

The American University in Cairo
Computer Science & Engineering Department
CSCE 106 – Fundamentals of Computer Science

Lab Session 9

Programming of nested loops

Objectives:

- To understand nested loops and how the outer loop control variable and inner loop control variable are changed in a nested loop.

Problems:

Group 1: Write a C++ nested loops to generate the following patterns:

<pre> & </pre>	<pre> 0 & & 0 1 2 & & & & 0 1 2 3 4 & & & & & & 0 1 2 3 4 5 6 & & & & & & & </pre>	<pre> 8 7 6 5 4 3 2 1 # # # # # # # & & & & & 8 7 6 5 4 # # # # & & & 8 7 # </pre>
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<pre> 2 4 6 8 10 3 6 9 12 15 4 8 12 16 20 5 10 15 20 25 </pre>	<pre> 1 2 4 8 16 32 64 128 256 512 </pre>	<pre> 5 7 10 14 15 20 21 25 28 30 35 40 42 45 49 </pre>

Group 2: Show the output of each of the following C++ program segments:

<pre> int nm; const int one = 1; const int two = 2; const int three = 3; for (int n = 1; n < 5; n++) { switch(n % three) { case 1: nm = one; break; case 2: nm = two; break; default: nm = three; } for (int m = 1; m <= n; m++) cout << nm; cout << endl; } </pre>	<pre> for (int x = 5; x < 10; x *= 2) for (int y = 3; y <= 5; y++) cout << setw(3) << x << setw(3) << y << endl; cout << "The Final Value Is: << setw(5) << x / 2 % y; </pre>
	<pre> for (int i = 1; i < 6; ; i++) { for (int j = 1; j < 6; j++) if (i <= j) cout << setw(2) << 1; else cout << setw(2) << 0; cout << '\n'; } </pre>

Instructions:

- The TA solves selected problems from groups 1 & 2 (**30 minutes**)
- The TA asks students to solve one problem from each group and submit it in Lab.
- The TA asks students to solve the rest of problems from groups 1 & 2 to be **submitted**.