

The American University in Cairo
Department of Computer Science & Engineering
CSCI 106-03&04&09

Dr. KHALIL	Exam II	Fall 2012
Last Name :		ID:
First Name:		Form – I Section No. ()

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 Academic Integrity 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	25	
2	15	
3	15	
4	20	
5	25	
Total	100	

Question 1 (25 points)

Show the output of each of the following program segments:

<pre>int x = 3, y = 1, z; while (x > 1) z = y++ / 2 + --x; cout << "x = " << setw(2) << x << "y = " << setw(2) << y << "z = " << setw(2) << z << endl;</pre>	
<pre>const int ten = 10; int n = 765, s = 0; do { s = s + n % ten; n = n / ten; } while (n != 0); cout << endl << "The Final Result = " << s << endl;</pre>	
<pre>int a = .., b = .., c = ..; // a, b, and c are assigned some values if ((a > b) && false) cout << "It is the first case!!" << endl; else if ((b == c) true) cout << "It is the second case!!" << endl; else cout << "It is the third case!!" << endl;</pre>	
<pre>for (int c = 2; c < 5; c++) { for (int k = c; k <= 3 * c; k += c) cout << setw(3) << k; cout << endl; }</pre>	
<pre>const float pie = 3.14; const int L = 16; for (int c = 1; c <= L; c++) cout << '*'; cout << endl; cout << setw(8) << "Radius" << setw(8) << "Area" << endl; for (int c = 1; c <= L; c++) cout << '-'; cout << endl << setprecision(0); for (int r = 1; r < 3; r++) cout << setw(8) << r << setw(8) << pie * r * r << endl; for (int c = 1; c <= L; c++) cout << '*'; cout << endl;</pre>	

Question 2 (15 points)

- a) Write only the C++ loop to compute and print out the sum and count of all the positive **Odd** integers that are **divisible by 5** in the range 1 to 200 (inclusive).

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

- b) Write a C++ loop to generate the following sequence:

6 7 12 14 18 21 24

[illegible]

- c) Write a C++ loop to generate the following sequence:

9 10 15 17 21 24 27

[illegible]

Question 3 (15 points)

Write a **only two nested loops** in C++ to produce the following output:

#	#	#	#	#	#	#	#	#
@	#	#	#	#	#	#	#	#
@	@	#	#	#	#	#	#	#
@	@	@	#	#	#	#	#	#
@	@	@	@	#	#	#	#	#
@	@	@	@	@	#	#	#	#
@	@	@	@	@	@	#	#	#
@	@	@	@	@	@	@	#	#
@	@	@	@	@	@	@	@	#

[illegible]

Question 4 (20 points)

The **Academic Standing** of a student is determined according to his/her achieved credit hours as follows:

Credit Hours (CrHr))	Academic Standing
CrHr < 30	Freshman
30 <= CrHr < 60	Sophomore
60 <= CrHr < 90	Junior
CrHr >= 90	Senior

Draw a flow chart and write a program in C++ that reads a student's Credit Hours and prints his/her Academic Standing. **Show the three phases of software development: the analysis, design, and implementation. Implement your solution in C++ using nested-if structure, and second using the switch structure. Enforce validation on the input Credit Hours such that it is greater than or equal 0 and not greater than 160.**

The Analysis

[illegible]

The Flow Chart

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 30 evenly spaced, thin grey horizontal lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no vertical lines, headers, footers, or other markings present.

[illegible]

Write a C++ program to enter scores of **n** students in a test, compute and print out the average score (**avgScore**), the highest score (**highScore**), the number of scores that are below **50** (**countB50**), and the number of scores that are above **90** (**countA90**). Your program should validate the user input to only accept for **n** a positive integer value greater than **0** and not more than **40**, and for each score an integer value between **0** and **100** (inclusive). The average score should be printed rounded to the nearest integer.

[illegible]

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