Mobile Application Development Lab

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Exercis-2

1.Calculate the difference between two dates. (Display the output in No. of Year, No. of Month, No. of Day, No. of Hour, No. of Minute, No. of Seconds)

SOURCE CODE:

MainActivity.java

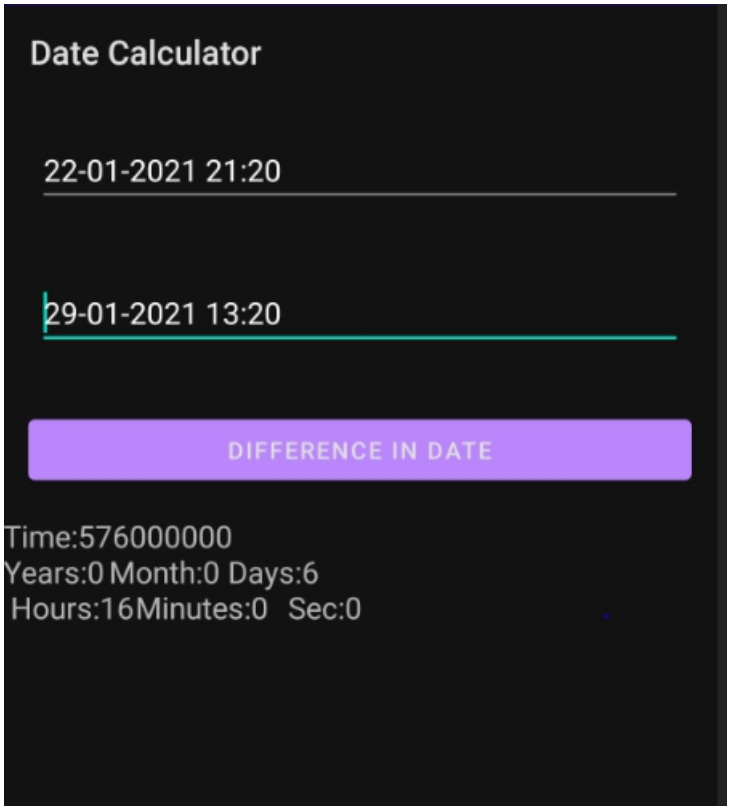
```
package com.example.settheory;

import androidx.appcompat.app.AppCompatActivity;

import android.app.DatePickerDialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CalendarView;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.TimePicker;

import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Calendar;
import java.util.Date;
import java.util.concurrent.TimeUnit;

public class MainActivity extends AppCompatActivity {

    EditText date2,date1;
    Button difference_date;
    TextView result;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        this.setTitle("Date Calculator");

        date2=(EditText) findViewById(R.id.date2);
        date1=(EditText) findViewById(R.id.Date1);
        difference_date=(Button) findViewById(R.id.button2);
        result=(TextView) findViewById(R.id.textView);

        date1.setOnClickListener(new View.OnClickListener(){
```

```
            public void onClick(View v)
            {
                showDateTimeDialog(date1);
            }
        });
        date2.setOnClickListener(new View.OnClickListener(){

            public void onClick(View v)
            {
                showDateTimeDialog(date2);
            }
        });

        difference_date.setOnClickListener(new View.OnClickListener(){
            @Override
            public void onClick(View v) {
                showDifference(date1,date2);
            }
        });
    }


    private void showDifference(EditText t1,EditText t2)
    {
        SimpleDateFormat sd=new SimpleDateFormat("dd-MM-yyyy HH:mm");
        String dateone= t1.getText().toString();
        String datetwo=t2.getText().toString();
        Date d1 = null;
        try {
            d1 = sd.parse(dateone);
            Date d2 = sd.parse(datetwo);
            long difference_In_Time = d2.getTime() - d1.getTime();
            long difference_In_Seconds =
TimeUnit.MILLISECONDS.toSeconds(difference_In_Time) % 60;
            long difference_In_Minutes =
TimeUnit.MILLISECONDS.toMinutes(difference_In_Time)% 60;
            long difference_In_Hours = TimeUnit.MILLISECONDS.toHours(difference_In_Time) %
24;
            long difference_In_Days = TimeUnit.MILLISECONDS.toDays(difference_In_Time) % 365;
            long difference_In_Month=TimeUnit.MILLISECONDS.toDays(difference_In_Time) / 30;
            long difference_In_Years = TimeUnit.MILLISECONDS.toDays(difference_In_Time) /
365;
            String value1=Long.toString(difference_In_Days);
            String value2=Long.toString(difference_In_Time);
            String value3=Long.toString(difference_In_Minutes);
            String value4=Long.toString(difference_In_Hours);
            String value5=Long.toString(difference_In_Years);
            String value6=Long.toString(difference_In_Seconds);
            String value7=Long.toString(difference_In_Month);
            result.setText(" ");

result.setText("Time:"+value2+"\nYears:"+value5+"\tMonth:"+value7+"\tDays:"+value1+"\n
Hours:"+value4+"\tMinutes:"+value3+"\t Sec:"+value6);
        } catch (ParseException e) {
            e.printStackTrace();
        }

    }

    private  void showDateTimeDialog(EditText date1)
    {
        Calendar calendar= Calendar.getInstance();
        DatePickerDialog.OnDateSetListener datesetListener=new
DatePickerDialog.OnDateSetListener() {
            @Override
            public void onDateSet(DatePicker view, int year, int month, int dayOfMonth) {
                calendar.set(Calendar.YEAR, year);
                calendar.set(Calendar.MONTH, month);
```

```
                calendar.set(Calendar.DAY_OF_MONTH, dayOfMonth);

                TimePickerDialog.OnTimeSetListener timesetlistener = new
TimePickerDialog.OnTimeSetListener() {

                    public void onTimeSet(TimePicker view,int hourOfDay,int minute)
                    {
                      calendar.set(Calendar.HOUR_OF_DAY,hourOfDay);
                      calendar.set(Calendar.MINUTE,minute);
                        SimpleDateFormat sd=new SimpleDateFormat("dd-MM-yyyy HH:mm");

                        date1.setText(sd.format(calendar.getTime()));
                    }
                };

                new
TimePickerDialog(MainActivity.this,timesetlistener,calendar.get(Calendar.HOUR_OF_DAY),cal
endar.get(Calendar.MINUTE),false).show();
            }

        };
        new
DatePickerDialog(MainActivity.this,datesetListener,calendar.get(Calendar.YEAR),calendar.g
et(Calendar.MONTH),calendar.get(Calendar.DAY_OF_MONTH)).show();
    }
}
```

