

# ALGORITMA STRUKTUR DATA

## Jobsheet 3 Array of Objects – Tugas

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### Tugas 1

Sebuah kampus membutuhkan program untuk menampilkan informasi mahasiswa berupa nama, NIM, jenis kelamin dan juga IPK mahasiswa. Program dapat menerima input semua informasi tersebut, kemudian menampilkanya kembali ke user. Tambahkan informasi rata-rata IPK pada bagian akhir. Gunakan looping dengan FOR untuk pembuatan object. Gunakan looping dengan FOREACH untuk pencetakan data ke layar.

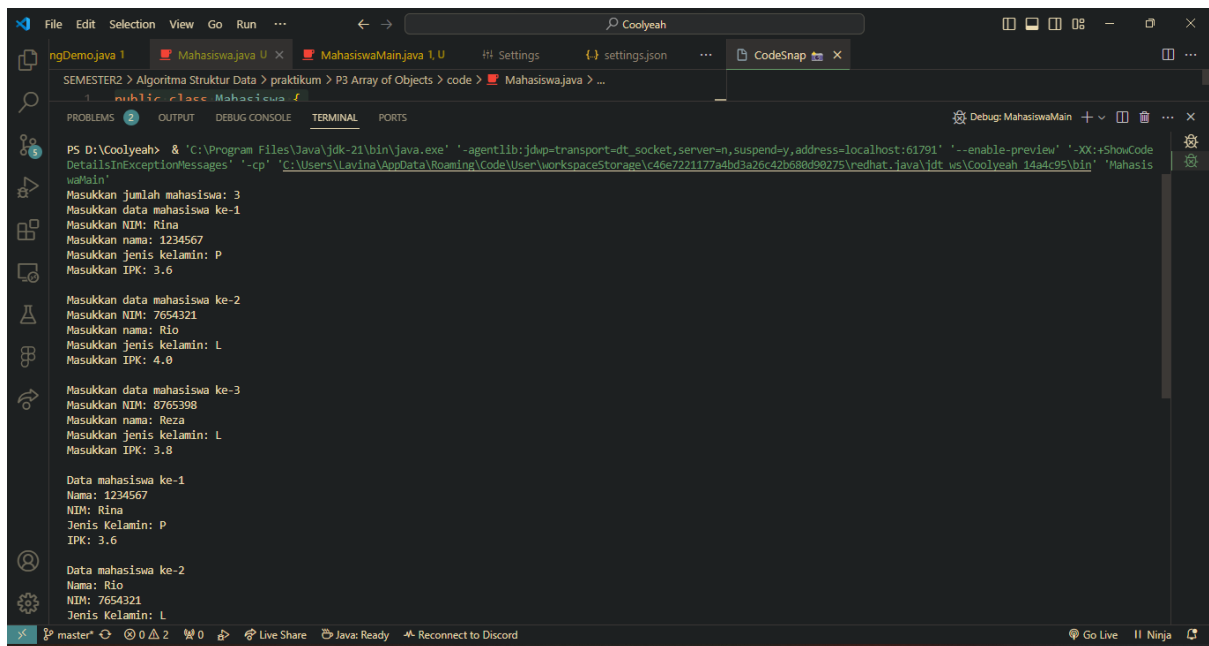
Mahasiswa.java

```
1  public class Mahasiswa {
2      public String nim;
3      public String nama;
4      public String gender;
5      public double ipk;
6      public double rata;
7
8      public Mahasiswa(String nim, String nama, String gender, double ipk) {
9          this.nim = nim;
10         this.nama = nama;
11         this.gender = gender;
12         this.ipk = ipk;
13     }
14
15     void cetakData() {
16         System.out.println("Nama: " + nama);
17         System.out.println("NIM: " + nim);
18         System.out.println("Jenis Kelamin: " + gender);
19         System.out.println("IPK: " + ipk + "\n");
20     }
21
22     void hitungRataRata(Mahasiswa[] mhs) {
23         double total = 0;
24         for (int i = 0; i < mhs.length; i++) {
25             total += mhs[i].ipk;
26         }
27         rata = total / mhs.length;
28     }
29 }
30
```

