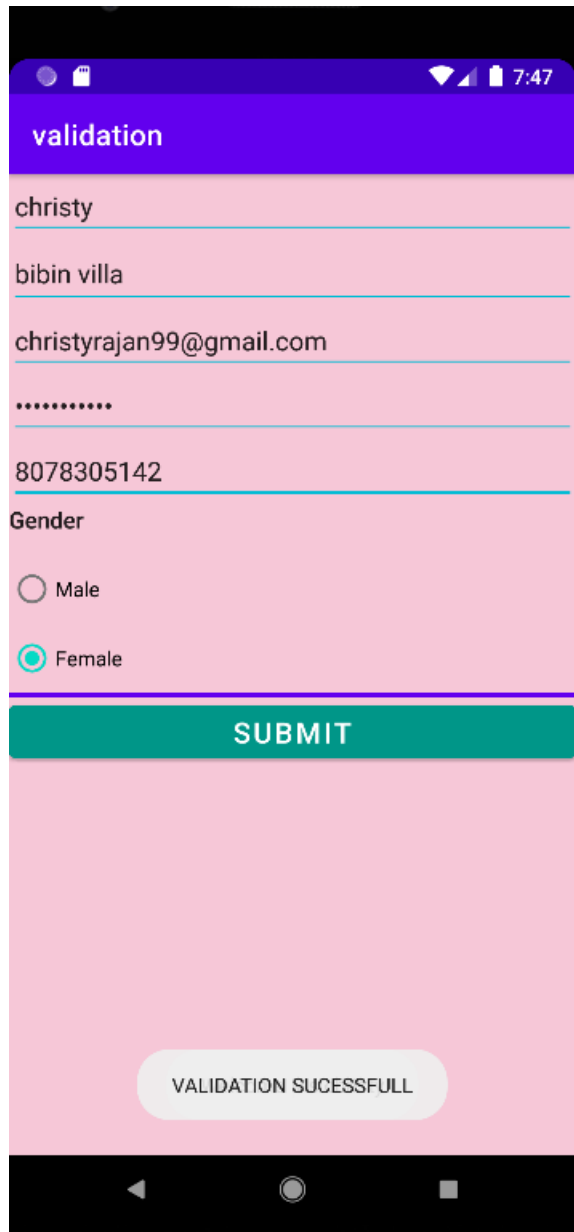
```java
            Toast.makeText(getApplicationContext(), "Enter valid address",
Toast.LENGTH_SHORT).show();
            valid++;
        }
        if(email.length()==0)
        {
            e3.getText().clear();
            e3.requestFocus();
            e3.setError("Enter email address");
            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 (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();
```

```java
        }
      }
      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();
      }
    }
}
```

RESULT: The program is executed successfully and output is obtained