
Haaris Infote
Driven by Technology
Java Full Stack
w

Agenda

01 Variables

Types of Variables, Type Casting

02 Conditional Branchin

If-else-if, switch case, ternary operator

03 Looping Constructs

For Loop, while loop, doWhile loop.

04 Arrays

Single dimension, Two dimension, Looping, Nested Loops

JAVA

INTRODUCTION TO JAVA

An object-oriented, multi-threaded programming language developed by Stanford University Network (SUN) in 1991 by James Gosling, Patrick Naughton, Chris Warth, Mike Sheridon.

Designed to be small, simple & portable across different platforms as well as OS.

POPULARITY

1. Usage of Applets
2. Powerful Programming language constructs
3. Rich set of significant object classes

Features of Java

Reason why Java is Famous

1. Platform Independent.
2. Simple & Powerful
3. Secure
4. Portable
5. Object-oriented
6. Robust
7. Multithreaded
8. Architecture-neutral
9. Interpreted & High Performance
10. Distributed
11. Dynamic

PROGRAMMING

Basic Programming Constructs

- Data types & variables
- Operators
- Control Statements
- Arrays
- Strings

Writing Program in Java

Java

Java programs are a collection of whitespace, identifiers, comments, literals, operators, separators, & keywords.

Whitespace → Java is a free-form language. It is not needed to follow any rules. (i.e.) The program can be written in one line. Whitespace is a space, tab, or new line.

PROGRAMMING

DATATYPES & VARIABLES

Java is a very strongly typed language.

Java defines 4 types of data.

1. Integers → byte, short, int, & long.
2. Floating-Point → float, double.
3. Characters → char.
4. Boolean → True or False.

INTEGERS

long 64 bit -9,223,372,036,854,775,808 to +9,223,372,036,854,775,807

Int - 32 bit -2,147,483,648 to +2,147,483,647

Java

short	**16 bit**	**-32,768 to + 32,767**
byte	**8 bit**	**-128 to +127**

FLOATING-NUMBERS

double	**64 bit**	**1.7e-308 to 1.7e+308**
float	**32 bit**	**3.4e-308 to 3.4e+038**

Ex: float f=3.7f

CHARACTERS - ex: char c='a';
range of char is 0 to 65,536

BOOLEAN - ex: boolean b=true;
Only 2 possible values. TRUE or FALSE.

PROGRAMMING

Type Conversion and Casting

When one type of data is assigned to another type of variable, an automatic type conversion will take place if the following two conditions are met

1. The two types are compatible

2.The destination type is larger than the source type.

Automatic type promotion –
for ex:

```
byte b=10;
byte c=2;

int a=b*c;
```

Casting Incompatible Types

To cast incompatible types

use (typecasting)

For ex:

```
Int I=257;
byte b=(byte)I;
```

**** b will be equal to 1**
(257 is divided by 256)and the remainder is assigned.

```
int value = (int) 3.89;
```

Output: 3

PROGRAMMING

Identifiers → class names, method names & variable names. Identifier can be descriptive sequence of LC or UC letters, numbers or anything valid.
Literals → A constant value is created by using a literal representation.
Comments → Display some message related to the program for understanding the program.
Separators → ( ), { }, [ ], ;, , .; -- are the most commonly used separators in java.

Java

Keywords → abstract, boolean, const, finally, int, public, this, return, throw, throws, implements, package, final, class, catch, byte, etc.
These keywords cannot be used as names for a variable, class or method.

PROGRAMMING

OPERATORS

Java provides a rich operator environment. There are 4 groups of operators,

1. Arithmetic Operators
2. Relational Operator
3. Logical Operator

OPERATORS

Arithmetic Operators

+,	-,	*,	/,	%,
=	++		--	
+=	-=	*=	/=	%=

Relational Operators

==	!=	>	<
>=	<=		

Logical Operators

An operator used to create complex Boolean expressions.

&&	||	!

PROGRAMMING

OPERATORS

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OPERATORS

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&&	||	!

