



Fundamentals of Object Oriented Programming

CSN- 103

Dr. R. Balasubramanian

Associate Professor

Department of Computer Science and Engineering

Indian Institute of Technology Roorkee

Roorkee 247 667

balarfcs@iitr.ac.in

<https://sites.google.com/site/balaiiitr/>



```
1 public class Right2Left{  
2  
3     public static void main(String []args){  
4         int a=3;  
5         int b=2;  
6         int c=1;  
7         int d=~a/b*~c;  
8         System.out.println(d);  
9     }  
10 }  
11
```

Terminal

```
sh-4.3$ javac Right2Left.java  
sh-4.3$ java Right2Left  
4  
sh-4.3$
```

<http://goo.gl/CeHlxM>

Mathematical functions

$\sin(x)$

$\cos(x)$

$\tan(x)$

$\text{asin}(x)$

$\text{acos}(x)$

..

..

..

$\text{ceil}(x)$

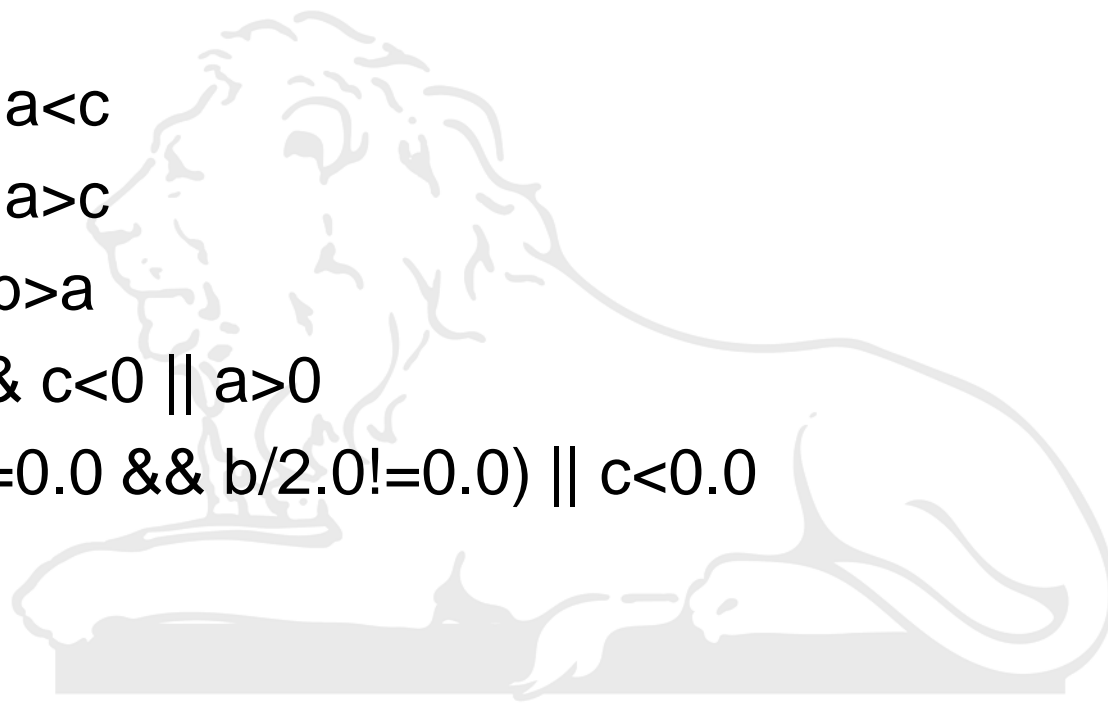
$\text{floor}(x)$

$\text{max}(a,b)$



Determine the value of each of the following logical expressions if $a=5$, $b=10$ and $c=-6$

