

LAPORAN PRAKTIKUM
ALGORITMA DAN PEMROGRAMAN LANJUTAN
PERTEMUAN KE – 5



Disusun Oleh :

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Array 3 Dimensi

A. Tujuan

- Mahasiswa dapat menjelaskan konsep array 3 dimensi
- Dapat merencanakan struktur data dengan array 3 dimensi
- Dapat mengaplikasikan array 3 dimensi

B. Praktik

1. Deklarasi dan inisialisasi array 3-dimensi, jalankan praktik program di bawah ini dan amati hasilnya

```
import java.util.Scanner;
public class Praktikum1 {
    public static void main (String [] args) {
        Scanner masuk = new Scanner(System.in);
        double nilai [][][ ] = {{51.58, 89.94}, {60.06, 59.58}, {52.93, 47.63}, {89.98, 77.56}, {45.87, 94.56}}, {{39.46, 58.41}, {71.42, 85.37}, {39.08, 7
        for (int i = 0; i < nilai.length; i++) {
            for (int j = 0; j < nilai[i].length; j++) {
                for (int k = 0; k < nilai[i][j].length; k++) {
                    System.out.print("nilai[" + i + "][" + j + "][" + k + "] = " + nilai [i][j][k] + "\n");
                }
            }
        }
    }
}
```

```
nilai[0][0][0] = 51.58 nilai[0][0][1] = 89.94
nilai[0][1][0] = 60.06 nilai[0][1][1] = 59.58
nilai[0][2][0] = 52.93 nilai[0][2][1] = 47.63
nilai[0][3][0] = 89.98 nilai[0][3][1] = 77.56
nilai[0][4][0] = 45.87 nilai[0][4][1] = 94.56

nilai[1][0][0] = 39.46 nilai[1][0][1] = 58.41
nilai[1][1][0] = 71.42 nilai[1][1][1] = 85.37
nilai[1][2][0] = 39.08 nilai[1][2][1] = 78.21
nilai[1][3][0] = 79.03 nilai[1][3][1] = 80.32
nilai[1][4][0] = 45.49 nilai[1][4][1] = 23.47

nilai[2][0][0] = 81.09 nilai[2][0][1] = 32.24
nilai[2][1][0] = 51.86 nilai[2][1][1] = 86.92
nilai[2][2][0] = 59.58 nilai[2][2][1] = 31.69
nilai[2][3][0] = 96.18 nilai[2][3][1] = 26.72
nilai[2][4][0] = 28.76 nilai[2][4][1] = 91.54
```

2. Modifikasi program praktik 1 dan Amati hasilnya dan jelaskan dalam laporan

```
import java.util.Scanner;
public class Praktikum2 {
    public static void main (String [] args) {
        Scanner masuk = new Scanner(System.in);
        double nilai [][][ ] = {{51.58, 89.94}, {60.06, 59.58}, {52.93, 47.63}, {89.98, 77.56}, {45.87, 94.56}}, {{39.46, 58.41}, {71.42, 85.37}, {39.08, 7
        for (int i = 0; i < nilai.length; i++) {
            for (int j = 0; j < nilai[i].length; j++) {
                for (int k = 0; k < nilai[i][j].length; k++) {
                    System.out.print("nilai[" + i + "][" + j + "][" + k + "] = " + nilai [i][j][k] + "\n");
                }
            }
            System.out.println();
        }
        System.out.println();

        //menghitung nilai rata
        System.out.println("Nilai rata-rata siswa :");
        for (int i = 0; i < nilai.length; i++) {
            double totalNilaiPilihanGanda = 0, totalNilaiEssay = 0;
            for (int j = 0; j < nilai[i].length; j++) {
                totalNilaiPilihanGanda += nilai [i][j][0];
                totalNilaiEssay += nilai [i][j][1];
            }
            //Menampilkan hasil
            double pilihanGanda = totalNilaiPilihanGanda / nilai[i].length;
            double essay = totalNilaiEssay / nilai[i].length;
            System.out.printf("Nilai rata-rata ujian soal pilihan ganda siswa * + (i + 1) + " adalah %.2f \n", pilihanGanda);
            System.out.printf("Nilai rata-rata ujian soal essay siswa * + (i + 1) + " adalah %.2f \n", essay); System.out.println();
        }
    }
}
```

```

nilai[0][0][0] = 51.58 nilai[0][0][1] = 89.94
nilai[0][1][0] = 60.06 nilai[0][1][1] = 59.58
nilai[0][2][0] = 52.93 nilai[0][2][1] = 47.63
nilai[0][3][0] = 89.98 nilai[0][3][1] = 77.56
nilai[0][4][0] = 45.87 nilai[0][4][1] = 94.56

nilai[1][0][0] = 39.46 nilai[1][0][1] = 58.41
nilai[1][1][0] = 71.42 nilai[1][1][1] = 85.37
nilai[1][2][0] = 39.08 nilai[1][2][1] = 78.21
nilai[1][3][0] = 79.03 nilai[1][3][1] = 80.32
nilai[1][4][0] = 45.49 nilai[1][4][1] = 23.47

nilai[2][0][0] = 81.09 nilai[2][0][1] = 32.24
nilai[2][1][0] = 51.86 nilai[2][1][1] = 86.92
nilai[2][2][0] = 59.58 nilai[2][2][1] = 31.69
nilai[2][3][0] = 96.18 nilai[2][3][1] = 26.72
nilai[2][4][0] = 28.76 nilai[2][4][1] = 91.54

Nilai rata-rata siswa:
Nilai rata-rata ujian soal pilihan ganda siswa 1 adalah 60.08
Nilai rata-rata ujian soal essay siswa 1 adalah 73.85

Nilai rata-rata ujian soal pilihan ganda siswa 2 adalah 54.90
Nilai rata-rata ujian soal essay siswa 2 adalah 65.16

Nilai rata-rata ujian soal pilihan ganda siswa 3 adalah 63.49
Nilai rata-rata ujian soal essay siswa 3 adalah 53.82

