

## Experiment - 10

**Name:** Ansari Ushair

**Roll no** : 14DCO53

**Class :** BE.CO

**Batch** : 03

**Aim :** Implementation of a EMI Calculator

➤ EMI Calculator

A loan is a financial agreement between two parties, a lender and a borrower. Under this agreement, the lender gives a specific amount of money to the borrower with the intent that the amount borrowed is paid back with interest as monthly installments over a predetermined period of time by the borrower. Using an EMI calculator is the easiest way to determine your monthly payouts and balance your budget accordingly. Everyone has to borrow a loan at some point in time in their life whether for buying a car or a house, funding their child's education or consolidating debts, etc. Thus, loans have become an important part of everyone's life in today's times. Loans can be availed for various purposes, but the key components on loans are always the same, namely - loan amount, loan tenure and interest rates.

➤ Project functionality

$$EMI = [P \times R \times (1+R)^N] / [(1+R)^{(N-1)}],$$

In this formula the variables stand for:

EMI is the equated monthly installment

P is the principal or the amount that is borrowed as a loan

R is the rate of interest that is levied on the loan amount (the interest rate should be a monthly rate)

N is the tenure of repayment of the loan or the number of monthly installments that you will pay.

Let us consider an example to understand EMI calculations in a better way,

For instance, you have taken a personal loan of Rs. 2 lakhs for 2 years at an interest of 20 % p.a.

Firstly, we need to convert the annual interest rate into a monthly rate and the tenure into months.

To calculate the monthly interest rate, we divide the annual interest rate by the number of months in a year, i.e. 12, so monthly  $20/12 = 1.66\%$  per month

The 2-year loan tenure must also be converted into months before integrating into the formula i.e. 24 months

Now we have the three variables with us which we can integrate into the formula as follows:

$$EMI = [P \times R \times (1+R)^N] / [(1+R)^{N-1}]$$

$$EMI = [2,00,000 \times 1.66/100 \times (1+1.66/100)^{24}] / [(1+1.66/100)^{24} - 1]$$

$$EMI = \text{Rs. } 10,179$$

Program:-

MainActivity.java

```
package com.example.exp10;
```

```
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    Button emiCalcBtn;
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
```

```
        final EditText P = (EditText)findViewById(R.id.principal);
```

```
        final EditText I = (EditText)findViewById(R.id.interest);
```

```
        final EditText Y = (EditText)findViewById(R.id.years);
```

```
        final EditText TI = (EditText)findViewById(R.id.interest_total);
```

```
        final EditText result = (EditText)findViewById(R.id.emi) ;
```

```
        emiCalcBtn = (Button) findViewById(R.id.btn_calculate2);
```

```
        emiCalcBtn.setOnClickListener(new View.OnClickListener() {
```

```
            @Override
```

```
            public void onClick(View v) {
```

```
                String st1 = P.getText().toString();
```

```
                String st2 = I.getText().toString();
```

```
                String st3 = Y.getText().toString();
```

```
                if (TextUtils.isEmpty(st1)) {
```

```
                    P.setError("Enter Principal Amount");
```

```
                    P.requestFocus();
```

```
                    return;
```

```
                }
```

```
                if (TextUtils.isEmpty(st2)) {
```

```
                    I.setError("Enter Interest Rate");
```

```
                    I.requestFocus();
```

```
                    return;
```

```
                }
```

```
                if (TextUtils.isEmpty(st3)) {
```

```
                    Y.setError("Enter Years");
```

```
                    Y.requestFocus();
```

```
                    return;
```

```
                }
```

```
                float p = Float.parseFloat(st1);
```

```

        float i = Float.parseFloat(st2);
        float y = Float.parseFloat(st3);

        float Principal = calPric(p);

        float Rate = calInt(i);

        float Months = calMonth(y);

        float Dvdnt = calDvdnt( Rate, Months);

        float FD = calFinalDvdnt (Principal, Rate, Dvdnt);

        float D = calDivider(Dvdnt);

        float emi = calEmi(FD, D);

        float TA = calTa (emi, Months);

        float ti = calTotalInt(TA, Principal);

        result.setText(String.valueOf(emi));
        Tl.setText(String.valueOf(ti));

    }
});
}
public float calPric(float p) {
    return (float) (p);
}

public float calInt(float i) {
    return (float) (i/12/100);
}
public float calMonth(float y) {
    return (float) (y * 12);
}

public float calDvdnt(float Rate, float Months) {
    return (float) (Math.pow(1+Rate, Months));
}

public float calFinalDvdnt(float Principal, float Rate, float Dvdnt) {
    return (float) (Principal * Rate * Dvdnt);
}

public float calDivider(float Dvdnt) {
    return (float) (Dvdnt-1);
}

public float calEmi(float FD, Float D) {
    return (float) (FD/D);
}
public float calTa(float emi, Float Months) {
    return (float) (emi*Months);
}
}

```

```

public float calTotalInt(float TA, float Principal) {

    return (float) (TA - Principal);
}

```

### activity\_main.xml

```

<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:orientation="vertical">

```

```

    <EditText
        android:id="@+id/principal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:digits="0123456789."
        android:hint="@string/hint_principal"
        android:inputType="number"
        android:singleLine="true" />

```

```

    <EditText
        android:id="@+id/years"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:digits="0123456789."
        android:hint="@string/hint_years"
        android:inputType="number" />

```

```

    <EditText
        android:id="@+id/interest"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:digits="0123456789."
        android:hint="@string/hint_interest"
        android:inputType="number"
        android:singleLine="true" />

```

```

    <Button
        android:id="@+id/btn_calculate2"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="40dp"
        android:background="@color/colorPrimary"
        android:text="Calculate"
        android:textColor="@android:color/white" />

```

```

    <EditText
        android:id="@+id/emi"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="@string/hint_emi"
        android:inputType="number"

```

```

        android:maxEms="0" />
<EditText
    android:id="@+id/interest_total"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"

    android:hint="@string/hint_interest_total"
    android:inputType="number" />

</LinearLayout>

```

### Output:-

