



CSE 215: Programming Language II Lab

Lab – 3

Loops

Objective:

- To learn the usage of loops (for, while, do-while)

Loops allow us to perform repetitive tasks within a few blocks of code instead of doing them manually (e.g. copy pasting).

In Java, there are mainly three types of loops:

- a. for loop
- b. while loop
- c. do...while loop

<i>for</i>	<i>while</i>
<pre>for(int i = 0; i < 10; i++){ // do something }</pre>	<pre>while(condition){ // do something }</pre>
Anything that can be done using a for loop, can also be done using a while loop	

Most tasks can be done using for loops or while loops.

There is a third kind of loop called the do...while loop.

Syntax:

```
do {  
    // code to execute  
} while (condition);    // notice the semi-colon here
```

Can you guess, what the special characteristic of this type of loop is?

Nested loops:

Nested loops are simply loop within a loop.

However, the more loops you have within a nested loop, the more computationally expensive it becomes.

Syntax:

Nested for loop	Nested while loop
<pre>for (int i = 1; i <=5; i++) { // outer loop body for (int j = 1; j <=5; j++) { // inner loop body } // outer loop body }</pre>	<pre>while(someCondition) { // outer while loop body while(someOtherCondition) { // inner while loop body } // outer while loop body }</pre>

Task:

1. Write a program that takes an integer (say, n) and your name as inputs, and then prints your name n times to the console.
2. Write a program that prints the following patterns:

(a) 5 4 3 2 1	(b) 1
4 3 2 1	1 2
3 2 1	1 2 3
2 1	1 2 3 4
1	1 2 3 4 5

3. (a) Generate two random numbers, lower and upper, within the range 1-1000.

Random numbers in Java can be generated by using the method `Math.random()`.

e.g. To generate a random integer between min and max range:

```
int randNumber = (int)(min + Math.random() * (max - min + 1));
```

N.B. The `(int)` on the right hand side of the assignment operator is called type-casting and we will get to know about it in details later on.

- (b) Write a program which will use while loop to print all the integers between lower and upper which are divisible by 5 or 8 in descending order to the console **in one line**.