```

3. Dari Praktik program 2 ubahlah program tersebut menjadi inputan yang di masukan dengan keyboard seperti program dibawah ini

```

import java.util.Scanner;
public class Praktik3 {
    public static void main (String [] args){
        Scanner input = new Scanner(System.in);
        System.out.println("Masukkan jumlah siswa: ");
        final int JUMLAH_SISWA = input.nextInt();
        System.out.println("Berapa kali ujian dilakukan: ");
        final int JUMLAH_UJIAN = input.nextInt();
        double [][] nilai = new double [JUMLAH_SISWA][JUMLAH_UJIAN][2];
        System.out.println("Silakan masukkan data: ");
        //memasukkan nilai
        for (int a = 0; a < JUMLAH_SISWA * JUMLAH_UJIAN; a++){
            int nomorSiswa = input.nextInt();
            int nomorUjian = input.nextInt();
            double nilaiPilihanGanda = input.nextDouble();
            double nilaiEssay = input.nextDouble();
            nilai[nomorSiswa - 1][nomorUjian - 1][0] = nilaiPilihanGanda;
            nilai[nomorSiswa - 1][nomorUjian - 1][1] = nilaiEssay;
        }
        //menampilkan array
        System.out.println("Array nilai ditampilkan: ");
        for (int i = 0; i < nilai.length; i++){
            for (int j = 0; j < nilai[i].length; j++){
                for (int k = 0; k < nilai[i][j].length; k++){
                    System.out.print("nilai[" + i + "][" + j + "][" + k + "] = " + nilai [i][j][k] + " /n");
                }
            }
            System.out.println();
        }
        //menghitung nilai rata-rata
        System.out.println("Nilai rata-rata siswa: ");
        for (int i = 0; i < nilai.length; i++){
            double totalNilaiPilihanGanda = 0, totalNilaiEssay = 0;
            for (int j = 0; j < nilai[i].length; j++){
                totalNilaiPilihanGanda += nilai [i][j][0];
                totalNilaiEssay += nilai [i][j][1];
            }
            //menampilkan nilai hasil
            double pilihanGanda = totalNilaiPilihanGanda / nilai[i].length;
            double essay = totalNilaiEssay / nilai[i].length;
            System.out.printf("Nilai rata-rata ujian soal pilihan ganda siswa " + (i + 1) + " adalah %.2f /n", pilihanGanda);
            System.out.printf("Nilai rata-rata ujian soal essay siswa " + (i + 1) + " adalah %.2f /n", essay);
        }
        System.out.println();
    }
}

```

Masukkan jumlah siswa:
3
Berapa kali ujian dilakukan:
2
Silakan masukkan data:
89
89
76
878
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 88
at Praktik3.main(Praktik3.java:17)
Press any key to continue . . .