## MahasiswaMain.java

```
1  import java.util.Scanner;
2
3  public class MahasiswaMain {
4      public static void main(String[] args) {
5          Scanner sc = new Scanner(System.in);
6          int jmlMhs;
7          double ipk;
8          String nama, nim, gender;
9
10         System.out.print("Masukkan jumlah mahasiswa: ");
11         jmlMhs = sc.nextInt();
12         sc.nextLine();
13         Mahasiswa[] mhs = new Mahasiswa[jmlMhs];
14         Mahasiswa mahasiswa = new Mahasiswa(null, null, null, 0);
15
16         for (int i = 0; i < jmlMhs; i++) {
17             System.out.println("Masukkan data mahasiswa ke-" + (1 + i));
18             System.out.print("Masukkan NIM: ");
19             nim = sc.nextLine();
20             System.out.print("Masukkan nama: ");
21             nama = sc.nextLine();
22             System.out.print("Masukkan jenis kelamin: ");
23             gender = sc.nextLine();
24             System.out.print("Masukkan IPK: ");
25             ipk = sc.nextDouble();
26             sc.nextLine();
27             System.out.println();
28
29             mhs[i] = new Mahasiswa(nim, nama, gender, ipk);
30         }
31
32         mahasiswa.hitungRataRata(mhs);
33
34         int i = 0;
35         for (Mahasiswa m : mhs) {
36             System.out.println("Data mahasiswa ke-" + (1 + i));
37             m.cetakData();
38             i++;
39         }
40         System.out.printf("\nRata-rata IPK: %5.2f\n", mahasiswa.rata);
41     }
42 }
```

Output:



```
PS D:\Coolyeh> & 'C:\Program Files\Java\jdk-21\bin\java.exe' ^-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:61791' ^---enable-preview' ^-XX:+ShowCodeDetailsInExceptionMessages' ^-cp' 'C:\Users\Lavina\AppData\Roaming\Code\User\workspaceStorage\c46e7221177a4bd3a26c42b688d90275\redhat.java\jdk_ws\Coolyeh_14a4c95\bin' 'MahasiswaMain'
```

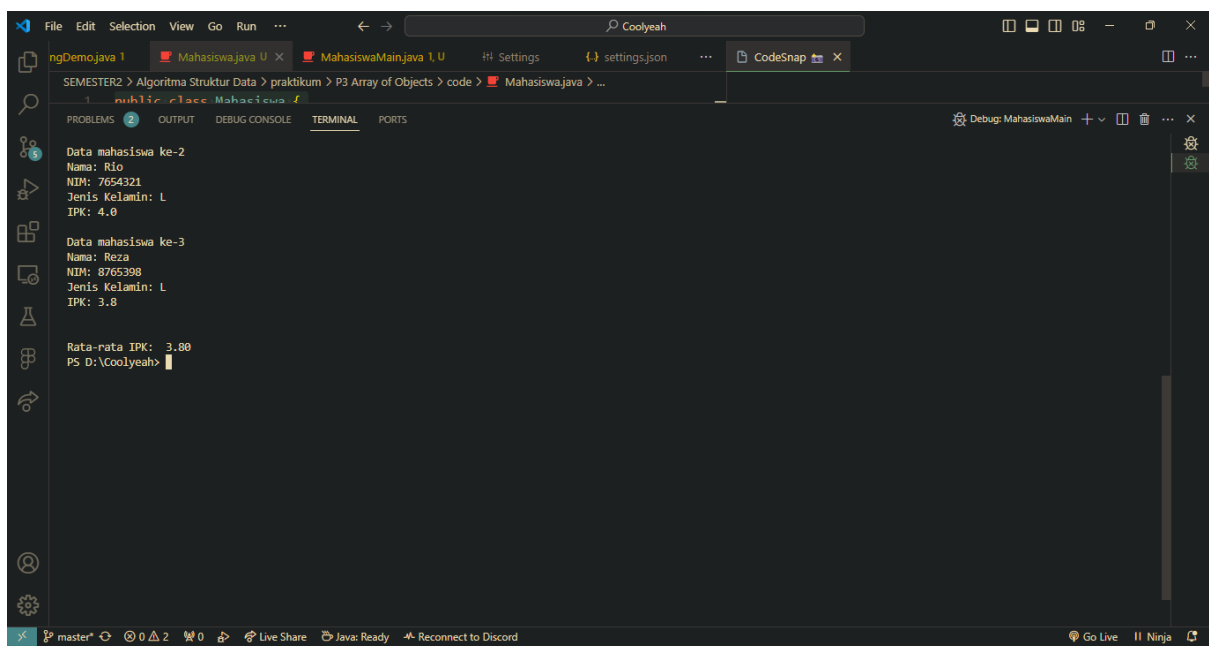
Masukkan jumlah mahasiswa: 3  
Masukkan data mahasiswa ke-1  
Masukkan NIM: Rina  
Masukkan nama: 1234567  
Masukkan jenis kelamin: P  
Masukkan IPK: 3.6

Masukkan data mahasiswa ke-2  
Masukkan NIM: 7654321  
Masukkan nama: Rio  
Masukkan jenis kelamin: L  
Masukkan IPK: 4.0

Masukkan data mahasiswa ke-3  
Masukkan NIM: 8765398  
Masukkan nama: Reza  
Masukkan jenis kelamin: L  
Masukkan IPK: 3.8

Data mahasiswa ke-1  
Nama: 1234567  
NIM: Rina  
Jenis Kelamin: P  
IPK: 3.6

Data mahasiswa ke-2  
Nama: Rio  
NIM: 7654321  
Jenis Kelamin: L



```
Data mahasiswa ke-2  
Nama: Rio  
NIM: 7654321  
Jenis Kelamin: L  
IPK: 4.0
```

```
Data mahasiswa ke-3  
Nama: Reza  
NIM: 8765398  
Jenis Kelamin: L  
IPK: 3.8
```

Rata-rata IPK: 3.80  
PS D:\Coolyeh>

## Tugas 2

Implementasikan tugas ASD Teori no 1 ke dalam kode program. Buatlah array of objects berdasarkan input dari user dan tampilkan data seperti pada Tugas no 1.