OUTPUT:

Tested with OPPO REALME mobile with USB debugging



2. Perform Set theory operations such as Union, Minus, Intersection for the group of data.

SOURCE CODE:

MainActivity.java

```
package com.example.settheory;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;

import static com.example.settheory.Set.getvalues;
public class MainActivity extends AppCompatActivity {
    TextView t1, t2, t3, t4;
    EditText e1, e2, e3;
    Button b1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ArrayList<Integer> a1 = new ArrayList<Integer>();
        ArrayList<Integer> a2 = new ArrayList<Integer>();
        a1.add(1);
        a1.add(2);
        a1.add(3);
        a2.add(3);
        a2.add(4);
        a2.add(5);
        b1 = (Button) findViewById(R.id.button);
        e1 = (EditText) findViewById(R.id.edit1);
        e2 = (EditText) findViewById(R.id.edit2);
        e3 = (EditText) findViewById(R.id.edit3);
        t1 = (TextView) findViewById(R.id.text1);
        t2 = (TextView) findViewById(R.id.text2);
        t3 = (TextView) findViewById(R.id.text3);
        t4 = (TextView) findViewById(R.id.text4);
        t1.setTextColor(Color.YELLOW);
        t2.setTextColor(Color.YELLOW);
```

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:background="@color/black"
    tools:context=".MainActivity">


    <Button
        android:id="@+id/button"
        android:layout_width="121dp"
        android:layout_height="0dp"
        android:layout_marginBottom="25dp"
        android:text="@string/b1"
        app:layout_constraintBottom_toTopOf="@+id/text4"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/edit3"
        />

    <TextView
        android:id="@+id/text1"
        android:layout_width="159dp"
        android:layout_height="0dp"
        android:layout_marginTop="34dp"
        android:layout_marginBottom="27dp"
        android:text="@string/t1"
        app:layout_constraintBottom_toTopOf="@+id/edit1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"  />

    <TextView
        android:id="@+id/text2"
        android:layout_width="163dp"
        android:layout_height="0dp"
        android:layout_marginBottom="24dp"
        android:text="@string/t2"
        app:layout_constraintBottom_toTopOf="@+id/edit2"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/edit1"
        />

    <TextView
        android:id="@+id/text3"
        android:layout_width="208dp"
        android:layout_height="0dp"
        android:layout_marginBottom="21dp"
        android:text="@string/t3"
        app:layout_constraintBottom_toTopOf="@+id/edit3"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/edit2"
        />
```

```
    <TextView
```

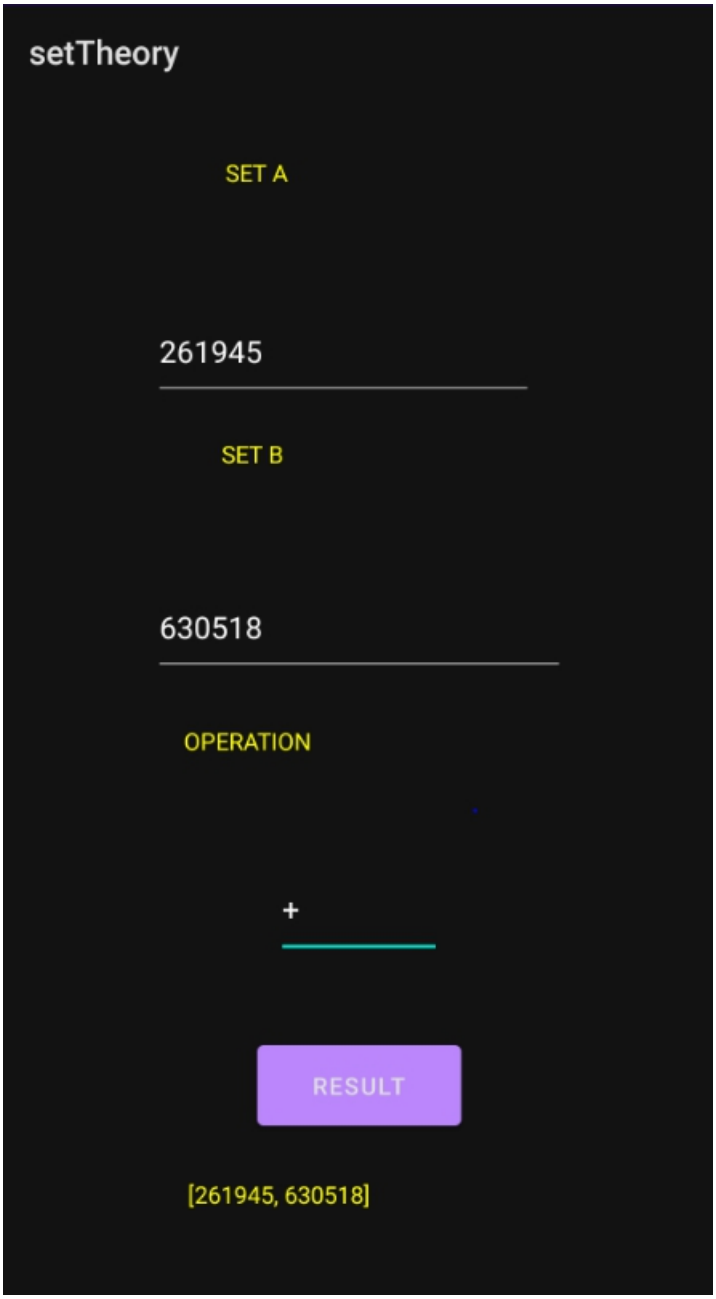
```
        android:id="@+id/text4"
        android:layout_width="203dp"
        android:layout_height="0dp"
        android:layout_marginBottom="15dp"
        android:text="@string/t4"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button" />


    <EditText
        android:id="@+id/edit1"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginBottom="21dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text="@string/e1"
        app:layout_constraintBottom_toTopOf="@+id/text2"
        app:layout_constraintEnd_toEndOf="@+id/text3"
        app:layout_constraintStart_toStartOf="@+id/edit2"
        app:layout_constraintTop_toBottomOf="@+id/text1" />

    <EditText
        android:id="@+id/edit2"
        android:layout_width="245dp"
        android:layout_height="0dp"
        android:layout_marginBottom="28dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text="@string/e2"
        app:layout_constraintBottom_toTopOf="@+id/text3"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/text2" />

    <EditText
        android:id="@+id/edit3"
        android:layout_width="99dp"
        android:layout_height="0dp"
        android:layout_marginBottom="45dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text="@string/e3"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/text3" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Set.java

```
package com.example.setapplication;

import java.util.ArrayList;

public class Set {
    public static ArrayList<Integer> getvalues(ArrayList<Integer> a1,
                                               ArrayList<Integer> a2, String c)
        { ArrayList<Integer> op1 = new ArrayList<Integer>();
        int k = 0;
        switch (c) {
            case "+":
                a1.removeAll(a2);
                a1.addAll(a2);
                op1 = a1;
                break;
            case "*":
                a1.retainAll(a2);
                op1 = a1;
                break;
            case "-":
                for (int i = 0; i < a1.size();
                    i++) { k = 0;
                    for (int j = 0; j < a2.size();
                        j++) { if (a1.get(i) ==
                        a2.get(j))
                            k = 1;
                    }
                    if (k == 0)
                        op1.add(a1.get(i));
                }
                break;
        }
        return op1;
    }
```

OUTPUT:

Tested with OPPO REALME mobile with USB debugging



3.Perform matrix operations like Transpose, Lower Diagonal and Upper Diagonal

SOURCE CODE:

MainActivity.java

```
package com.example.matrixoperation;

import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import
android.widget.EditText; import
android.widget.TextView;

import java.util.Arrays;

public class MainActivity extends
    AppCompatActivity { TextView t1, t2;
    EditText e1;
    Button b1;

    @Override
    protected void onCreate(Bundle savedInstanceState)
        { int A[][] = { {1, 1, 1, 1},
                {2, 2, 2, 2},
                {3, 3, 3, 3},
                {4, 4, 4, 4}};
        int N = 4;

        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = (EditText)
        findViewById(R.id.edit1); b1 = (Button)
        findViewById(R.id.button); t1 =
        (TextView) findViewById(R.id.text1); t2
        = (TextView) findViewById(R.id.text2);
        t1.setTextColor(Color.WHITE);
        t2.setTextColor(Color.WHITE);
        e1.setBackgroundColor(Color.BLUE);
        b1.setBackgroundColor(Color.RED);
        b1.setOnClickListener(new View.OnClickListener()
            { public void onClick(View v) {
                if (e1.getText().toString().equals("T")) {
                        int B[][] = new
                        int[N][N],i,j; for (i = 0;
                        i < N; i++) {
                            for (j = 0; j < N;
                                j++) { B[i][j] =
                                A[j][i];
                            }
```

```
                for (int i = 0; i < N;
                    i++) {  for (int j = 0;
                    j < N; j++) {
                        if (i > j) {
                            A[i][j] = 0;
                        }
                    }
                    t2.setText(Arrays.deepToString(A));
                }
                if (e1.getText().toString().equals("L"))
                    { for (int i = 0; i < N; i++) {
                        for (int j = 0; j < N;
                            j++) { if (j > i) {
                                A[i][j] = 0;
                            }
                        }
                    }
                        t2.setText(Arrays.deepToString(A));
                }
            }
        }
    });
}
```

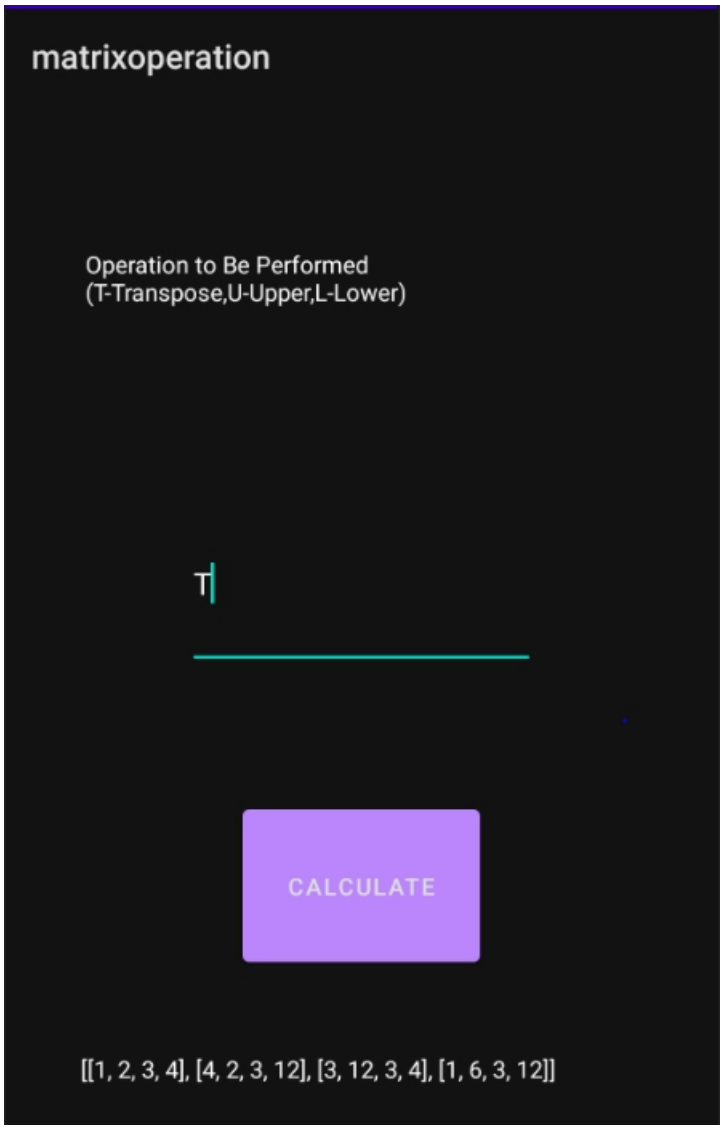
Activity_main.xml

```
<?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:background="@color/black"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/text1"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="48dp"
        android:layout_marginLeft="48dp"
```

```
        android:layout_marginTop="86dp"
        android:layout_marginEnd="48dp"
        android:layout_marginRight="48dp"
        android:layout_marginBottom="46dp"
        android:text="@string/textbox1"
        app:layout_constraintBottom_toTopOf="@+id/edit1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"  />

    <EditText
        android:id="@+id/edit1"
        android:layout_width="207dp"
        android:layout_height="0dp"
        android:layout_marginBottom="77dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text="@string/editbox1"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/text1"  />

    <Button
        android:id="@+id/button"
        android:layout_width="141dp"
        android:layout_height="0dp"
        android:layout_marginBottom="48dp"
        android:text="@string/button1"
        app:layout_constraintBottom_toTopOf="@+id/text2"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/edit1"
        />

    <TextView
        android:id="@+id/text2"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="45dp"
        android:layout_marginLeft="45dp"
        android:layout_marginEnd="45dp"
        android:layout_marginRight="45dp"
        android:layout_marginBottom="49dp"
        android:text="@string/textbox2"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button"  />

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

OUTPUT:

Tested with OPPO REALME mobile with USB debugging



4.Convert the figure into words in currency.

SOURCE CODE:

Main_Activity.java

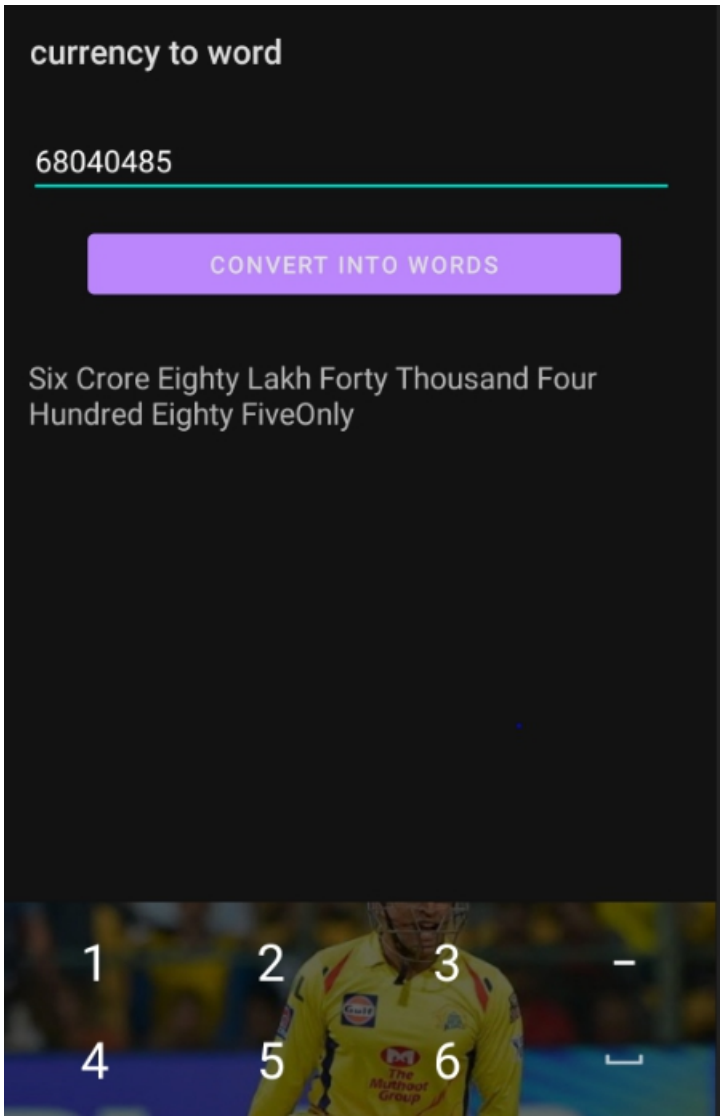
```
package com.example.currencytoword;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;


public class MainActivity extends AppCompatActivity {

    EditText currency;
    Button convert;
    TextView result;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        currency=(EditText) findViewById(R.id.editTextNumber);
        convert=(Button) findViewById(R.id.button);
        result=(TextView) findViewById(R.id.textView);

        convert.setOnClickListener(new View.OnClickListener(){

            @Override
            public void onClick(View v) {
                int num=Integer.parseInt(currency.getText().toString());
                result.setText(numToWords(num)+"Only");
            }
        });
    }
    private String numToWords (int n){ //optional
        NumberToWordsConverter ntw = new NumberToWordsConverter(); // directly implement this
        return ntw.convert(n);
    }
}
```

NumberToWordsConverter.java

```java
package com.example.currencytoword;

public class NumberToWordsConverter {
    public static final String[] units = {"", "One", "Two", "Three", "Four",
            "Five", "Six", "Seven", "Eight", "Nine", "Ten", "Eleven", "Twelve",
            "Thirteen", "Fourteen", "Fifteen", "Sixteen", "Seventeen",
            "Eighteen", "Nineteen"};

    public static final String[] tens = {
            "", "", "Twenty", "Thirty", "Forty", "Fifty", "Sixty", "Seventy", "Eighty",
"Ninety"
    };

    public static String convert(final int n) {
        if (n < 0) {
            return "Minus " + convert(-n);
        }

        if (n < 20) {
            return units[n];
        }

        if (n < 100) {
            return tens[n / 10] + ((n % 10 != 0) ? " " : "") + units[n % 10];
        }

        if (n < 1000) {
            return units[n / 100] + " Hundred" + ((n % 100 != 0) ? " " : "") + convert(n % 100);
        }

