Clase SplashScreen (AntiPatrón)

```
package com.monsh.seriemaclaurin;

import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;

/**
 * Created by monsh on 22/02/2018.
 */

public class SplashActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);

        Intent intent = new Intent(getApplicationContext(), MainActivity.class);
        startActivity(intent);
        finish();
    }

}
```

Clase Métodos Matemáticos

```
package com.monsh.seriemaclaurin;

/**
 * Created by monsh on 19/02/2018.
 * @author Jacob, Fernanda
 */

public class MetodosMatematicos {
    String polinomioSinEvaluar, polinomioSustituido, polinomioEvaluado;
    double resultadoEvaluado, eA, eR, eP, rE, p;
    double resultadoReal;

    //Para evaluar las funciones calc 0.5 c
    double evaluar=0.5;


    //public static final double DX = 0.01;
    static final int OPCION_SENO = 1;
    static final int OPCION_COSENO = 2;
    static final int OPCION_EXPONENCIAL = 3;
    static final String[] ARRAY_SENO = {"Sen(x)", " + Cos(x)", " - Sen(x)", " -
Cos(x)"};
    static final String[] ARRAY_COSENO = {"Cos(x)", " - Sen(x)", " - Cos(x)", " +
Sen(x)"};
    static final String[] ARRAY_SENO_VALUE = {"Sen(0)", " + Cos(0)", " - Sen(0)",
" - Cos(0)"};
    static final String[] ARRAY_COSENO_VALUE = {"Cos(0)", " - Sen(0)", " -
Cos(0)", " + Sen(0)"};
    static final int[] SENO = {0, 1, 0, -1};
    static final int[] COSENO = {1, 0, -1, 0};


    MetodosMatematicos(){
        polinomioSinEvaluar = "";
        polinomioSustituido = "";
        polinomioEvaluado = "";
```

Aplicación para calcular la serie de MacLaurin en las funciones Sen (x), Cos (x) y e (x)

```
        resultadoEvaluado = 0;
    }

    public int factorial(int x) {
        if (x == 0) {
            return 1;
        } else {
            return x * factorial(x - 1);
        }
    }

    public void e(int fac, int i) {
        polinomioSinEvaluar += "e^x";
        polinomioSustituido += "e^0";
        polinomioEvaluado += String.valueOf(1);
        resultadoEvaluado += 1 * Math.pow(evaluar, i) / fac;
        resultadoReal = Math.pow(Math.E, evaluar);
    }

    public void coseno(int fac, int i) {
        polinomioSinEvaluar += ARRAY_COSENO[i % 4];
        polinomioSustituido += ARRAY_COSENO_VALUE[i % 4];
        polinomioEvaluado += String.valueOf(COSENO[i % 4]);
        resultadoEvaluado += COSENO[i % 4] * Math.pow(evaluar, i) / fac;
        resultadoReal = Math.cos(evaluar);
    }

    void seno(int fac, int i) {
        polinomioSinEvaluar += ARRAY_SENO[i % 4];
        polinomioSustituido += ARRAY_SENO_VALUE[i % 4];
        polinomioEvaluado += String.valueOf(SENO[i % 4]);
        resultadoEvaluado += SENO[i % 4] * Math.pow(evaluar, i) / fac;
        System.out.println(resultadoEvaluado);
        resultadoReal = Math.sin(evaluar);
    }

    void resultados(int fac, int i) {
        polinomioSinEvaluar += "(x^" + i + ")/" + fac + "  ";
        polinomioEvaluado += "(x^" + i + ")/" + fac + "  ";
        polinomioSustituido += "(x^" + i + ")/" + fac + "  ";
    }


    public String getPolinomioSinEvaluar() {  return polinomioSinEvaluar;  }
    public String getPolinomioSustituido() {  return polinomioSustituido;  }
    public String getPolinomioEvaluado() {  return polinomioEvaluado;  }
    public double getResultadoEvaluado() {  return resultadoEvaluado;  }
    public double getResultadoReal() {  return resultadoReal;  }

}
```

Clase Principal

```
package com.monsh.seriemaclaurin;

import android.content.Context;
import android.os.Bundle;
import android.support.design.widget.Snackbar;
import android.support.v4.content.ContextCompat;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.view.inputmethod.InputMethodManager;
import android.widget.Button;
import android.widget.EditText;
```