- i. $a > b \ \&\& \ a < c$
- ii. $a < b \ \&\& \ a > c$
- iii. $a == c \ || \ b > a$
- iv. $b > 15 \ \&\& \ c < 0 \ || \ a > 0$
- v. $(a/2.0 == 0.0 \ \&\& \ b/2.0 != 0.0) \ || \ c < 0.0$



```
1 public class HelloWorld{  
2  
3     public static void main(String []args){  
4         boolean x,y,z,k,l;  
5         int a=5, b=10, c=-6;  
6         x= a>b && a<c;  
7         y= a<b && a>c;  
8         z= (a==c || b>a);  
9         k= b>15 && c<0 || a>0;  
10        l= (a/2.0==0.0 && b/2.0!=0.0) || c<0.0;  
11        System.out.println(x);  
12        System.out.println(y);  
13        System.out.println(z);  
14        System.out.println(k);  
15        System.out.println(l);  
16    }  
17 }  
18
```

Terminal

```
sh-4.3$ javac HelloWorld.java  
sh-4.3$ java -Xmx128M -Xms16M HelloWorld  
false  
true  
true  
true  
true  
sh-4.3$
```

Decision Making and Branching

- There are two types of decision making statements in Java. They are:
 - i f statements
 - swi tch statements



if statement

- An if statement consists of a Boolean expression followed by one or more statements.

Syntax:

- The syntax of an if statement is:

```
if( Boolean_expression )
```


```
{
```

```
/*Statements will execute if the Boolean expression  
is true */
```

```
}
```

- If the Boolean expression evaluates to true then the block of code inside the if statement will be executed. If not the first set of code after the end of the if statement (after the closing curly brace) will be executed.

```
1 public class Test {  
2  
3     public static void main(String args[]){  
4         int x = 10;  
5  
6         if( x < 20 ){  
7             System.out.print("This is if statement");  
8         }  
9     }  
10 }  
11
```

 Terminal

```
sh-4.3$ javac Test.java  
sh-4.3$ java Test  
This is if statementsh-4.3$
```


The if...else Statement

- An if statement can be followed by an optional else statement, which executes when the Boolean expression is false.

- **Syntax**

```
if( Boolean_expression )
```

```
{
```

```
//Executes when the Boolean expression is true
```

```
}
```

```
else
```

```
{
```

```
/*Executes when the Boolean expression is false*/
```

```
}
```

```
1 public class Test {  
2  
3     public static void main(String args[]){  
4         int x = 30;  
5  
6         if( x < 20 )  
7         {  
8             System.out.print("This is if statement");  
9         }  
10        else  
11        {  
12            System.out.print("This is else statement");  
13        }  
14    }  
15 }  
16
```

 Terminal

```
sh-4.3$ javac Test.java  
sh-4.3$ java Test  
This is else statementsh-4.3$
```



```
1 public class Dec2Bin3{
2
3     public static void main(String []args){
4         byte a= (byte) 128;
5         byte b= (byte) -128;
6         byte c= (byte) (a+b);
7         System.out.println(c);
8         if (a==b)
9             System.out.println("I am Confused");
10        else
11            System.out.println("Everything is perfect");
12        }
13    }
14
```

```
sh-4.4$ javac Dec2Bin3.java
sh-4.4$ java Dec2Bin3
0
I am Confused
sh-4.4$
```

<https://www.ideone.com/q6hPay>

- http://www.tutorialspoint.com/java/java_decision_making.htm



The if...else if...else Statement

- Syntax

```
if(Boolean_expression 1)
{ //Executes when the Boolean expression 1 is true
}
else if(Boolean_expression 2)
{ //Executes when the Boolean expression 2 is true
}
else if(Boolean_expression 3)
{ //Executes when the Boolean expression 3 is true
}
else
{ //Executes when the none of the above condition
  is true. }
```

```
1 public class Test {  
2  
3     public static void main(String args[]){  
4         int x = 30;  
5  
6         if( x == 10 ){  
7             System.out.print("Value of X is 10");  
8         }else if( x == 20 ){  
9             System.out.print("Value of X is 20");  
10        }else if( x == 30 ){  
11            System.out.print("Value of X is 30");  
12        }else{  
13            System.out.print("This is else statement");  
14        }  
15    }  
16 }
```

Terminal

```
sh-4.3$ javac Test.java  
sh-4.3$ java Test  
Value of X is 30sh-4.3$
```
