Semester	T.E. Semester VI – Computer Engineering
Subject	Mobile Computing
Subject Professor In-charge	Prof. Sneha Annappanavar
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Laboratory	M310A

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Title: Case Study(Calaculator)

Explanation:

1. Design the UI with EditText for input and Buttons for operators.
2. Implement onClickListeners for buttons to capture input and perform calculations.
3. Write logic to handle arithmetic operations in Java or Kotlin.
4. Test the app thoroughly and debug any issues.
5. Enhance user experience with feedback and efficiency optimizations.
6. Build and distribute the app via the Google Play Store or other channels for users to download and use.

Implementation:

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#2A2A2A">


    <TextView
```

```
        android:id="@+id/t1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="30dp"
        android:fontFamily="@font/chela_one"
        android:gravity="center"
        android:paddingTop="50dp"
        android:text="GRADE CALCULATOR"
        android:textColor="#FF9800"
        android:textSize="42dp"
        android:textStyle="bold"  />

    <GridLayout
        android:id="@+id/gridLayout"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:alignmentMode="alignMargins"
        android:columnCount="3"
        android:rowCount="5"
        android:columnOrderPreserved="false"
        android:rowOrderPreserved="false"
        android:layout_marginTop="30dp"
        android:layout_marginLeft="35dp"
        android:layout_marginRight="35dp">

        <TextView
            android:id="@+id/test"
            android:layout_width="136dp"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:text="TEST"
            android:textColor="#CDDC39"
            android:textSize="21sp"
            android:textStyle="bold" />

        <TextView
            android:id="@+id/marks"
            android:layout_width="89dp"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:text="MARKS"
            android:textColor="#CDDC39"
```

```
            android:textSize="21sp"
            android:textStyle="bold" />

        <TextView
            android:id="@+id/txtView"
            android:layout_width="101dp"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:text="OUT OFF"
            android:textColor="#CDDC39"
            android:textSize="21sp"
            android:textStyle="bold" />


        <TextView
            android:id="@+id/assgn"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:textColor="#FFFFFF"
            android:paddingTop="30dp"
            android:text="Assignment"
            android:textSize="18dp"
            android:textStyle="bold" />

        <EditText
            android:id="@+id/txtAss"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="10dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:singleLine="true"
            android:textColor="#003296" />

        <EditText
            android:id="@+id/outAss"
```

```
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="15dp"
            android:layout_marginLeft="16dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />


        <TextView
            android:id="@+id/pro"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:paddingTop="10dp"
            android:text="Project"
            android:textColor="#FFFFFF"
            android:textSize="18dp"
            android:textStyle="bold" />

        <EditText
            android:id="@+id/txtPro"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="10dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

        <EditText
            android:id="@+id/outPro"
            android:layout_width="70dp"
```

```
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="15dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

        <TextView
            android:id="@+id/mterm"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:paddingTop="10dp"
            android:text="Mid Term Exam"
            android:textColor="#FFFFFF"
            android:textSize="18dp"
            android:textStyle="bold" />

        <EditText
            android:id="@+id/txtMidt"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="10dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

        <EditText
            android:id="@+id/outMidt"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="15dp"
```

```
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

        <TextView
            android:id="@+id/fterm"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:fontFamily="@font/bree_serif"
            android:paddingTop="10dp"
            android:text="Final Term Exam"
            android:textColor="#FFFFFF"
            android:textSize="18dp"
            android:textStyle="bold" />

        <EditText
            android:id="@+id/txtFint"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="10dp"
            android:layout_marginLeft="16dp"
            android:autofillHints=""
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

        <EditText
            android:id="@+id/outFint"
            android:layout_width="70dp"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_marginStart="15dp"
            android:layout_marginLeft="16dp"
            android:autofillHints=""
```

```
            android:backgroundTint="#0D23C8"
            android:fontFamily="@font/bree_serif"
            android:gravity="center"
            android:hint=""
            android:inputType="numberDecimal"
            android:minHeight="48dp"
            android:textColor="#003296" />

    </GridLayout>

    <LinearLayout
        android:id="@+id/linearLayout2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center">

        <Button
            android:id="@+id/percent"
            android:layout_width="120dp"
            android:layout_height="50dp"
            android:layout_margin="3dp"
            android:backgroundTint="#003296"
            android:fontFamily="@font/bevan"
            android:gravity="center"
            android:text="%"
            android:textColor="#F85944"
            android:textSize="18sp" />

