

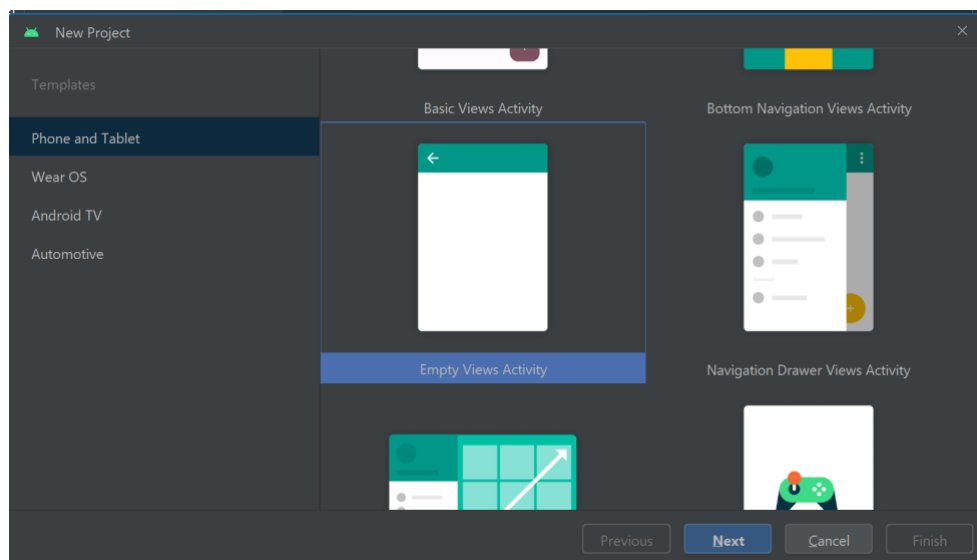
Roll no.: 20BCE204

Subject: MOS

Practical: 2

Aim: Android activity, Basic User Interface: Calculator Design and develop basic level calculator which include input items from user and perform operations like: addition, subtraction, multiplication, division etc. and display the results to the user

⇒ Create a New project (Empty View Activity)



⇒ Now set the layout of the screen as per requirement

***activity\_main.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"
android:textAlignment="center"
tools:context=".MainActivity">

    <EditText
        android:id="@+id/op1"
        android:layout_width="128dp"
        android:layout_height="69dp"
        android:contentDescription="operand 1"
        android:ems="10"
        android:hint="Operand 1"
        android:inputType="numberDecimal"
        android:textAlignment="center"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
app:layout_constraintEnd_toStartOf="@+id/op2"
app:layout_constraintHorizontal_bias="0.606"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.108" />
```

#### <EditText

```
android:id="@+id/op2"
android:layout_width="144dp"
android:layout_height="70dp"
android:layout_marginEnd="48dp"
android:ems="10"
android:hint="Operand 2"
android:inputType="numberDecimal"
android:selectAllOnFocus="false"
android:singleLine="false"
android:textAlignment="center"
android:textStyle="bold"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.106" />
```

#### <LinearLayout

```
android:id="@+id/linearLayout"
android:layout_width="381dp"
android:layout_height="wrap_content"
android:layout_marginTop="164dp"
android:orientation="horizontal"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHeight="wrap_content"
app:layout_constraintHeight_default="wrap"
app:layout_constraintHeight_max="wrap"
app:layout_constraintHeight_min="wrap"
app:layout_constraintHorizontal_bias="0.533"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent">
```

#### <Button

```
android:id="@+id/add"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginHorizontal="5dp"
android:layout_weight="1"
android:backgroundTint="#EDC126"
android:textSize="25dp"
android:text="+" />
```

#### <Button

```
android:id="@+id/sub"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginHorizontal="5dp"
android:layout_weight="1"
android:backgroundTint="#EDC126"
android:textSize="25dp"
android:text="-" />
```

#### <Button

```
android:id="@+id/mul"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginHorizontal="5dp"
android:layout_weight="1"
android:backgroundTint="#EDC126"
android:textSize="25dp"
android:text="x" />
```

#### <Button

```

        android:id="@+id/div"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginHorizontal="5dp"
        android:layout_weight="1"
        android:backgroundTint="#EDC126"
        android:textSize="25dp"
        android:text="/" />

```

