PERT 6-7: Array

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Tujuan Pembelajaran

Memahami konsep Array

Dapat mendeklarasikan array

Dapat menginisialisasi array

Dapat mengisi dan menampilkan data array

Materi

Pengantar Array

Pendefinisian Array

Inisialisasi Array

Mengisi array

Mengambil data array

Seorang dosen memiliki 3 mahasiswa dalam kelas bahasa pemrograman dengan nilai sebagai berikut:

1. Nilai Mahasiswa 1= 90
2. Nilai Mahasiswa 2= 50
3. Nilai Mahasiswa 3= 80

Saya dengan mudah dapat menentukan nilai yang paling tinggi adaah 90 dan yang paling rendah adalah 50

O...ternyata di kelas lain dosen tersebut memiliki 45 orang mahasiswa

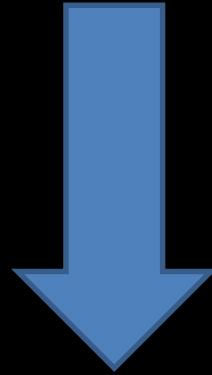| 90	65	70	60	45	46	35	60	70
40	60	96	50	30	65	45	80	70
56	85	78	55	50	60	40	60	75
45	85	90	85	70	55	70	50	80
75	65	50	89	80	95	60	60	90

Berapa nilai tertinggi?
Berapa nilai yang paling banyak?
Berapa nilai rata-rata dalam kelas?

Perhatikan Contoh berikut

```java
public class StudentList1
{
    public static void main(String args[])
    {
        // first enter all students
        String student1 = "Smith, John";
        String student2 = "Jones, Bill";
        String student3 = "Thomson, Jerry";
        // second print out all students
        System.out.println( student1 );
        System.out.println( student2 );
        System.out.println( student3 );
    }
}
```

What is Array?

- An *array* is a data structure that holds a group of variables under a single identifier.

- An array is an *indexed* sequence of components. In mathematics, one is familiar with variables bearing indices like, for example, the vector coordinates x_i or matrix elements $m_{i,j}$.

index	Elemen/isi
0	10
1	8
2	12
3	9
4	7
5	20
6	7
7	3
8	5
9	6

dataInt[]

DEKLARASI ARRAY

```
int []dataInt = new int[10];
dataInt[0]=10;
dataInt[1]=8;
dataInt[2]=12;
dataInt[3]=9;
dataInt[4]=7;
dataInt[5]=20;
dataInt[6]=7;
dataInt[7]=3;
dataInt[8]=5;
dataInt[0]=6;
```

Array of primitive data type

```
int[] a;   //Deklarasi array dengan tipe int tanpa assigment
a = new int[2];   //definisia panjang array
int[] b = {1, 2, 3, 4};   //mengisi array
int bLength = b.length;   //panjang array
```

Array of Reference/Objects

String strs[]=new String[2];

strs[0]=new String("John");

strs[1]=new String("Doe");

Integer []ints=new Integer[2];

ints[0]=new Integer(10);

ints[1]=new Integer(20);

```java
 5  import java.util.Scanner;
 6
 7  public class ArrayOfScores{
 8  public static void main(String[] args){
 9      Scanner keyboard = new Scanner(System.in);
10      double[] score = new double[5];
11      int index;
12      double max;
13      System.out.println("Enter 5 scores:");
14      score[0] = keyboard.nextDouble();
15      max = score[0];
16      for (index = 1; index < 5; index++){
17          score[index] = keyboard.nextDouble();
18          if (score[index] > max)
19              max = score[index];
20      }
21      System.out.println("The highest score is " + max);
22      System.out.println("The scores are:");
23      for (index = 0; index < 5; index++)
24          System.out.println(score[index] + " differs from max by "+ (max - score[index])
25  }
26  }
```

Mencari skor tertinggi

```
D:\B\BPRO\Pert6>java ArrayOfScores
Enter 5 scores:
8
4
10
2
6
The highest score is 10.0
The scores are:
8.0 differs from max by 2.0
4.0 differs from max by 6.0
10.0 differs from max by 0.0
2.0 differs from max by 8.0
6.0 differs from max by 4.0
```