## Nasabah.java

```
1  package atm;
2
3  import java.util.Locale;
4  import java.util.Scanner;
5
6  public class Nasabah {
7      private String no_rek;
8      private String nama;
9      private String pin;
10     private String nama_bank;
11     private int saldo, sisaSaldo;
12
13     static Scanner sc = new Scanner(System.in);
14
15     public Nasabah(String noRek, String nm, String pin, String nmBank, int sld) {
16         no_rek = noRek;
17         nama = nm;
18         this.pin = pin;
19         nama_bank = nmBank;
20         saldo = sld;
21     }
22
23     boolean login(Nasabah[] nasabah) {
24         do {
25             System.out.println("\n=====");
26             System.out.println("    SELAMAT DATANG DI BANK BTS !");
27             System.out.println("=====");
28             System.out.print("\nMasukkan Nomor Rekening anda : ");
29             String noRek = sc.nextLine();
30             System.out.print("Masukkan PIN anda          : ");
31             String pin = sc.nextLine();
32             System.out.println("\n=====");
33
34             for (int i = 0; i < nasabah.length; i) {
35                 if (nasabah[i].no_rek.equals(noRek) && nasabah[i].pin.equals(pin)) {
36                     int indexNasabah = i;
37                     mainMenu(nasabah, indexNasabah);
38                     return true;
39                 }
40             }
41             return false;
42         } while (true);
43     }
44
45     void mainMenu(Nasabah[] nasabah, int index) {
46         System.out.println("Pilihan Menu");
47         System.out.println("1. Cek Saldo");
48         System.out.println("2. Tarik Tunai");
49         System.out.print("Pilih menu: ");
50         int menu = sc.nextInt();
51         sc.nextLine();
```

```

53     switch (menu) {
54         case 1:
55             showSaldo(nasabah, index);
56             break;
57         case 2:
58             tarikTunai(nasabah, index);
59             break;
60         case 3:
61             break;
62         default:
63             break;
64     }
65 }
66
67 void showSaldo(Nasabah[] nasabah, int index) {
68     System.out.println("\n===== JUMLAH SALDO ANDA =====");
69     System.out.printf(Locale.ITALY, "\nRp %,d %n", nasabah[index].saldo);
70     System.out.println("\n===== \n");
71 }
72
73 void tarikTunai(Nasabah[] nasabah, int index) {
74     System.out.print("Masukkan nominal yang ingin ditarik: ");
75     int nominal = sc.nextInt();
76     sc.nextLine();
77
78     sisaSaldo = nasabah[index].saldo - nominal;
79     System.out.printf(Locale.ITALY, "Sisa saldo: Rp %,d %n", sisaSaldo);
80 }
81 }
82

```

## App.java

The screenshot shows a Java IDE with a dark theme. The top bar includes a menu (File, Edit, Selection, View, Go, Run, ...), a search bar (Coolyaah), and window management icons. Below the top bar, a tab bar shows several open files: ng.java, PersegiPanjangDemo.java 1, Mahasiswa.java U, Nasabah.java 2, U, App.java X, and MahasiswaMain.java 1, U. The 'App.java' tab is active, displaying the following code:

```
1 package atm;
2
3 public class App {
4     Run | Debug
5     public static void main(String[] args) {
6
7         Nasabah[] nasabah = new Nasabah[2];
8         nasabah[0] = new Nasabah(noRek:"1234567890", nm:"Lavina", pin:"238804", nmBank:"BSI", sld:10_000_000);
9         nasabah[1] = new Nasabah(noRek:"0987654321", nm:"Yono", pin:"050505", nmBank:"Mandiri", sld:20_000_000);
10
11         Nasabah n = new Nasabah(noRek:null, nm:null, pin:null, nmBank:null, sld:0);
12         while (n.login(nasabah)) {
13             n.mainMenu(nasabah, index:0);
14             n.showSaldo(nasabah, index:0);
15             n.tarikTunai(nasabah, index:0);
16         }
17     }
18 }
```

The bottom status bar shows the following information: master\* (with a refresh icon), 4 (with a zoom icon), Live Share (with a share icon), Java: Ready (with a Java icon), Connected to Discord (with a Discord icon), Ln 18, Col 1, Spaces: 2, UTF-8, CRLF, () Java (with a Java icon), Go Live (with a Go Live icon), II Ninja (with a Ninja icon), and Prettier (with a Prettier icon).