```
</LinearLayout>
```

```
<TextView
```

```

    android:id="@+id/result"
    android:layout_width="match_parent"
    android:layout_height="56dp"
    android:layout_marginBottom="204dp"
    android:fallbackLineSpacing="false"
    android:hapticFeedbackEnabled="false"
    android:text=""
    android:textAlignment="center"
    android:gravity="center"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout"
    app:layout_constraintVertical_bias="0.482" />

```

```
<TextView
```

```

    android:id="@+id/result2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="204dp"
    android:fallbackLineSpacing="false"
    android:hapticFeedbackEnabled="false"
    android:text="Practical 2 : Calculator"
    android:textAlignment="center"
    android:textAllCaps="false"
    android:textSize="24sp"
    android:textStyle="bold|italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout"
    app:layout_constraintVertical_bias="1.0" />

```

```
<Button
```

```

    android:id="@+id/clearall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="52dp"
    android:backgroundTint="#3DBE29"
    android:textSize="25dp"
    android:text="Clear All"
    app:layout_constraintBottom_toTopOf="@+id/result"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout"
    app:layout_constraintVertical_bias="0.0" />

```

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

⇒ Now we will write the business logic of calculator in Java

## MainActivity.java

```
package com.example.practical2_calculator;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
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 {
    private EditText opr1;

    private EditText opr2;

    private Button btnadd;

    private Button btnsub;

    private Button btnmul;

    private Button btndiv;

    private Button btncclr;

    private TextView txtresult;

    // private Button nextscr;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        opr1 = (EditText) findViewById(R.id.op1);

        opr2 = (EditText) findViewById(R.id.op2);

        btnadd = (Button) findViewById(R.id.add);

        btnsub = (Button) findViewById(R.id.sub);

        btnmul = (Button) findViewById(R.id.mul);

        btndiv = (Button) findViewById(R.id.div);

        btncclr = (Button) findViewById(R.id.clearall);

        txtresult= (TextView) findViewById(R.id.result);

        // nextscr = (Button) findViewById(R.id.next);

        btnadd.setOnClickListener(new View.OnClickListener() {
            @SuppressLint("SetTextI18n")
            @Override
            public void onClick(View v) {
                if ((opr1.getText().length() > 0) && (opr2.getText().length() > 0)) {
                    double op1 = Double.parseDouble(opr1.getText().toString());
                    double op2 = Double.parseDouble(opr2.getText().toString());
                    double result = op1 + op2;
                    txtresult.setText(op1 + " + " + op2 + " = " + Double.toString(result));
                }
            }
        });
    }
}
```

```

    }
    else {
        Toast toast= Toast.makeText(MainActivity.this,"Enter The Required
Numbers",Toast.LENGTH_LONG);
        toast.show();
    }
}
});

btnsub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if ((opr1.getText().length() > 0) && (opr2.getText().length() > 0)) {
            double operal = Double.parseDouble(opr1.getText().toString());
            double opera2 = Double.parseDouble(opr2.getText().toString());
            double result = operal - opera2;
            txtresult.setText(operal + " - "+opera2+ " =
"+Double.toString(result));
        }
        else {
            Toast toast= Toast.makeText(MainActivity.this,"Enter The Required
Numbers",Toast.LENGTH_LONG);
            toast.show();
        }
    }
});

btnmul.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if ((opr1.getText().length() > 0) && (opr2.getText().length() > 0)) {
            double operal = Double.parseDouble(opr1.getText().toString());
            double opera2 = Double.parseDouble(opr2.getText().toString());
            double result = operal * opera2;
            txtresult.setText(operal + " x "+opera2+ " =
"+Double.toString(result));
        }
        else {
            Toast toast= Toast.makeText(MainActivity.this,"Enter The Required
Numbers",Toast.LENGTH_LONG);
            toast.show();
        }
    }
});

btndiv.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if ((opr1.getText().length() > 0) && (opr2.getText().length() > 0)) {
            double operal = Double.parseDouble(opr1.getText().toString());
            double opera2 = Double.parseDouble(opr2.getText().toString());
            double result = operal / opera2;
            txtresult.setText(operal + " / "+opera2+ " =
"+Double.toString(result));
        }
        else {
            Toast toast= Toast.makeText(MainActivity.this,"Enter The Required
Numbers",Toast.LENGTH_LONG);
            toast.show();
        }
    }
});

btncclr.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        opr1.setText("");
        opr2.setText("");
    }
});

```

```

        txtresult.setText("");

        opr1.requestFocus();
    });
}
}

```

Output:

