

**LAPORAN PROGRAM JAVA DALAM MENGHITUNG
MEAN, MODUS, MEDIAN, KUARTIL, VARIAN, DAN
STANDAR DEVIASI**



OLEH :

DWI WAHYU EFFENDI [18081010017]

PARALEL STATISTIKA KOMPUTER A

PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS ILMU KOMPUTER

**UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" JAWA
TIMUR**

2019

DATA BIAYA LISTRIK SELAMA 1 BULAN
(DATA YANG SUDAH DI URUTKAN)

No	Nama	NPM / KTP	Kota Asal	Jawaban
1	Moch Hawin H	18081010038	Tulungagung	Rp 27.500
2	Susy Rahmawati	18081010048	Bojonegoro	Rp 45.000
3	Miftahul N.S	18081010040	Pasuruan	Rp 45.000
4	Endy Gigih P	18081010066	Kediri	Rp 50.000
5	Benaya A.H	18081010037	Nganjuk	Rp 50.000
6	M. Arel I.U	18081010146	Kediri	Rp 50.000
7	Heri Khariono	18081010002	Lamongan	Rp 60.000
8	Ilham Firmansyah	18081010053	Surabaya	Rp 75.000
9	Ilham K.S	18081010103	Surabaya	Rp 75.000
10	Asmaul Khusna	17082010016	Sidoarjo	Rp 80.000
11	Debi Unsilatur	18081010006	Surabaya	Rp 100.000
12	Dimas Rehan N.A	18081010021	Sidoarjo	Rp 100.000
13	Elang Eka	18081010068	Madiun	Rp 100.000
14	Alfiatun Masrifah	18081010012	Sidoarjo	Rp 100.000
15	Wahyu F.S	18081010055	Surabaya	Rp 100.000
16	Thrisna Ramadhan	18081010099	Gresik	Rp 100.000
17	Eka Restu Justitian	18081010153	Surabaya	Rp 100.000
18	Aditya Putra P	18081010035	Sidoarjo	Rp 100.000
19	Khonsa Salsabilla	18081010028	Madiun	Rp 115.000
20	Melania SP	18081010011	Surabaya	Rp 124.000
21	M. Atay N.N	18081010027	Jombang	Rp 135.000
22	M. Alif Abror	17082010011	Surabaya	Rp 135.000
23	Dedy Ramadhan	18081010020	Surabaya	Rp 150.000
24	M. Ilham	18081010019	Sidoarjo	Rp 150.000
25	M. Wildany S	18081010080	Sidoarjo	Rp 150.000
26	Fahmi Nugroho	18081010065	Surabaya	Rp 150.000
27	Afrizal M.A	17081010092	Surabaya	Rp 150.000
28	Anggun Safira	18081010003	Tuban	Rp 160.000

29	Dian Fitriana	18081010015	Surabaya	Rp	200.000
30	Satrio HPP	17082010015	Sidoarjo	Rp	200.000
31	Pandu Sukma K.S	17082010001	Blitar	Rp	200.000
32	Muhammad Rifan D	18081010067	Sidoarjo	Rp	200.000
33	Devan Cakra M.W	18081010013	Sragen	Rp	250.000
34	Jefri Abdul Rozak	18081010059	Surabaya	Rp	250.000
35	Dwiki A.S	18081010064	Jombang	Rp	250.000
36	Rizqi Yahya M	18081010014	Surabaya	Rp	255.000
37	Rifky Ahmad	18081010126	Bojonegoro	Rp	270.000
38	Meike Hardiati	18081010031	Jombang	Rp	275.000
39	Robby Hady	18081010039	Madiun	Rp	275.000
40	Irsya Zainal Hanif	18081010007	Sidoarjo	Rp	300.000
41	Amirah A.f	18081010029	Surabaya	Rp	350.000
42	Hamzah Dimas	18081010119	Surabaya	Rp	380.000
43	Muhammad Hilal	18081010061	Surabaya	Rp	500.000
44	Alfareza F.S	18081010079	Surabaya	Rp	500.000
45	Irfan Ramadhan	17082010019	Surabaya	Rp	500.000
46	Angling Fenina P	17082010013	Gresik	Rp	500.000
47	Adelia Sefri Larasati	17082010021	Sidoarjo	Rp	550.000
48	Alfia Rahmania	17082010004	Mojokerto	Rp	600.000
49	Jihan Prasasti N	17082010024	Sidoarjo	Rp	700.000
50	Robbi A	18081010131	Surabaya	Rp	900.000

Source Code Program Java :

```
package TugasStatkom1;
import java.util.Scanner;
import java.lang.Math;

public class Statkom
{
    public static void main(String[] args) {
        Scanner UserInput = new Scanner(System.in);

        System.out.print("Jumlah Bilangan = ");
        int n = UserInput.nextInt();
        System.out.println("\n");
        int g = 1;
        double[] arraybilangan = new double[n];
        for (int i = 0; i < n; i++){
            System.out.print("Masukan Data ke-" + g++ + "\t : ");
            arraybilangan[i] = UserInput.nextDouble();
        }
        System.out.println("Jumlah Data      : " + urutkan(arraybilangan));

        double c = arraybilangan[0];
        double b=0;
        double modus=0,besar=0;
        for (int i=0; i<arraybilangan.length ;i++)
        {
            if(arraybilangan[i]==c)
            {
                //System.out.print(arraybilangan[i]+" ");
                ++b;
                if(b>besar)
                {
                    besar=b;
                    modus=c;
                }
            }
        }
    }
}
```

```

        else
        {
            c=arraybilangan[i];
            b=1;
            //System.out.print(arraybilangan[i]+" ");
            //System.out.println(b);
        }
    }

    System.out.println("Modus          : " + modus);
    System.out.println("Rata-rata      : " + TotalJumlah(arraybilangan)/arraybilangan.length);
    System.out.println("Varian        : " + var(arraybilangan));
    System.out.println("Standar Deviasi   : " + Math.sqrt(var(arraybilangan)));
    System.out.println("Median baru      : " + median(arraybilangan));
    System.out.println("Quartil Bawah (1) : " + quartil1(arraybilangan));
    System.out.println("Quartil Atas (3)  : " + quartil3(arraybilangan));
}

public static double TotalJumlah(double [] data){
    double result = 0;
    for(int i=0; i<data.length; i++){
        result += data[i];
    }
    return result;
}

public static double TotalJumlahP2(double [] data){
    double result = 0;
    for(int i=0; i<data.length; i++){
        result += data[i];
    }
    return Math.pow((result),2);
}

public static double kuadratNP2(double[] data){
    double result = 0;

```

```

        for(int i=0; i<data.length; i++){
            result += data[i] * data[i];
        }
        return result;
    }

    public static double var(double [] data){
        double result;
        return result = ((data.length*kuadratNP2(data))-
TotalJumlahP2(data))/((data.length*(data.length-1)));
    }

    public static double urutkan(double [] data){
        for(int i=0;i<data.length-1;i++) {
            for (int j = data.length - 1; j > i; j--) {
                if (data[i] > data[j]) {
                    double temp = data[j];
                    data[j] = data[i];
                    data[i] = temp;
                }
            }
        }
    }

    int x = data.length;
    System.out.println("\n\nData sesudah diurutkan : ");
    for(int i=0;i<x;i++){
        System.out.print(data[i]+", ");
    }
    System.out.println("\n");
    return x;
}

    public static double median(double [] data) {
        double result=0;
        int posisi =0;

```

```

posisi += data.length/2;
for(int i=0;i<data.length;i++){
    int bil=data.length%2;
    if(bil == 0){
        result = (data[posisi]+(data[posisi])-1)/2;
    } else {
        result = data[posisi];
    }
}
return result;
}

```

```

public static double quartil1(double [] data) {
    double result=0;
    int posisi =0;
    posisi += data.length/4;
    for(int i=0;i<data.length;i++){
        int bil=data.length%2;
        if(bil == 0){
            result = (data[posisi]+(data[posisi])-1)/2;
        } else {
            result = data[posisi];
        }
    }
    return result;
}