Aplicación para calcular la serie de MacLaurin en las funciones Sen (x), Cos (x) y e (x)

```
import android.widget.TextView;

import java.text.DecimalFormat;

/**
 * Created by monsh on 12/02/2018.
 * @author Jacob, Fernanda, MariaJose
 */


public class MainActivity extends AppCompatActivity {
    //Instance Variables
    TextView tvTitulo, tvValAppSerie, tvEA, tvER, tvERP;
    Button btnSen, btnCos, btnE;
    TextView edtValorN;
    int v;

    // n iteraciones (EditText)
    String a;
    int n;

    DecimalFormat decimales = new DecimalFormat("0.000000");
    MetodosMatematicos m = new MetodosMatematicos();

    //Constructor
    public MainActivity(){

    }

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        //Inject Views
        createViews();
    }

    //Initialize Views
    void createViews() {
        tvTitulo = (TextView) findViewById(R.id.txtTitulo);
        tvValAppSerie = (TextView) findViewById(R.id.tvVA);
        tvEA = (TextView) findViewById(R.id.tvEA);
        tvER = (TextView) findViewById(R.id.tvER);
        tvERP = (TextView) findViewById(R.id.tvERP);
        btnSen = (Button) findViewById(R.id.btnSen);
        btnCos = (Button) findViewById(R.id.btnCos);
        btnE = (Button) findViewById(R.id.btnE);
        edtValorN = (EditText) findViewById(R.id.edtValN);
    }

    public void calcCos(View v) {
        m.polinomioSinEvaluar = "";
        m.polinomioSustituido = "";
        m.polinomioEvaluado = "";
        m.resultadoEvaluado = 0;

        a = edtValorN.getText().toString();
        if (!a.isEmpty()){
            n = Integer.parseInt(a);
            int fac;
            for (int i = 0; i <= n; i++) {
                fac = m.factorial(i);
                m.coseno(fac, i);
```

```
                m.resultados(fac, i);
            }
            m.rE =
Double.parseDouble(decimales.format(m.getResultadoEvaluado()));

            tvValAppSerie.setText(String.valueOf(m.rE));

            errorAbsoluto(m.rE);
            errorRelativo(m.eA);
            errorPorcentual(m.eR);

            edtValorN.setText("");

            InputMethodManager imm = (InputMethodManager)
getSystemService(Context.INPUT_METHOD_SERVICE);
            imm.hideSoftInputFromWindow(v.getWindowToken(), 0);
        } else {
            Snackbar sb = Snackbar.make(v, "Por favor ingresa un
valor",Snackbar.LENGTH_SHORT);
            sb.getView().setBackgroundColor(ContextCompat.getColor(this,
R.color.colorAccent));
            sb.show();
        }

    }

    public void calcE(View view) {
        m.polinomioSinEvaluar = "";
        m.polinomioSustituido = "";
        m.polinomioEvaluado = "";
        m.resultadoEvaluado = 0;

        a = edtValorN.getText().toString();
        if (!a.isEmpty()){
        n = Integer.parseInt(a);

        int fac;
        for (int i = 0; i <= n; i++) {
            fac = m.factorial(i);
            m.e(fac, i);
            m.resultados(fac, i);
        }
        m.rE = Double.parseDouble(decimales.format(m.getResultadoEvaluado()));
        tvValAppSerie.setText(String.valueOf(m.rE));

        errorAbsoluto(m.rE);
        errorRelativo(m.eA);
        errorPorcentual(m.eR);

        edtValorN.setText("");

        InputMethodManager imm =
(InputMethodManager)getSystemService(Context.INPUT_METHOD_SERVICE);
        imm.hideSoftInputFromWindow(view.getWindowToken(), 0);
        } else {
            Snackbar sb = Snackbar.make(view, "Por favor ingresa un
valor",Snackbar.LENGTH_SHORT);
            sb.getView().setBackgroundColor(ContextCompat.getColor(this,
R.color.colorAccent));
            sb.show();
        }
    }
```

```
    public void calcSen(View vi) {
        m.polinomioSinEvaluar = "";
        m.polinomioSustituido = "";
        m.polinomioEvaluado = "";
        m.resultadoEvaluado = 0;

        a = edtValorN.getText().toString();
        if (!a.isEmpty()){
        n = Integer.parseInt(a);

        int fac;
        for (int i = 0; i <= n; i++) {
            fac = m.factorial(i);
            m.seno(fac, i);
            m.resultados(fac, i);
        }
        m.rE = Double.parseDouble(decimales.format(m.getResultadoEvaluado()));
        tvValAppSerie.setText(String.valueOf(m.rE));

        errorAbsoluto(m.rE);
        errorRelativo(m.eA);
        errorPorcentual(m.eR);

        edtValorN.setText("");

        InputMethodManager imm =
(InputMethodManager)getSystemService(Context.INPUT_METHOD_SERVICE);
        imm.hideSoftInputFromWindow(vi.getWindowToken(), 0);
        } else {
            Snackbar sb = Snackbar.make(vi, "Por favor ingresa un
valor",Snackbar.LENGTH_SHORT);
            sb.getView().setBackgroundColor(ContextCompat.getColor(this,
R.color.colorAccent));
            sb.show();
        }
    }


    public double errorAbsoluto(double resEv){
        m.eA = Math.abs(resEv - m.getResultadoReal());
        m.eA = Double.parseDouble(decimales.format(m.eA));
        tvEA.setText(String.valueOf(m.eA));
        return m.eA;
    }

    public double errorRelativo(double eRel){
        m.eR = (Math.abs(eRel)/m.getResultadoReal());
        m.eR = Double.parseDouble(decimales.format(m.eR));
        tvER.setText(String.valueOf(m.eR));
        return  m.eR;
    }

    public void errorPorcentual(double eRelat){
        m.eP = (eRelat * 100);
        m.eP = Double.parseDouble(decimales.format(m.eP));
        tvERP.setText(String.valueOf(m.eP));

    }

}
```

