

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

Dr. Khalil	Exam II	Fall 2011
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 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	25	
2	15	
3	15	
4	15	
5	30	
Total	100	

Question 1 (25 points)

Show the output of each of the following program segments:

```
int x = 3, y = 3, z;  
while (x < 6)  
{   y *= ++x;  
    z *= x++ / y--;  
    cout << setw(3) << x << setw(3) << y << setw(3) << z  
<< endl;  
}
```

```
for ( int c = 1; c <= 45; c++)  
if (( c % 5 == 0) && ( c % 6 != 0 )  
    cout << setw(3) << c;  
cout << endl;
```

```
const int ten = 10;  
int d, s = 0, k = 1;  
int n = 1101;  
do  
{   s = s + k * ( n % ten );  
    k *= 2;  
    n /= ten;  
} while (n != 0);  
cout << "The final result is = " << s << endl;
```

```
# include <iostream>  
# include <iomanip>  
using namespace std;  
  
void main()  
{  
    int a = 15, b = 8, c = 22, t;  
    do  
    {  
        if ( b < a)  
        { t = a;  
          a = b;  
          b = t; }  
  
        if ( c < b )  
        { t = b;  
          b = c;  
          c = t; }  
    } while (( b < a ) || ( c < b ));  
  
    cout << "The first number = " << setw(3) << a << endl;  
    cout << "The second number = " << setw(3) << c << endl;  
}
```

```
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 + 2;  
            break;  
        case 2:  
            nm = two + 2;  
            break;  
        default:  
            nm = three + 2;  
    }  
    for (int m = 1; m <= n; m++)  
        cout << nm;  
    cout << endl;  
}
```

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.

Question 2 (15 points)

- a. Write a C++ loop to print the count and sum of all the integer numbers that are divisible by 7 but not divisible by 8 in the range 100 to 1000.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- b. Using only **one variable**, write a C++ for-loop to generate the following sequence:

3 5 6 9 10 12 15 18 20 21

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- c. Using only **one variable**, write a C++ for-loop to generate the following sequence:

2 4 5 8 9 11 14 17 19 20

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Question 3 (15 points)

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

```
@
2 3
@ @ @
2 3 4 5
@ @ @ @ @
2 3 4 5 6 7
@ @ @ @ @ @ @
2 3 4 5 6 7 8 9
@ @ @ @ @ @ @ @ @
```

This image shows a full page of a document template. It consists of approximately 30 evenly spaced horizontal dotted lines across the entire width of the page, providing a guide for handwriting or typing. There are no margins, headers, footers, or other markings present.

Question 4 (15 points)

The following C++ program takes n temperature readings of a day, computes and displays the average temperature (avgTemp) rounded to the nearest integer, the highest temperature (highTemp) and the number of readings below 0 (countBelow0). The program reads first an integer value for n that should be greater than 1 and not more than 24. Next, the program reads temperature readings one by one and accepts only an integer value between -10 and 42 for each. The program prints all resulting values in fixed format. 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>

.....

using namespace std;
void main ()

{   int num, temp, highTemp = ....., countBelow0 = .....;
    float avgTemp, sumTemp = .....;
    cout << setiosflags ( ios :: fixed );
    cout << "Enter the number of temperature readings, greater than 0 and not more than 24:";
    cin >> num;
    while (.....)
    {   cout << "Error!!, Invalid value for the number of temperature readings, Please reenter!!";
        .....;   }
    for ( ..... )
        .....
        cout << "Enter a temperature reading between -10 and 42:";
        .....;
        while (.....)
        {   cout << "Error!!, Invalid temperature reading, Please reenter!!";
            .....;
        }
        .....;
        If ( ..... )
            .....;
        If ( ..... )
            .....;
        .....
        .....;
    cout << "The Average Temperature = " << ..... << setw(3) << ..... << endl;
    cout << "The Highest Temperature = " << setw(3) << ..... << endl;
    cout << "The Lowest Temperature = " << setw(3) << ..... << endl;
}
```

Write a C++ program to generate a table showing the conversion from Celsius degrees to Fahrenheit degrees according to the following formula:

The program reads an integer value for the start Celsius (**startC**) which should be between **-5** and **10** (inclusive), an integer value for the end Celsius (**endC**) which should not be more than 50, and an integer value for the step Celsius (**stepC**) which should be greater than **0**. The program should enforce the necessary validation on all entered values The computed Farenheit should be printed rounded to the nearest integer in fixed format. The created table should include appropriate header, body and footer.

This image shows a full page of a document template. It consists of approximately 30 evenly spaced horizontal dotted lines across the entire width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings present.

7