```

```

public static double quartil3(double [] data) {
    double result=0;
    int posisi =0;
    posisi += 3*data.length/4;
    for(int i=0;i<data.length;i++){
        int bil=data.length%2;
        if(bil == 0){
            result = (data[posisi]+(data[posisi])-1)/2;
        } else {

```

```

        result = data[posisi];

    }
}
return result;
}
}

```

Hasil output program java :

```

Jumlah Banyaknya Data: 50.0
Mean                : 223630.0
Modus               : 100000.0
Median             : 149999.5
Varian             : 3.616864091836735E10
Standar Deviasi    : 190180.54821239566
Quartil Bawah      : 99999.5
Quartil Atas       : 274999.5
BUILD SUCCESSFUL (total time: 0 seconds)

```

Validasi menggunakan rumus excel :

MEAN (=AVERAGE(E82:E131))	Rp	223.630
MODUS (=MODE(E82:E131))	Rp	100.000
MEDIAN (=MEDIAN(E82:E131))	Rp	150.000
VARIAN (=VARA(E82:E131))		36168640918
STANDAR DEVIASI (=STDEV.S(E82:E131))		190180,5482
KUARTIL ATAS (=QUARTILE(E82:E131,3))	Rp	273.750
KUARTIL BAWAH (=QUARTILE(E82:E131;1))	Rp	100.000

PERHITUNGAN MENGGUNAKAN RUMUS ANALITIK					
1. MEAN					
MEAN = $x_1 + x_2 + x_3 + x_4 + \dots + x_{50} / \text{Banyak Data}$					
MEAN =	223630				
2. MODUS					
PENGELUARAN	JUMLAH DATA		PENGELUARAN	JUMLAH DATA	
27500	1		250000	3	
45000	2		255000	1	
50000	3		270000	1	
60000	1		275000	2	
75000	2		300000	1	
80000	1		350000	1	
100000	8		380000	1	
115000	1		500000	4	
124000	1		550000	1	
135000	2		600000	1	
150000	5		700000	1	
160000	1		900000	1	
200000	4				
JADI NILAI MODUSNYA ADALAH 100000					
3. MEDIAN					
MEDIAN = $n/2 = 50/2 = 25$					
KARENA DATA GENAP MAKA NILAI TENGAH (NILAI KE 25 + NILAI KE 26) DI BAGI 2					
MEDIAN = $(150000 + 150000) / 2 = 150000$					
4. KUARTIL					
KUARTIL ATAS = $3(n)/4 = 3(50)/4 = 37,25$					
DATA KE 37,25 YAITU 273500					
KUARTIL BAWAH = $1(n)/4 = (50)/4 = 12.25$					
DATA KE 12,25 YAITU 100000					

VARIAN	$\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}$		36168640918
STANDAR DEVIASI	$\sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$		190180,5482

TABEL FREKUENSI

NO	HARGA	FREKUENSI	FREKUENSI KOMULATIF
1	27500	1	1
2	45000	2	3
3	50000	3	6
4	60000	1	7
5	75000	2	9
6	80000	1	10
7	100000	8	18
8	115000	1	19
9	124000	1	20
10	135000	2	22
11	150000	5	27
12	160000	1	28
13	200000	4	32
14	250000	3	35
15	255000	1	36
16	270000	1	37
17	275000	2	39
18	300000	1	40
19	350000	1	41
20	380000	1	42
21	500000	4	46
22	550000	1	47
23	600000	1	48
24	700000	1	49
25	900000	1	50

