The American University in Cairo
Computer Science Department
CSCI 106

Dr. KHALIL
Quiz-III
Fall 2007

Last Name: ..............................................  ID: ............................................

First Name: ..............................................  Form – I  Section No.:

EXAMINATION INSTRUCTIONS
* Do not turn this page until asked to do so.
* Exam time is 30 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

<table>
<thead>
<tr>
<th>Question</th>
<th>Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10</td>
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<tr>
<td>3</td>
<td>10</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
<td></td>
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</tbody>
</table>
Question 1 (30 points)
At AUC, the academic standing of a student is determined according to the number of the credit hours that he/she has achieved. The rules are as follows:

<table>
<thead>
<tr>
<th>Number of Credit Hours (CrH)</th>
<th>Academic Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>CrH &lt; 30</td>
<td>Freshman</td>
</tr>
<tr>
<td>30 &lt;= CrH &lt; 60</td>
<td>Sophomore</td>
</tr>
<tr>
<td>60 &lt;= CrH &lt; 90</td>
<td>Junior</td>
</tr>
<tr>
<td>90 &lt;= CrH &lt; 120</td>
<td>Senior</td>
</tr>
<tr>
<td>CrH &gt;= 120</td>
<td>Graduating Senior</td>
</tr>
</tbody>
</table>

Draw a flow chart and write a program in C++ to input the number of credit hours achieved by the student and print out his/her academic standing. **Show the three phases of software development: the analysis, design, and implementation. Implement your solution in C++ once using nested-if structure and second using switch structure.**

Assume that the input number of credit hours is always between 0 and 142.

The Analysis

The Flow Chart
The Program Using nested-if structure

The Program Using switch structure
Question 2 (10 points)

1. Rewrite the Boolean expression eliminating the not (!) operator.

\(! ( x < y )\)  
\(! ( ( x <= y ) || ( s > t ) )\)

2. What is the value of the following expressions:

\((x == x)\)  
\((x != 7) && (x == 7)\)  
\((y != 5) || (y == 5)\)

Question 3 (10 points)

Show the output of the following program:

```cpp
void main()
{
    int a = 5, b = 3, c = 9, 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 << “The First Number is “ << setw(3) << a << endl;
    cout << “The Second Number is “ << setw(3) << c << endl;
}
```