C. Latihan

1. Buat program untuk menampilkan data sederhana mahasiswa sebagai berikut:

```
public class Latihan1{
    public static void main (String [] argsx){
        String entry[][] = {{{"vianslezer","100411052","Surabaya"},
                               {"Echa","100411025","Jakarta"}, {"Masayu","100411024","Malang"}}};

        System.out.println("Nama    : "+entry[0][0][0]);
        System.out.println("Nim     : "+entry[0][0][1]);
        System.out.println("Alamat  : "+entry[0][0][2]);

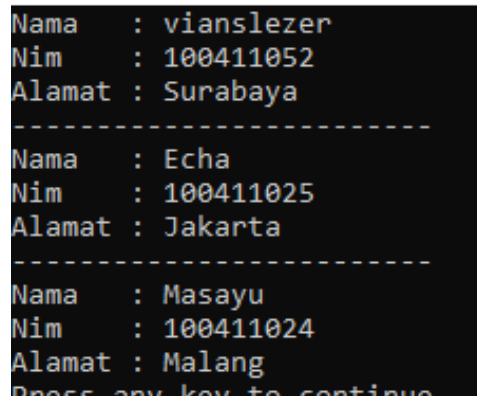
        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][1][0]);
        System.out.println("Nim     : "+entry[0][1][1]);
        System.out.println("Alamat  : "+entry[0][1][2]);

        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][2][0]);
        System.out.println("Nim     : "+entry[0][2][1]);
        System.out.println("Alamat  : "+entry[0][2][2]);

        System.out.println("-----");
    }
}
```



```
Nama    : vianslezer
Nim     : 100411052
Alamat  : Surabaya
-----
Nama    : Echa
Nim     : 100411025
Alamat  : Jakarta
-----
Nama    : Masayu
Nim     : 100411024
Alamat  : Malang
Press any key to continue
```

2. Modifikasi program Latihan 1 untuk menambah data minimaln tambahkan 5 buah data

```
public class Latihan1{
    public static void main (String [] argsx){
        String entry[][] = {{{"vianslezer","100411052","Surabaya"},
                               {"Echa","100411025","Jakarta"}, {"Masayu","100411024","Malang"},
                               {"Tariax","100411033","Pondorejo"}, {"Niken","100411029","Solo"}}};

        System.out.println("Nama    : "+entry[0][0][0]);
        System.out.println("Nim     : "+entry[0][0][1]);
        System.out.println("Alamat  : "+entry[0][0][2]);

        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][1][0]);
        System.out.println("Nim     : "+entry[0][1][1]);
        System.out.println("Alamat  : "+entry[0][1][2]);

        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][2][0]);
        System.out.println("Nim     : "+entry[0][2][1]);
        System.out.println("Alamat  : "+entry[0][2][2]);

        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][3][0]);
        System.out.println("Nim     : "+entry[0][3][1]);
        System.out.println("Alamat  : "+entry[0][3][2]);

        System.out.println("-----");

        System.out.println("Nama    : "+entry[0][4][0]);
        System.out.println("Nim     : "+entry[0][4][1]);
        System.out.println("Alamat  : "+entry[0][4][2]);
    }
}
```

```

Nama    : vianslezer
Nim     : 100411052
Alamat  : Surabaya
-----
Nama    : Echa
Nim     : 100411025
Alamat  : Jakarta
-----
Nama    : Masayu
Nim     : 100411024
Alamat  : Malang
-----
Nama    : Tarisa
Nim     : 100411033
Alamat  : Ponorogo
-----
Nama    : Niken
Nim     : 100411089
Alamat  : Solo
-----

```

3. Buatlah program untuk menampilkan output sbg:

```

public class Latihan2{
    public static void main(String [] args){
        for(int a=0;a<2;a++){
            for(int j=0;j<2;j++){
                for(int l=0;l<2;l++){
                    System.out.println(a+"|"+j+"|"+l);
                }
            }
        }
    }
}

```

```

0|0|0
0|0|1
0|1|0
0|1|1
1|0|0
1|0|1
1|1|0
1|1|1

```