CURS JAVA SE

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Programming with statements (1)

Understanding Fundamental Statements:

- Assignment Statements
- Conditional statements
- Iteration statements

Assignment Statements

Assignment	**variableName = 7;**
Pre-increment	**++variableName;**
Pre-decrement	**--variableName;**
Post-increment	**variableName++;**
Post-decrement	**variableName--;**
Method invocation	**performMethod();**
Object creation	**new ClassName();**

Programming with statements (2)

Conditional Statements

Formal Name	Keywords	Main Expression Components	Example
if	if, else (optional)	boolean	if (value == 0) {}
if-then	if, else if, else if (optional)	boolean	if (value == 0) {} else if (value == 1) {} else if (value >= 2) {}
if-then-else	if, else if, else if (optional), else	boolean	if (value == 0) {} else if (value >=1) {} else {}

switch	switch,
	case,
	default (optional),
	break (optional)
		char, byte, short,
		int, Character,
		Byte, Short,
		Integer,
		enumeration types
			switch (100) {
			case 100: break;
			case 200: break;
			case 300: break;
			default: break;
			}

Programming with statements (3)

Iteration Statements

Formal Name	Keywords	Main Expression Components	Example
for loop	for, break (optional), continue(optional)	Initializer, expression, update mechanism	for (i=0; i<j; i++) {}
Enhanced for loop	for, break (optional), continue (optional)	Element, array, or collection	for (Fish f : listOfFish) {};
while	while , break (optional), continue (optional)	Boolean expression	while (value == 1) {}
do-while	do, while, break (optional), continue (optional)	Boolean expression	do { } while (value == 1);

Preincrement / Postincrement in Java

Variable++ / Variable-- means: Increment variable AFTER evaluating the expression.

++Variable / --Variable means: Increment variable BEFORE evaluating the expression.

```
int i=0;
```

Postincrement:

```
System.out.println(i++);    //Output is 0
System.out.println(i++);    //Output is 1
System.out.println(i++);    //Output is 2
System.out.println(i);      //Output is 3
System.out.println(i);      //Output is 3
```

Preincrement:

```
System.out.println(++i);    //Output is 1
System.out.println(++i);    //Output is 2
System.out.println(++i);    //Output is 3
System.out.println(i);      //Output is 3
System.out.println(i);      //Output is 3
```

Exiting a loop

Exiting a loop with BREAK - exits completely a loop:

```
int index = 0;
while (index <= 1000) {
        index = index + 5;
                if (index == 400) {
                        System.out.println(“Index is 400”)
                        break;
        }
}
```

Exiting a loop with CONTINUE - exits a loop but continues from last index:

```
int index = 0;
while (index <= 1000) {
        index = index + 5;
                if (index == 400){
                        continue;
                }
                System.out.println(“The index is “ + index);
}
```

Exercises (1)

Exercitiu:

Convert the following for loop statement to a while loop and to a do-while loop.

```
long sum = 0;
for ( int i = 0; i <= 1000; i++ ){
   sum = sum + i;
}
```

Exercitiu:

How many times is the following loop body repeated? What is the printout of the loop?

```
int i = 1;
while( i < 10 )
   if ( (i++) % 2 == 0 )
      System.out.println( i );
```

Exercises (2)

Exercitiu:

Write a valid java statement for the following item:Output only the positive numbers from x up to y. Use the Scanner class to read the values for the variables.

Exercitiu:

Write a valid java statement for the following item:Output the numbers from y down to 0. Use the Scanner class to read the values for the variables.

Exercitiu:

Write a valid java statement for the following item:Output only the even numbers between the int x and int y. Use the Scanner class to read the values for the variables.

Exercitiu:

Write a valid java statement for the following item: Output the average of all numbers between int x and int y. Use the Scanner class to read the values for the variables.

Exercises (3)

Exercitiu:

Assume that the variables x and y contain integers. Write code to perform the following tasks.

a. Output the largest value, using an if statement.

b. Output the largest value, using the method Math.max

Exercitiu:

Write a program which asks the user a number between 1 - 7. Display the day of the week by using a switch statement. Use the Scanner class for value input.

Exercitiu:

Print out the indexes of a matrix using nested 2 “for” loops. Dimension should be inserted using the Scanner class. Try following versions:

a. Number of lines = number of columns
b. Number of lines != number of columns

Exercises (4)

Exercitiu:

Write a program to produce the multiplication table of 1 to 9 as shown using two nested for-loops

```
* |  1  2  3  4  5  6  7  8  9
------------------------------
1 |  1  2  3  4  5  6  7  8  9
2 |  2  4  6  8 10 12 14 16 18
3 |  3  6  9 12 15 18 21 24 27
4 |  4  8 12 16 20 24 28 32 36
5 |  5 10 15 20 25 30 35 40 45
6 |  6 12 18 24 30 36 42 48 54
7 |  7 14 21 28 35 42 49 56 63
8 |  8 16 24 32 40 48 56 64 72
9 |  9 18 27 36 45 54 63 72 81
```