        if (n < 100000) {
            return convert(n / 1000) + " Thousand" + ((n % 10000 != 0) ? " " : "") + convert(n %
1000);
        }

        if (n < 10000000) {
            return convert(n / 100000) + " Lakh" + ((n % 100000 != 0) ? " " : "") + convert(n %
100000);
        }

        return convert(n / 10000000) + " Crore" + ((n % 10000000 != 0) ? " " : "") + convert(n %
10000000);
    }
}
```

OUTPUT:

Tested with OPPO REALME mobile with USB debugging



5.Calculate LCM, GCF, HCF, GCD, Standard Deviation and Variance

SOURCE CODE:

MainActivity.java

```
package com.example.statisticsconversions;
import
androidx.appcompat.app.AppCompatActivity;

import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import
android.widget.TextView;

import java.util.Arrays;

public class MainActivity extends AppCompatActivity {

    EditText e1,e2,choice;
    Button button1;
    TextView t1,t2,t3,result;
    @Override
    protected void onCreate(Bundle savedInstanceState)
        { super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = (EditText) findViewById(R.id.edit1);
        e2 = (EditText)
        findViewById(R.id.edit2);
        choice = (EditText)
        findViewById(R.id.edit3); button1 = (Button)
        findViewById(R.id.button); t1 = (TextView)
        findViewById(R.id.text1);
        t2 = (TextView) findViewById(R.id.text2);
        t3 = (TextView)
        findViewById(R.id.text3);
        result= (TextView) findViewById(R.id.text4);
        t1.setTextColor(Color.YELLOW);
        t2.setTextColor(Color.YELLOW);
        t3.setTextColor(Color.YELLOW);
        result.setTextColor(Color.BLUE);
        e1.setBackgroundColor(Color.WHITE);
        e2.setBackgroundColor(Color.WHITE);
        choice.setBackgroundColor(Color.WHITE);
        button1.setBackgroundColor(Color.RED);
        button1.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {

if((choice.getText().toString().equals("gcd")||choice.getText().toString().equals("
hcf"))){
                    long val1 = Long.parseLong(e1.getText().toString());
                    long val2 = Long.parseLong(e2.getText().toString());
                    String
                    ans=Long.toString(StatOperations.gcd(val1,val2));
                        result.setText(ans);
                }

if(choice.getText().toString().equals("lcm")||choice.getText().toString().equals("
gcf")){
```

```
                    long  val1  =  Long.parseLong(e1.getText().toString());
                    long  val2  =  Long.parseLong(e2.getText().toString());
                    String
                    ans=Long.toString(StatOperations.lcm(val1,val2));
                    result.setText(ans);
                }
                if(choice.getText().toString().equals("sd")){ Str
                    ing  str  =  e1.getText().toString();
                    long  val2  =  Long.parseLong(e2.getText().toString());
                    String[]  arr  =  str.split("  ");
                    double[]  nums  =  new
                    double[arr.length]; for  (int  i  =  0;
                    i  <  nums.length;  i++)  {
                        nums[i]  =  Double.parseDouble(arr[i]);
                    }
                    String
ans=Double.toString(StatOperations.standardDeviation(nums,val2));
                    result.setText(ans);
                }
                if(choice.getText().toString().equals("var")){ St
                    ring  str  =  e1.getText().toString();
                    long  val2  =  Long.parseLong(e2.getText().toString());
                    String[] arr = str.split(" ");
                    double[]  nums  =  new
                    double[arr.length]; for  (int  i  =  0;
                    i  <  nums.length;  i++)  {
                        nums[i]  =  Double.parseDouble(arr[i]);
                    }
                    String
ans=Double.toString(StatOperations.variance(nums,val2));
                    result.setText(ans);
                }
            }}
```

StatOperations.java

```
package  com.example.statisticsconversions;

public  class  StatOperations  {
        static  long  gcd(long  a,  long  b)
        {
            if (a == 0)
                return  b;
            return  gcd(b  %  a,  a);
        }
        static  long  lcm(long  a,  long  b)
        {
            return  (a  /  gcd(a,  b))  *  b;
        }

        static  double  variance(double  a[],long  n)
        {
            double  sum  =  0;
```