        <Button
            android:id="@+id/grade"
            android:layout_width="160dp"
            android:layout_height="50dp"
            android:layout_margin="3dp"
            android:backgroundTint="#003296"
            android:fontFamily="@font/bevan"
            android:gravity="center"
            android:text="Grade"
            android:textColor="#F85944"
            android:textSize="18sp" />

    </LinearLayout>

    <LinearLayout
        android:id="@+id/linearLayout3"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center">

        <Button
            android:id="@+id/pointer"
            android:layout_width="200dp"
            android:layout_height="50dp"
            android:layout_gravity="center"
            android:layout_margin="1dp"
            android:backgroundTint="#003296"
            android:fontFamily="@font/bevan"
            android:gravity="center"
            android:text="Pointer"
            android:textColor="#F85944"
            android:textSize="18sp" />

    </LinearLayout>

    <TextView
        android:id="@+id/res"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="60dp"
        android:fontFamily="@font/amaranth"
        android:gravity="center"
        android:text=""
        android:textColor="#028FFA"
        android:textSize="35sp"
        android:textStyle="bold" />

</LinearLayout>
```

MainActivity.java:

```
package com.example.exp11a;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
```

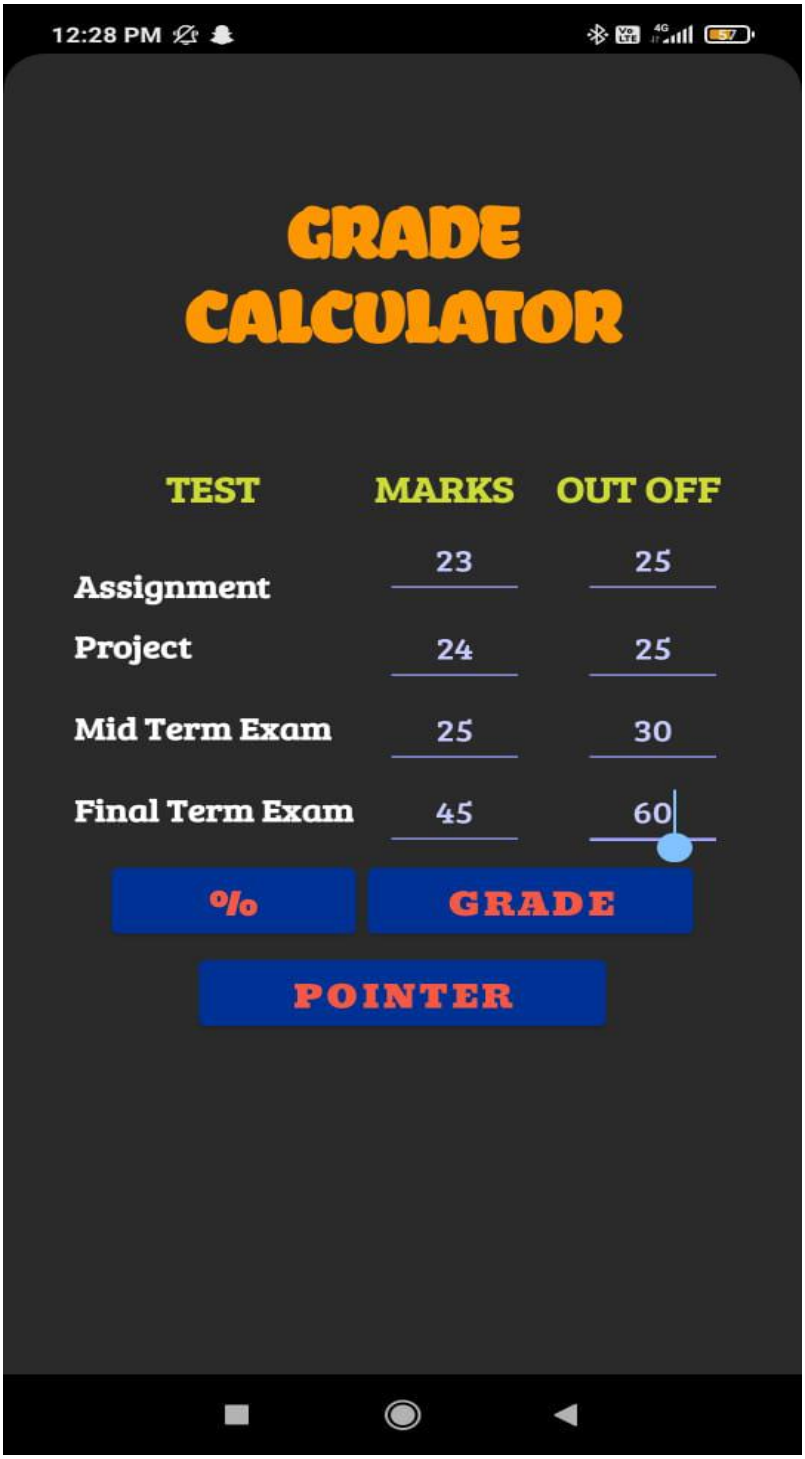
```
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity implements OnClickListener
{
    //Defining the Views
    EditText txtAss;
    EditText txtPro;
    EditText txtMidt;
    EditText txtFint;
    EditText outAss;
    EditText outPro;
    EditText outMidt;
    EditText outFint;
    Button percent;
    Button grade;
    Button pointer;

