

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

Dr. Khalil	Exam II	Fall 2010
Last Name :		ID:
First Name: Form I		

EXAMINATION INSTRUCTIONS

- * Do not turn this page until asked to do so.
- * Exam time is **75** minutes.
- * Put the answers on the same question sheet, do not use any additional papers, even for scratch.
- * Write your name, ID, section no. in the indicated places.
- * Read the exam instructions.
- * Read the honesty policy.
- * Sign the following statement.

Academic Integrity Policy

Cheating in Exams is a violation of the honesty policy of AUC. Whispering, talking, looking at someone else's paper, or copying from any source is considered cheating. Any one who does any of these actions or her/his answers indicates that she/he did any of them, will receive a punishment ranging from zero in this exam to failing the course. If repeated, it may lead to dismissal from AUC.

I have read the honesty policy and exam instructions and I am presenting this exam as entirely my effort.

Signature: _____

DO NOT USE THIS SECTION

Question	Points	Grade
1	15	
2	20	
3	15	
4	10	
5	15	
6	25	
Total	100	

Question 1 (15 points)

Show the output of each of the following program segments:

<pre>Int a = 5; Int b = 2; If (a < b) for (k = a; k <= b; k++) cout << k << endl; else for (k = a; k >= b; k--) cout << k << endl;</pre>	
---	--

<pre>int x = 4, y = 1; while (x > 4) { y *= x++; cout << "x = " << setw(2) << x << "y = " << setw(2) << y << endl; } cout << "Final x = " << setw(2) << x << "Final y = " << setw(2) << y << endl;</pre>	
---	--

<pre>float a = 2, b = 2, c = 1.5, x; int d = 5, e = 4.5, y, z; x = a * b - c + d / e; y = a * (b - c) + d / e; z = a * (b - (c + d - 0.5) / e); cout << "x = " << setw(4) << x << " y = " << setw(4) << y << " z = " << setw(4) << z << endl;</pre>	
---	--

<pre>int x = 1, y = 1, z; y = y * x++; cout << "x = " << setw(2) << x << "y = " << setw(2) << y << endl; x = 6; y = 2; z = --x / y++; y = z-- + x++; cout << "x = " << x << " y = " << y << " z = " << z << endl;</pre>	
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Write a C++ program that takes a positive integer number not less than **0** and not more than **999**. The program checks the number and prints the message **"One BIG digit"** if the number is composed of only one digit, the message **"Two BIG digits"** if it is composed of two digits and the message **"Three BIG digits"** otherwise.

The Analysis

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[illegible]

[illegible]

Write a C++ program that uses **only two nested loops** to produce the following output:

[illegible]

Using only one variable, write only one C++ for-loop to generate the following series:

[illegible]

Question 5 (15 points)

The following C++ program takes a positive integer representing a binary number (composed of only 0s and 1s, such as 111010), computes and displays its equivalent decimal value. The program should accept only such number greater than 0 and not more than 111111. There are some missings (represented by dots) in the given program. Complete these missings such that the program could be compiled and run correctly.

The Program

```
#include <iostream>
#include <iomanip>
using namespace std;

void main ()
{   int num, nn, d, sum, b = 1;
    const int ten = 10;
    .....;

    Cout << "Enter a positive number composed of 0s and 1s greater than 0 and not more than
111111:";
    cin >> num;
    while (
        )
    {   cout << "Invalid input, Enter a positive number composed of 0s and 1s greater than 0 and
not more than 111111:";
        cin >> num;
    }

    nn = num;

    while ( nn != 0)
    {   d = nn ..... ten;

        sum = sum + d * b;

        b = .....;

        nn = nn / .....;
    }

    cout << "The binary number " << setw(8) << num << " is equivalent to " << setw(5) << sum <<
endl;
}
```

Question 6 (25 points)

Write a C++ program to enter scores of **n** students in a test. The number of scores (**n**) should not exceed **30** and each entered score is an integer value between **0** and **100** (inclusive). The program should accept only valid values, compute and print out the average and highest scores together with the number of scores that are above 90. Include in your program the necessary controls to validate the user input.

The Program

[illegible]

Write a C++ program to enter scores of **n** students in a test, compute and print out the average, maximum, and minimum scores. The program should also compute and display the number of scores that are below **50** and the number of scores that are over **90**. The computer should validate the user input such that **n** should be greater than **0** and not more than 30 and each score to be between **0** and **100** (inclusive). Format the computed average score to the nearest hundredth.

[illegible]

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