

The American University in Cairo
Computer Science & Engineering Department
CSCE 106-05&07

Dr. KHALIL	Exam II	Spring 2012
Last Name :		ID:
First Name:	Form – I	Section:

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	35	
2	15	
3	10	
4	15	
5	25	
Total	100	

Question 1 (35 points)

Show the output of each of the following program segments:

```
const int ten = 10;
int d;
int n = 57089;
do
{   d = n % ten;
    cout << d;
    n = n / ten;
} while (n != 0);
cout << endl << "Done!!" << endl;
```

```
int x = 1, y = 2;
while (x < 3)
    y = y / x++;
cout << "x = " << setw(3) << x << setw(6) <<
"y = " << setw(3) << y << endl;
```

```
int a = .., b = .., c = ..; // a, b, and c are assigned
some values
if ((a > b) && (a <= b))
    cout << "It is the first case!!" << endl;
else
    if ((b == c) || (b != c))
        cout << "It is the second case!!" << endl;
    else
        cout << "It is the third case!!" << endl;
```

```
string nm;
for ( int n = 1; n < 5; n++)
{
    switch(n % three)
    {
        case 1:
            nm = "One!!";
            break;
        case 2:
            nm = "Two!!";
            break;
        default:
            nm = "Zero!!";
    }
    cout << nm << endl;
}
cout << "It is Done!!" << endl;
```

<pre> const int ten = 10; int d, s = 0, k = 1; int n = 1101; do { s = s + k * (n % ten); k = 2 * k; n = n / ten; } while (n != 0); cout << "The final result is = " << s << endl; </pre>	
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<pre> for (int c = 1; c <= 45; c++) if ((c % 5 == 0) && (c % 6 != 0) cout << setw(3) << c; cout << endl << "End!!" << endl; </pre>	
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<pre> Int s; const float pie = 3.14; for (s = 1; s <= 20; s++) cout << '-'; cout << endl; cout << setw(10) << "Radius" << setw(10) << "Area" << endl; for (s = 1; s <= 20; s++) cout << '-'; cout << endl; cout << setprecision(1); for (int r = 1; r <= 2; r++) cout << setw(10) << r << setw(10) << pie*r*r << endl; for (s = 1; s <= 20; s++) cout << '-'; cout << endl; </pre>	
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Question 2 (10 points)

Draw the Flow Chart and show the output of program segments:

<pre># include <iostream> # include <iomanip> using namespace std; void main() { int a = 5, b = 7, c = 3, t; if (b > a) { t = a; a = b; b = t; } if (c > b) { t = b; b = c; c = t; } if (b > a) { t = a; a = b; b = t; } cout << "a = " << setw(3) << a << endl; cout << "b = " << setw(3) << b << endl; cout << "c = " << setw(3) << c << endl; }</pre>	<u>Flow Chart</u> <u>Output</u>
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Question 3 (15 points)

Write a C++ loop to generate each of the following sequences:

1 2 4 8 16 32 64

.....

.....

.....

.....

.....

2 3 5 9 17 33 65

.....

.....

.....

.....

.....

Question 4 (15 points)

The following C++ program takes a binary number (an integer number of only 0's and 1's), compute and print out its equivalent decimal value. The program accepts only positive integer that is between 0 and 1111111 (inclusive). 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, d, sum = 0, BinaryWeight = 1;
  const int ten = 10;
  cout << "Enter a positive binary integer between 0 and 1111111: " << endl;
  cin >> num;
  while (.....)
  {
    cout << "Invalid Input!!, Re-enter: " ;
    .....
  }
  do
  {
    d = num % ten;
    sum = .....
    BinaryWeight = 2 * BinaryWeight;
    num = .....
  } while (.....);

  Cout << "The equivalent Decimal Value = " << setw(6) << .....<< endl;
}
```

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).

[illegible]