    TextView Result;

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

        //Referring the Views
        txtAss = (EditText) findViewById(R.id.txtAss);
        txtPro = (EditText) findViewById(R.id.txtPro);
        txtMidt = (EditText) findViewById(R.id.txtMidt);
        txtFint = (EditText) findViewById(R.id.txtFint);


        outAss = (EditText) findViewById(R.id.outAss);
        outPro = (EditText) findViewById(R.id.outPro);
        outMidt = (EditText) findViewById(R.id.outMidt);
        outFint = (EditText) findViewById(R.id.outFint);

        percent = (Button) findViewById(R.id.percent);
        grade = (Button) findViewById(R.id.grade);
        pointer = (Button) findViewById(R.id.pointer);

        Result = (TextView) findViewById(R.id.res);

        // set a listener
```

```
        percent.setOnClickListener(this);
        grade.setOnClickListener(this);
        pointer.setOnClickListener(this);
    }

        @Override
    public void onClick (View v)
    {

        int ass = 0;
        int pro = 0;
        int midt = 0;
        int fint = 0;

        int oass = 0;
        int opro = 0;
        int omidt = 0;
        int ofint = 0;

        float percent = 0;
        String grade = "";
        Integer pointer = 0;

        // read EditText and fill variables with numbers
        ass = Integer.parseInt(txtAss.getText().toString());
        pro = Integer.parseInt(txtPro.getText().toString());
        midt = Integer.parseInt(txtMidt.getText().toString());
        fint = Integer.parseInt(txtFint.getText().toString());

        oass = Integer.parseInt(outAss.getText().toString());
        opro = Integer.parseInt(outPro.getText().toString());
        omidt = Integer.parseInt(outMidt.getText().toString());
        ofint = Integer.parseInt(outFint.getText().toString());

        int markTot = ass + pro + midt + fint;
        int outTot = oass + opro + omidt + ofint;