Clase Principal Layout (Único)

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout 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.monsh.seriemaclaurin.MainActivity">

    <!--Titulo -->
    <TextView
        android:id="@+id/txtTitulo"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal"
        android:padding="@dimen/small"
        android:text="@string/titulo"
        android:textColor="@color/colorTSec"
        android:textSize="@dimen/xlarge" />


    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_below="@id/txtTitulo"
        android:orientation="vertical"
        android:weightSum="10">

        <!-- Panel Captura -->
        <LinearLayout
            android:id="@+id/lytText"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="2"
            android:gravity="center_horizontal"
            android:orientation="horizontal">


            <EditText
                android:id="@+id/edtValN"
                style="@style/EditText"
                android:inputType="number"
                android:textColorHint="@color/colorAccent"
                android:gravity="center_horizontal"
                android:layout_marginLeft="16dp"
                android:layout_marginRight="16dp"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:hint="@string/valueN"
                />

        </LinearLayout>

        <!-- Panel Botones -->
        <LinearLayout
            android:id="@+id/lytBtn"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_below="@id/lytText"
            android:layout_marginTop="16dp"
            android:layout_weight="3.3"
            android:gravity="center_horizontal"
```

```
            android:orientation="horizontal">

            <Button
                android:id="@+id/btnSen"
                style="@style/ButtonApp"
                android:onClick="calcSen"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginRight="10dp"
                android:text="@string/btnSeno" />

            <Button
                android:id="@+id/btnCos"
                android:onClick="calcCos"
                style="@style/ButtonApp"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_marginRight="10dp"
                android:text="@string/btnCos" />

            <Button
                android:id="@+id/btnE"
                style="@style/ButtonApp"
                android:onClick="calcE"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="@string/btnE" />

        </LinearLayout>

        <!-- Divider -->
        <View android:layout_height="1dp"
            android:background="@color/colorDiv"
            android:layout_width="match_parent">

        </View>

        <!-- Panel Val Aprox -->
        <LinearLayout
            android:id="@+id/lytVa"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_below="@id/lytBtn"
            android:layout_marginTop="16dp"
            android:layout_weight="1.5"
            android:orientation="horizontal">

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:paddingLeft="16dp"
                android:textColor="@color/colorTSec"
                android:text="@string/lblValSerie"
                android:textSize="@dimen/large" />

            <TextView
                android:id="@+id/tvVA"
                android:textColor="@color/colorTSec"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:paddingLeft="@dimen/large"
                android:text="@string/valueAppSerie"
                android:textSize="@dimen/large" />
```

```
        </LinearLayout>

        <!-- Panel Errores -->
        <LinearLayout
            android:id="@+id/lytLbl"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_below="@id/lytVa"
            android:layout_marginTop="10dp"
            android:layout_weight="1.5"
            android:orientation="horizontal">

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:paddingLeft="16dp"
                android:textColor="@color/colorTSec"
                android:text="@string/lblEA"
                android:textSize="@dimen/large" />

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:textColor="@color/colorTSec"
                android:paddingLeft="6dp"
                android:text="@string/lblER"
                android:textSize="@dimen/large" />

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:paddingLeft="6dp"
                android:textColor="@color/colorTSec"
                android:text="@string/lblERP"
                android:textSize="@dimen/large" />
        </LinearLayout>

        <!-- Panel Resultado Errores -->
        <LinearLayout
            android:id="@+id/lytVal"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_below="@id/lytLbl"
            android:layout_marginTop="10dp"
            android:layout_weight="1.5"
            android:orientation="horizontal"
            android:weightSum="1">

            <TextView
                android:id="@+id/tvEA"
                android:textColor="@color/colorTSec"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight=".34"
                android:paddingLeft="16dp"
                android:text="@string/valueEA"
                android:textSize="@dimen/large" />

            <TextView
                android:id="@+id/tvER"
                android:textColor="@color/colorTSec"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
```

```
                android:layout_weight=".33"
                android:text="@string/valueER"
                android:textSize="@dimen/large" />

            <TextView
                android:id="@+id/tvERP"
                android:textColor="@color/colorTSec"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight=".33"
                android:text="@string/valueERP"
                android:textSize="@dimen/large" />
        </LinearLayout>

    </LinearLayout>

</RelativeLayout>
```