ARRAY MULTIDIMENSI

Array n x m

- Int [][]matrix;
- String [][]daftarNama;
- Cirinya:
  - Ada dua index atau lebih
  - Array of array

```java
public class ArrayNxM01B{
  public static void main(String []argx){
    //mendeklarasikan array 2 dim dgn baris = 3
    int [][]m=new int[3][];
    //setiap baris berisi 3 kolom
    m[0]=new int[2];
    m[1]=new int[4];
    m[2]=new int[3];
    m[0][0]=5;
    m[1][3]=5;
    m[2][2]=5;
    //looping baris
    for(int i=0;i<m.length;i++){
      //looping kolom
      for(int j=0;j<m[i].length;j++){
        System.out.print(m[i][j] + " ");
      }
      System.out.println();
    }
```
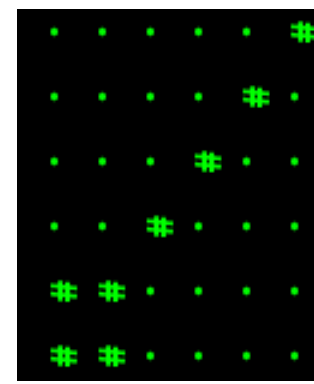
Compiler Output
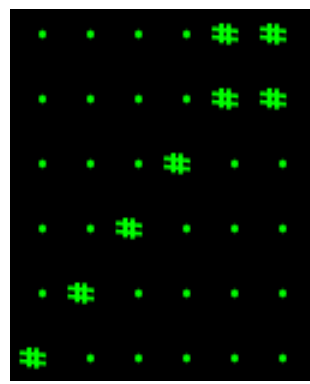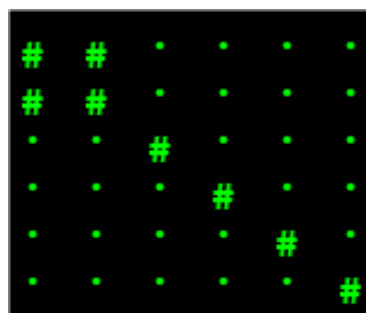
```java
public class LatArrayMxN02{
   public static void main(String []argv){
      int [][]data={
         {1,0,0,0,0,0},
         {0,1,0,0,0,0},
         {0,0,1,0,0,0},
         {0,0,0,1,0,0},
         {0,0,0,0,1,1},
         {0,0,0,0,1,1}};
      for(int i=0;i<data.length;i++){
         for(int j=0;j<data[i].length;j++){
            System.out.print((data[i][j]==1)?" # ":" . ");
         }
         System.out.println();
      }
   }
}
```
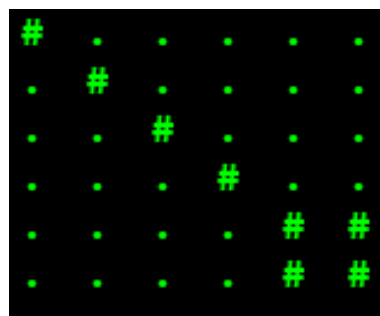
```
E:\B\BPRO\Pert8>java DataPenjualan
Data Penjualan
Brg-hari        Senin   Selasa  Rabu    Kamis   Jumat   Sabtu   Tota
Pencil 2B       10      10      4       13      2       10      49
Buku Tulis      5       8       4       3       12      10      42
Penggaris       9       3       4       13      12      10      51
Penghapus       14      10      4       3       1       10      42
```

A. Deklarasi

```java
public class DataPenjualan {
    public static void main(String[] argx) {
        String[] namaHari = {"Senin",
            "Selasa",
            "Rabu",
            "Kamis",
            "Jumat",
            "Sabtu"};
        String[] namaBrg = {"Pencil 2B",
            "Buku Tulis",
            "Penggaris",
            "Penghapus"
        };
        //int [][]dataJual=new int[namaBrg.length][namaHari.length];
        int[][] dataJual = {
            {10, 10, 4, 13, 2, 10},
            {5, 8, 4, 3, 12, 10},
            {9, 3, 4, 13, 12, 10},
            {14, 10, 4, 3, 1, 10}
        };
```

B. Tampilkan Data

```java
System.out.println("Data Penjualan");
System.out.print("Brg-hari\t");
for (int i = 0; i < namaHari.length; i++) {
    System.out.print(namaHari[i] + "\t");
}
System.out.println("Total");
for (int baris = 0; baris < dataJual.length; baris++) {
    System.out.print(namaBrg[baris] + "\t");
    for (int kolom = 0; kolom < dataJual[baris].length; kolom++) {
        System.out.print(dataJual[baris][kolom] + "\t");
        tOmsetBrg[baris] +=dataJual[baris][kolom];
    }
    System.out.println(tOmsetBrg[baris]);
}
```

```
E:\B\BPRO\Pert8>java DataPenjualan
Data Penjualan
Brg-hari        Senin   Selasa  Rabu    Kamis   Jumat   Sabtu   Total
Pencil 2B       10      10      4       13      2       10      49
Buku Tulis      5       8       4       3       12      10      42
Penggaris       9       3       4       13      12      10      51
Penghapus       14      10      4       3       1       10      42
```