```
            for (int i = 0; i <
                n; i++) sum += a[i];
            double mean = (double)sum / (double)n;

            double sqDiff = 0;
            for (int i = 0; i < n; i++)
                sqDiff += (a[i] - mean) * (a[i] -
            mean); return (double)sqDiff / n;
        }
        static double standardDeviation(double arr[],long n)
        {
            return Math.sqrt(variance(arr, n));
        }
}
```

strings.xml

```
<resources>
    <string name="app_name">Statistics Conversions</string>
    <string name="textbox1">Number-1(GCD|LCM ONE / SD|VAR ARRAY ELE) :
    </string>
    <string name="textbox2">Number-2(N ELEMENTS):</string>
    <string name="textbox3">Operation to be performed(GCD|LCM|SD|VAR):
    </string>
    <string name="textbox4">Result:</string>
    <string name="editbox1"></string>
    <string name="editbox2"></string>
    <string name="editbox3"></string>
```

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"
    tools:context=".MainActivity">

        <TextView
            android:id="@+id/text1"
            android:layout_width="0dp"
            android:layout_height="0dp"
            android:layout_marginTop="20dp"
            android:layout_marginBottom="14dp"
            android:text="(GCD|LCM 1/SD|VAR ARRAY ELE)"
            app:layout_constraintBottom_toTopOf="@+id/edit1"
            app:layout_constraintEnd_toEndOf="@+id/text3"
            app:layout_constraintStart_toStartOf="@+id/text2"
            app:layout_constraintTop_toTopOf="parent" />

        <EditText
            android:id="@+id/edit1"
```

```
        android:layout_width="238dp"
        android:layout_height="0dp"
        android:layout_marginStart="9dp"
        android:layout_marginLeft="9dp"
        android:layout_marginBottom="17dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toTopOf="@+id/text2"
        app:layout_constraintStart_toStartOf="@+id/text1"
        app:layout_constraintTop_toBottomOf="@+id/text1" />

    <TextView
        android:id="@+id/text2"
        android:layout_width="206dp"
        android:layout_height="0dp"
        android:layout_marginStart="26dp"
        android:layout_marginLeft="26dp"
        android:layout_marginBottom="25dp"
        android:text="(N ELEMENTS)"
        app:layout_constraintBottom_toTopOf="@+id/edit2"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/edit1" />

    <EditText
        android:id="@+id/edit2"
        android:layout_width="155dp"
        android:layout_height="0dp"
        android:layout_marginStart="35dp"
        android:layout_marginLeft="35dp"
        android:layout_marginBottom="19dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toTopOf="@+id/text3"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/text2" />

    <TextView
        android:id="@+id/text3"
        android:layout_width="298dp"
        android:layout_height="0dp"
        android:layout_marginBottom="25dp"
        android:text="Operation(gcd,lcm,sd,var)"
        app:layout_constraintBottom_toTopOf="@+id/edit3"
        app:layout_constraintStart_toStartOf="@+id/edit2"
        app:layout_constraintTop_toBottomOf="@+id/edit2" />

    <EditText
        android:id="@+id/edit3"
        android:layout_width="152dp"
        android:layout_height="0dp"
        android:layout_marginStart="35dp"
        android:layout_marginLeft="35dp"
        android:layout_marginBottom="39dp"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/text3" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="54dp"
        android:layout_marginLeft="54dp"
        android:layout_marginBottom="49dp"
        android:text="Convert"
        app:layout_constraintBottom_toTopOf="@+id/text4"
```

```
            app:layout_constraintStart_toStartOf="@+id/text4"
            app:layout_constraintTop_toBottomOf="@+id/edit3" />

        <TextView
            android:id="@+id/text4"
            android:layout_width="218dp"
            android:layout_height="0dp"
            android:layout_marginStart="86dp"
            android:layout_marginLeft="86dp"
            android:layout_marginBottom="37dp"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toBottomOf="@+id/button" />


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

Tested with OPPO REALME mobile with USB debugging