



Jurusan Teknik Komputer dan Informatika

Politeknik Negeri Bandung

Pertemuan 2 Java Fundamental 2

3.7 – 3.10

D3 Kelas 2A/2B

Dosen Pengampu :
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- Input Output
- Big Integer
- Control Flow
- Array

```
import java.util.*;
```

```
Scanner in = new Scanner(System.in);  
System.out.print("What is your name? ");  
String name = in.nextLine();  
System.out.print("How old are you? ");  
int age = in.nextInt();
```

- BigInteger class is used for mathematical operation which involves very big integer calculations that are outside the limit of all available primitive data types.

```
if(x>=-128 && x<=127)System.out.println("* byte");  
if(x>=-32768 && x<=32767)System.out.println("* short");  
if(x>=-2147483648 && x<=2147483647)  
System.out.println("* int"); if(x>=(-(Math.pow(2,63))) && x<=(Math.pow(2,63)-  
1))System.out.println("* long")
```

Big Integer

- BigInteger class is used for mathematical operation which involves very big integer calculations that are outside the limit of all available primitive data types.
- For example factorial of 100 contains 158 digits in it so we can't store it in any primitive data type available.

```
// Java program to find large factorials using BigInteger
import java.math.BigInteger;
import java.util.Scanner;

public class Example
{
    // Returns Factorial of N
    static BigInteger factorial(int N)
    {
        // Initialize result
        BigInteger f = new BigInteger("1"); // Or BigInteger.ONE

        // Multiply f with 2, 3, ...N
        for (int i = 2; i <= N; i++)
            f = f.multiply(BigInteger.valueOf(i));

        return f;
    }

    // Driver method
    public static void main(String args[]) throws Exception
    {
        int N = 20;
        System.out.println(factorial(N));
    }
}
```

Output:

```
2432902008176640000
```

- In java, you can declare arrays in two ways. Those two ways of declaring arrays in java are,

Data_Type[] Variable_Name;

AND

Data_Type Variable_Name[];

```
public class ArraysInJava
{
    public static void main(String[] args)
    {
        int[] arrayOfInts;    //Declaring an array of ints
        double arrayOfDoubles[]; //Declaring an array of doubles
        char[] arrayOfChars;   //Declaring an array of characters
        boolean arrayOfBooleans[]; //Declaring an array of booleans
    }
}
```

Instantiating An Array Object

- You can instantiate or create an array object using new operator. The syntax for instantiating arrays in java is,

Variable_Name = new Data_Type[ArraySize];

```
public class ArraysInJava
{
    public static void main(String[] args)
    {
        int[] arrayOfInts;    //Declaring an array of int
        arrayOfInts = new int[10]; //Instantiating an array of int using new operator
    }
}
```

Initializing Array Elements :

- The syntax for initializing array elements is,

Variable_Name[index] = Value;

```
public class ArraysInJava
{
    public static void main(String[] args)
    {
        int[] arrayOfInts;      //Declaring an array of int

        arrayOfInts = new int[10]; //Instantiating an array of int using new operator

        arrayOfInts[2] = 12;      //Initializing 3rd element

        arrayOfInts[5] = 56;      //Initializing 6th element
    }
}
```


Combining declaration, instantiate and initialization into one statement :

- You can combine declaration, instantiate and initialization in one statement like below,

- ```
Data_Type[] Variable_Name = new Data_Type[]
{Value0, Value1, Value2, Value3 };
```

```
public class ArraysInJava
{
 public static void main(String[] args)
 {
 //Declaring, instantiating and Initializing an array in one statement
 double[] arrayOfDoubles = new double[] {12.56, 45.87, 14.85};

 //This is also ok.
 int[] arrayOfInts = {12, 21, 0, 5, 7};
 }
}
```

```
public class ArraysInJava
{
 public static void main(String[] args)
 {
 //Declaring and Initializing an array in one statement
 int[] arrayOfInts = {12, 21, 0, 5, 7};

 System.out.println(arrayOfInts[0]); //accessing 1st element
 System.out.println(arrayOfInts[3]); //accessing 4th element
 System.out.println(arrayOfInts[2]); //accessing 3rd element
 }
}
```

# Multidimensional

```
public class MultiDimensionalArraysInJava
{
 public static void main(String[] args)
 {
 //One Dimensional Arrays
 int[] firstArray = {1, 2, 3};

 int[] secondArray = {4, 5, 6};

 int[] thirdArray = {7, 8, 9};

 int[] fourthArray = {10, 11, 12};

 int[] fifthArray = {13, 14, 15};

 int[] sixthArray = {16, 17, 18};

 int[] seventhArray = {19, 20, 21};

 int[] eighthArray = {22, 23, 24};

 int[] ninthArray = {25, 26, 27};

 //Two Dimensional Arrays
 int[][] twoDimensionalArray1 = {firstArray, secondArray, thirdArray};

 int[][] twoDimensionalArray2 = {fourthArray, fifthArray, sixthArray};

 int[][] twoDimensionalArray3 = {seventhArray, eighthArray, ninthArray};

 //Three Dimensional Array
 int[][][] threeDimensionalArray = {twoDimensionalArray1, twoDimensionalArray2, twoDimensionalArray3};
 }
}
```