Source Code Grafik1 Frekuensi :

```
package barchart;

import org.jfree.chart.ChartFactory;
import org.jfree.chart.ChartFrame;
import org.jfree.chart.JFreeChart;
import org.jfree.chart.plot.PlotOrientation;
import org.jfree.data.category.DefaultCategoryDataset;

public class BarChart {

    public static void main(String[] args) {
        // TODO code application logic here
        DefaultCategoryDataset grafik1 = new DefaultCategoryDataset();
        grafik1.setValue(1, "27500", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(2, "45000", "");
        grafik1.setValue(3, "50000", "");
        grafik1.setValue(1, "60000", "");
        grafik1.setValue(2, "75000", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(1, "80000", "");
        grafik1.setValue(8, "100000", "");
        grafik1.setValue(1, "115000", "");
        grafik1.setValue(1, "124000", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(2, "135000", "");
        grafik1.setValue(5, "150000", "");
        grafik1.setValue(1, "160000", "");
        grafik1.setValue(4, "200000", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(3, "250000", "");
        grafik1.setValue(1, "255000", "");
        grafik1.setValue(1, "270000", "");
        grafik1.setValue(2, "275000", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(1, "300000", "");
        grafik1.setValue(1, "350000", "");
        grafik1.setValue(1, "380000", "");
        grafik1.setValue(4, "500000", ""); // Value, RowKey/ColumnKey
        grafik1.setValue(1, "550000", "");
    }
}
```

```

grafik1.setValue(1, "600000", "");
grafik1.setValue(1, "700000", "");
grafik1.setValue(1, "90000", ""); //Value, RowKey/ColumnKey

```

```

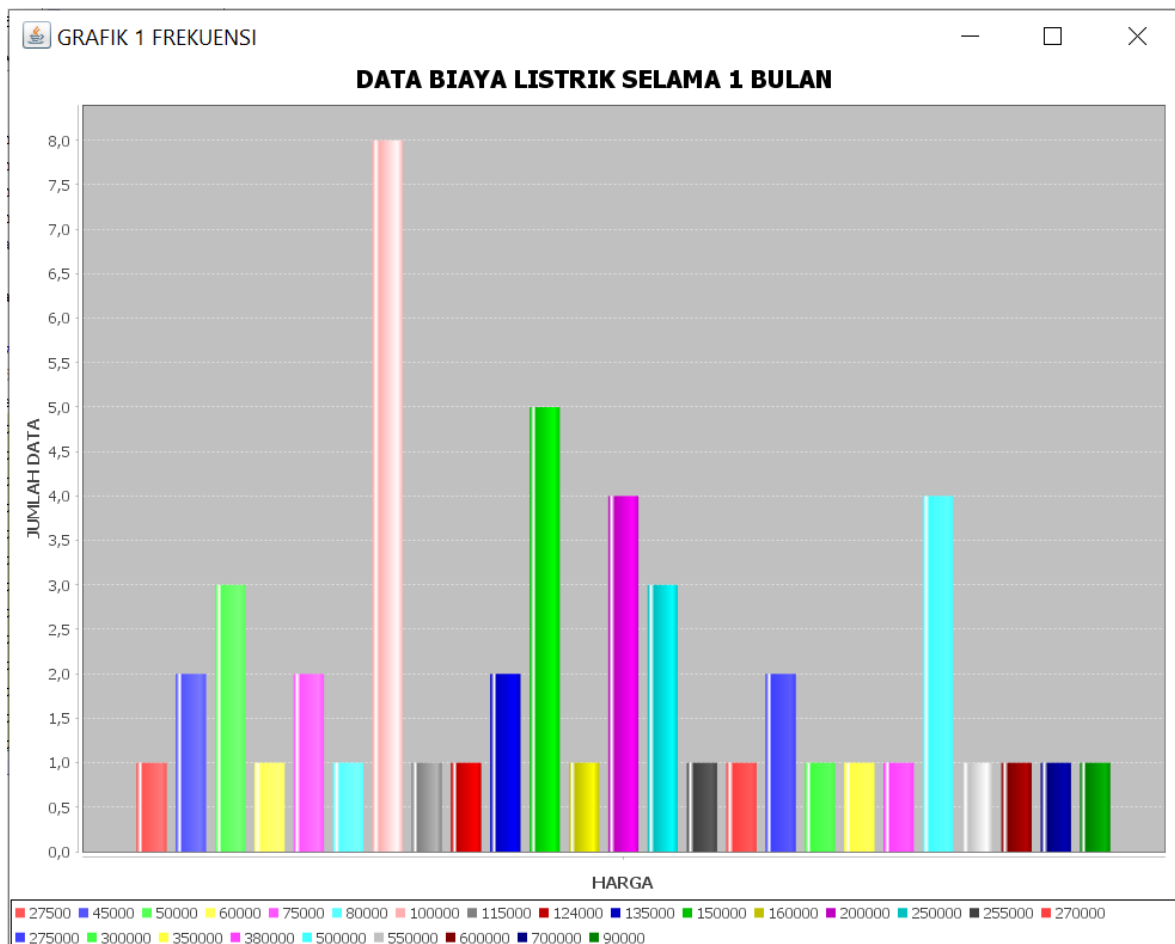
JFreeChart freeChart = ChartFactory.createBarChart("DATA BIAYA LISTRIK SELAMA 1
BULAN", "HARGA", "JUMLAH DATA", grafik1, PlotOrientation.VERTICAL, true, true, true);
//String arg0, String arg1, String arg2, Category Datasheet, Plot Orientation, boolean arg4, boolean
arg5, boolean arg6

ChartFrame cf = new ChartFrame("GRAFIK 1 FREKUENSI", freeChart);

cf.setSize(1000, 800);
cf.setVisible(true);
cf.setLocationRelativeTo(null);
}
}