PROGRAMMING

CONTROL STATEMENTS

If statement

General Form

```
if (condition)
        statement
```

If – else – if

General Form

```
if (condition)
        statement
else
if (condition)
        statement
….
```

Ternary Operator

```
String s=2>3?"success":"failure";
```

Sample

```
public static void main(String[] args) {
int i=100;

if(i==100) {
  System.out.println(" is Hundred");
}
else if(i==200) {
  System.out.println("i is two Hundred");
}
}
```

PROGRAMMING

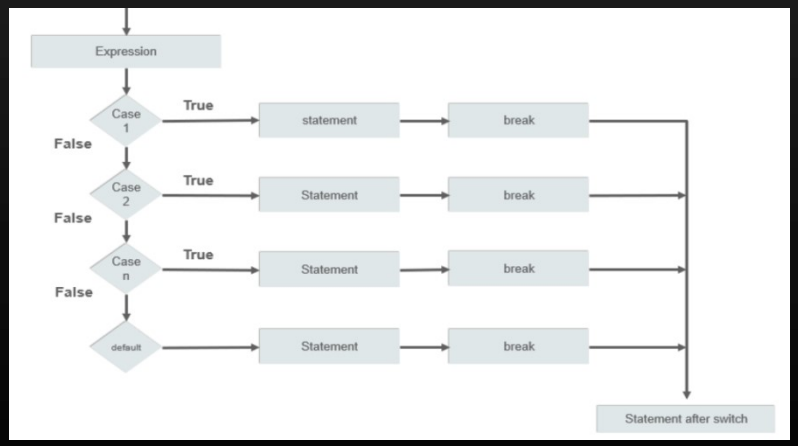
CONTROL STATEMENTS

Switch

It is a branch statement.

General Form

```
switch (choice)
{
    case <value 1> :
        statements;
        break;
    .....
    default :
        default statement;
}
```



Sample

```
public static void main(String[] args) {
int i=100;

switch(i) {
   case 100:{
     System.out.println("value is Hundred...");
     break;
 }
    case 200:{
      System.out.println("value is Two Hundred...");
      break;
  }
     default:{
       System.out.println("The value is not valid..");
  }
}
```

PROGRAMMING

CONTROL STATEMENTS

While

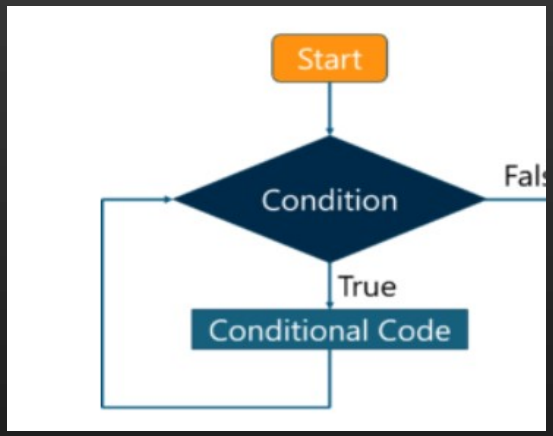
General Form

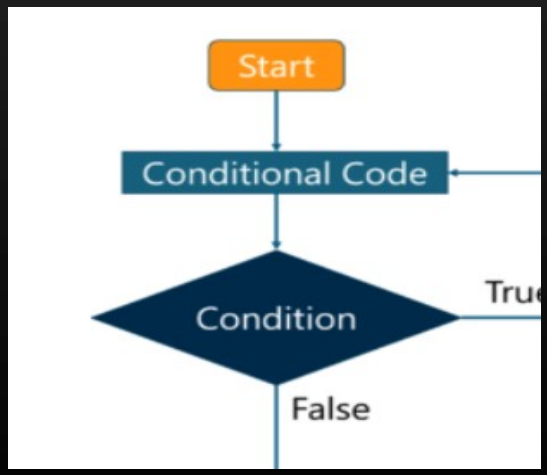
```
While (condition)
{
        body of loop
}
```