        // defines the button that has been clicked and performs the
corresponding operation
        // write operation into oper, we will use it later for output
        switch (v.getId())
        {
            case R.id.percent:
                percent = percent(markTot, outTot);
```

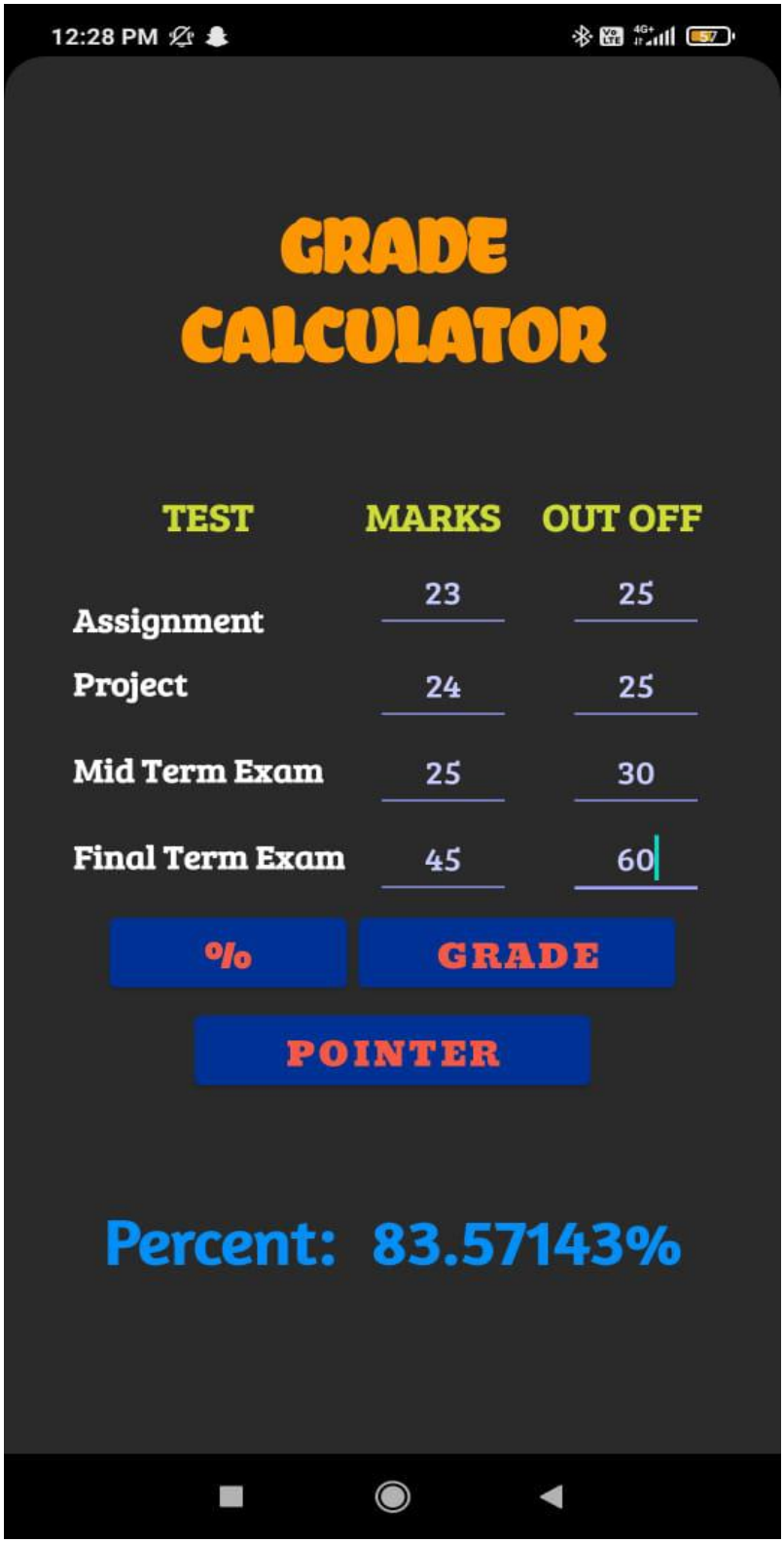
```
                break;
            case R.id.grade:
                percent = percent(markTot, outTot);
                grade = grade(percent);
                Result.setText("Grade:  " + grade);
                break;
            case R.id.pointer:
                percent = percent(markTot, outTot);
                grade = grade(percent);
                pointer = pointer(grade);
                Result.setText("Pointer:  " + pointer);
                break;
            default:
                break;
        }
    }

    private Integer pointer(String grade) {
        Integer pointer = 0;
        if(grade == "O"){
            pointer = 10;
        }
        else if(grade == "A"){
            pointer = 9;
        }
        else if(grade == "B"){
            pointer = 8;
        }
        else if(grade == "C"){
            pointer = 7;
        }
        else if(grade == "D"){
            pointer = 6;
        }
        else if(grade == "E"){
            pointer = 5;
        }
        else{
            pointer = 4;
        }

        return pointer;
    }
```

```
    private String grade(float percent) {
        String grade = "";
        if(percent >= 89.50 && percent <= 100.00){
            grade = "O";
        }
        else if(percent >= 79.50 && percent < 89.50){
            grade = "A";
        }
        else if(percent >= 69.50 && percent < 79.50){
            grade = "B";
        }
        else if(percent >= 59.50 && percent < 69.50){
            grade = "C";
        }
        else if(percent >= 49.50 && percent < 59.50){
            grade = "D";
        }
        else if(percent >= 35.50 && percent < 49.50){
            grade = "E";
        }
        else{
            grade = "F";
        }

        return grade;
    }

    public float percent(int markTot, int outTot) {
            float percent = ((float)markTot / outTot) * 100;
            Result.setText("Percent:  " + percent + "%");
            return percent;
    }