```

Hasil Output Grafik 1 Frekuensi :



Source Code Grafik 2 Frekuensi Kumulatif :

```
package barchart1;

import org.jfree.chart.ChartFactory;
import org.jfree.chart.ChartFrame;
import org.jfree.chart.JFreeChart;
import org.jfree.chart.plot.PlotOrientation;
import org.jfree.data.category.DefaultCategoryDataset;

public class BarChart1 {
    public static void main(String[] args){
        DefaultCategoryDataset grafik1 = new DefaultCategoryDataset();
        grafik1.setValue(1, "27500", ""); //Value,RowKey/ColumnKey
        grafik1.setValue(3, "45000", "");
        grafik1.setValue(6, "50000", "");
        grafik1.setValue(7, "60000", "");
        grafik1.setValue(9, "75000", ""); //Value,RowKey/ColumnKey
        grafik1.setValue(10, "80000", "");
        grafik1.setValue(18, "100000", "");
        grafik1.setValue(19, "115000", "");
        grafik1.setValue(20, "124000", ""); //Value,RowKey/ColumnKey
        grafik1.setValue(22, "135000", "");
        grafik1.setValue(27, "150000", "");
        grafik1.setValue(28, "160000", "");
        grafik1.setValue(32, "200000", ""); //Value,RowKey/ColumnKey
        grafik1.setValue(35, "250000", "");
        grafik1.setValue(36, "255000", "");
        grafik1.setValue(37, "270000", "");
        grafik1.setValue(39, "275000", ""); //Value,RowKey/ColumnKey
        grafik1.setValue(40, "300000", "");
        grafik1.setValue(41, "350000", "");
        grafik1.setValue(42, "380000", "");
        grafik1.setValue(46, "500000", ""); //Value,RowKey/ColumnKey
    }
}
```

```

grafik1.setValue(47, "550000", "");
grafik1.setValue(48, "600000", "");
grafik1.setValue(49, "700000", "");
grafik1.setValue(50, "90000", ""); //Value,RowKey/ColumnKey

JFreeChart freeChart = ChartFactory.createBarChart("DATA BIAYA LISTRIK
SELAMA 1 BULAN", "HARGA", "JUMLAH DATA", grafik1,
PlotOrientation.VERTICAL, true, true, true); //String arg0, String arg1, String arg2, Category
Datasheet, Plot Orientation, boolean arg4, boolean arg5, boolean arg6

ChartFrame cf = new ChartFrame("GRAFIK 2 FREKUENSI
KUMULATIF", freeChart);

cf.setSize(1000, 800);
cf.setVisible(true);
cf.setLocationRelativeTo(null);
}
}

```

Hasil Output Grafik 2 Frekuensi Komulatif :