Do-while

General Form

```
Do
{
        body of loop
} while (condition);
```





Sample

```
public static void main(String[] args) {
int i=10;
while(i>0) {
--i;
System.out.println("value of i is...:"+i);
}
}
```

```
public static void main(String[] args) {
int i=10;
do {
--i;
System.out.println("value of i is...:"+i);
}while(i>0);
}
```

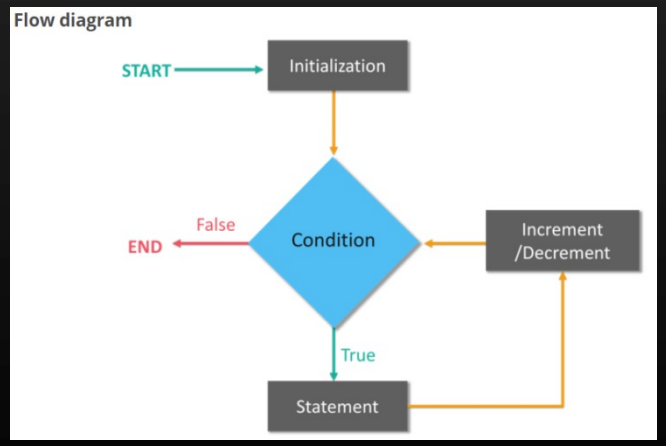
PROGRAMMING

CONTROL STATEMENTS

For loop

General Form

```
for (initialization; condition; iteration)
                    {
                              body
                    }
```



Sample

```
public static void main(String[] args) {

for(int i=10;i>0;i--) {
System.out.println("value of i..:"+i);
}
}
```

PROGRAMMING

CONTROL STATEMENTS

Break

Continue

Sample

```
public class Hotel
{
public static void main(String args[])
{
        a:{
        for(int i=0;i<10;i++)
        {
                b:{System.out.println(i);
                break a;
                //System.out.println(i);
                }
        }}

for(int i=0;i<10;i++)
        {
                if(i%2==0)
                {
                        continue;
                }
                System.out.print(i+":");
        }
}}
```

PROGRAMMING

Escape Sequence

\' – single quote
\" – double quote
\\ - backslash
\r – carriage return
\n – new line
\f – form feed
\t – tab
\b- backspace

Java

System.***out.println("Hello \n World");***

Output

Hello
World

PROGRAMMING

Arrays

Array is an object that stores a list of items of same data type.

In java, a variable to hold the array is declared, & a new object is created & assigned to it.

<data type> <array name> [] = new <data type> [size of the array];

<data type> <array name> [] = { array elements };

Java

```
public static void main (String args[])
{
int num[] = {21,5,78,56,59,23,19};
int n = num.length;
System.out.println ("The Numbers are : ");
for (int i=0;i<n ;i++)
{
        System.out.println (" "+num[i]);
}
```

PROGRAMMING

Arrays

Multidimensional Arrays

<data type> <variable name> [] [] = new <data type> [row size of array] [column size of array];

EX

```
class Twod
{
public static void main(String args[]){
            int I = 0;
            int j = 0;
int matrix [][] = new int [3][3];
```

Java

```
for (int I = 0; i<3; i++)
   {
          for (int j = 0; j<3; j++)
            {
       System.out.println (" "+matrix [i] [j]+" ");
            }
    System.out.println (" ");
   }
}
}
```

PROGRAMMING

Arrays

Multidimensional Arrays

<data type> <variable name> [] [] = new <data type> [row size of array] [column size of array];

EX

```
class Twod
{
public static void main(String args[]){
            int I = 0;
            int j = 0;
int matrix [][] = new int [3][3];
```

Java

```
for (int I = 0; i<3; i++)
   {
          for (int j = 0; j<3; j++)
            {
       System.out.println (" "+matrix [i] [j]+" ");
            }
    System.out.println (" ");
   }
}
}
```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