}
```

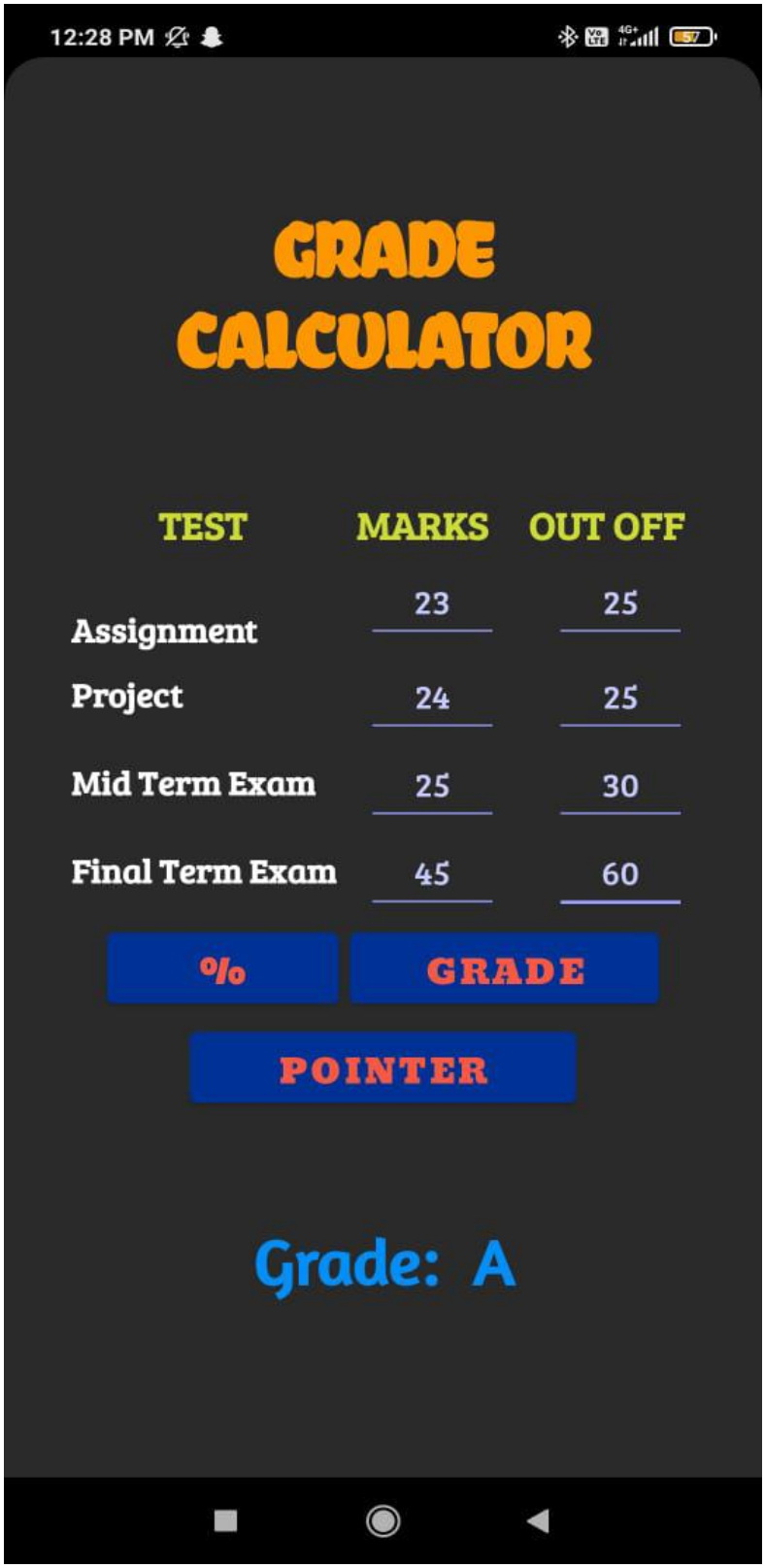
Output:



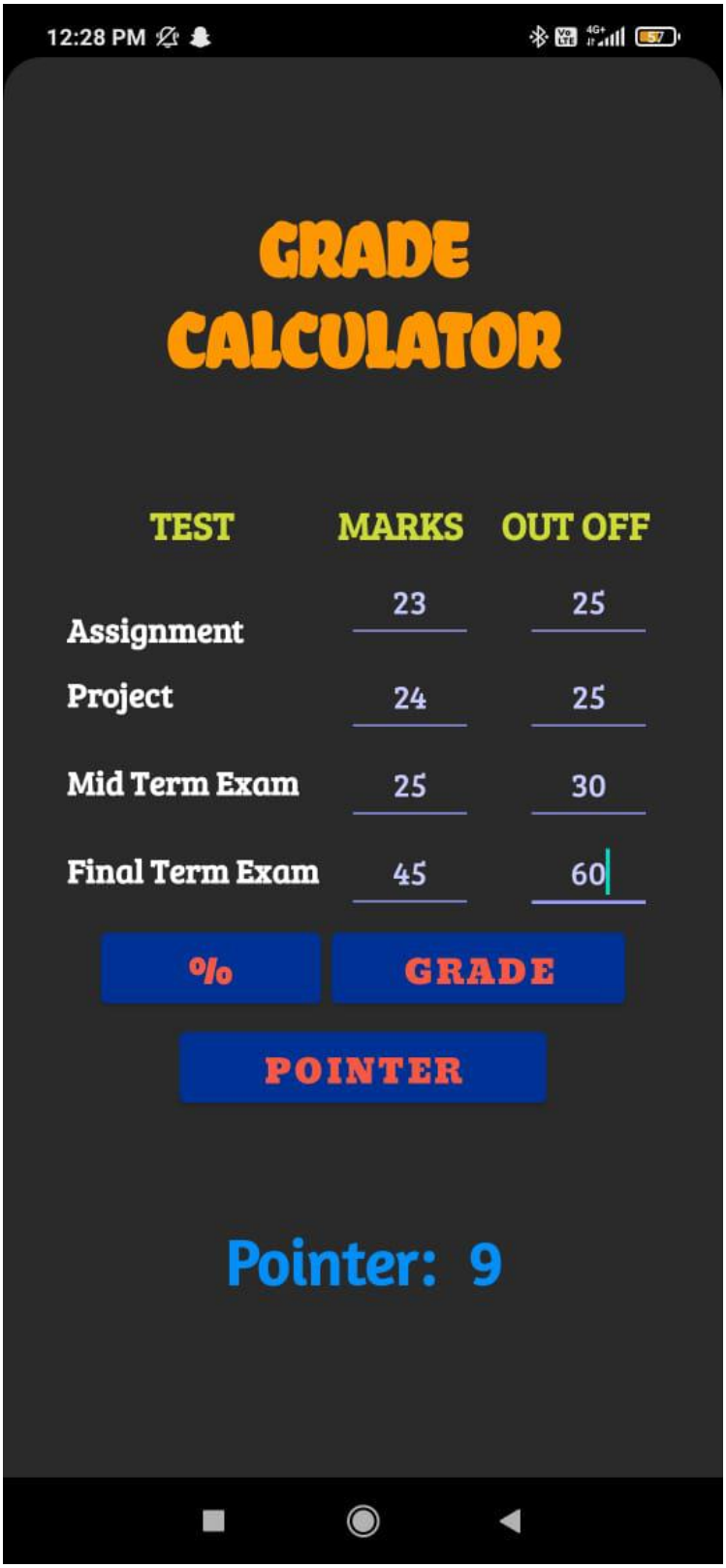
Title: calculator **Roll No:** 22102A2014



Title: calculator **Roll No:** 22102A2014



Title: calculator **Roll No:** 22102A2014



Title: calculator **Roll No:** 22102A2014

Conclusion:

Android Studio, developers can create a calculator app by integrating EditText for input, Buttons for operations, and TextView for displaying results. By implementing onClickListeners and logic for arithmetic operations, along with layout managers for UI organization, a functional and user-friendly calculator can be built to meet users' needs.