### CSC 103
**TEST Two**

**Date:** 28th Dec 2015  
**Time:** 16:00 - 17:15

<table>
<thead>
<tr>
<th>STUDENT NAME</th>
<th>Answer Key</th>
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<table>
<thead>
<tr>
<th>STUDENT ID #</th>
<th>20</th>
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<th>SECTION #</th>
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<table>
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<th>QUESTION #</th>
<th>MARKS</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
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<tr>
<td>TOTAL</td>
<td>40</td>
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**NOTE:** THERE ARE SIX (6) PAGES IN THIS TEST  
ONLY ONE SOLUTION WILL BE CONSIDERED FOR EACH QUESTION  
WRITE YOUR ANSWERS CLEARLY  
LAST PAGE IS EMPTY
Question 1  (10 marks)

Show the output of each code in the corresponding box to the right.

(1) int x = 4, y = -3, z = -4;
    if ( x < y || y > z) {
        cout << 2*(y - z) << endl;
    }
    if (x < 6 && y > -9 ) {
        cout << y*x << '	' << y+z*2 << '
';
    } else if ( !( z < -1) ) {
        cout << x + y << endl ;
        cout << 3*(x - y) << endl;  
    }
    cout << 3*(x - y) << endl;

(2) int i = 8, n = 2;
    while (i > 1) {
        cout << i << "\t";
        if (i % 2 == 0) {
            n += i;
            cout << n << endl;
        } else {
            cout << "*" << endl;
        }
        i -= 3;
    }

(3) int p, v;
    for (p=1 ; p <= 3 ; p++) {
        cout<<"(";
        for (v=11 ; v > 10 ; v--)
            cout << v+p;
        cout<<")"<<endl;
    }
Question 2  ( 8 marks )

A wholesale department is offering reduced prices on large orders of kitchen utensils. Write a C++ program to calculate and display the net price of an order based on three user inputs: Price (float), Quantity (int) and Payment method (char: A for cash in advance, D for cash on delivery). The net price of the order is calculated as follows:

\[ \text{Net price} = (\text{Price} - \text{Discount1} - \text{Discount2}) \times \text{Quantity} \]

\[ \text{Discount1} = 4\% \text{ of Price for Quantities of more than or equal to 1000 otherwise } 2\% \text{ of Price.} \]

\[ \text{Discount2} = 5\% \text{ of Price for cash in advance payment and no discount for cash on delivery.} \]

\[ \]

**SAMPLE INPUT/OUTPUT**

<table>
<thead>
<tr>
<th>Enter Price, Quantity and Payment Method (A or D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 2500 A</td>
</tr>
<tr>
<td>The net price is 22750</td>
</tr>
</tbody>
</table>

Answer:

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

int main()
{
    float Price, Discount1, Discount2;
    int Quantity;
    char Payment;

cout<<"Enter Price, Quantity and Payment method: \n";
cin >> Price >> Quantity >> Payment;

if ( Quantity >= 1000 )
    Discount1 = Price * 0.04;
else
    Discount1 = Price * 0.02;

if ( Payment == 'A' )
    Discount2 = Price * 0.05;
else
    Discount2 = 0;

float netprice = (Price - Discount1 - Discount2) * Quantity;

cout<<"The net price is "<< netprice << endl;

return 0;
}
```
Question 3 (10 marks)

In one of the introductory courses in a university, passing students are assigned a final grade of the uppercase letter P or lowercase p while failing students are assigned the letter F or f. Write a C++ program that asks the user to enter grades (P/p or F/f) of 30 students, then calculates and displays the percentage of passing and the percentage of failing students.

Answer

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

int main()
{
    char grade;
    int countp = 0, countf = 0;

    for (int i=1; i<=30; i++)
    {
        cout<<"Enter assigned grade: ";
        cin>>grade;

        if ( grade == 'P' || grade == 'p')
            countp++;
        else if ( grade == 'F' || grade == 'f')
            countf++;
    }

    cout<<countp/30.0*100 <<"% are assigned passing grade\n";
    cout<<countf/30.0*100 <<"% are assigned failing grade\n";

    return 0;
}
```
Question 4

Consider a file named transaction.txt which contains unknown number of lines. Each line contains data of one transaction as follows: username (string), amount (float), and membership number (int). Write a C++ program that reads the data from the file then displays on screen the number of users, the total amount and the highest amount. Reading from file should stop when one or more of the conditions given below become true:

1. The end of the file has been reached.
2. The username “user999” is reached

<table>
<thead>
<tr>
<th>transaction.txt</th>
<th>Sample Screen Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>user001 12.5 12345</td>
<td>Number of users: 54</td>
</tr>
<tr>
<td>user002 5.2 87542</td>
<td>Transactions total amount: 2658.7</td>
</tr>
<tr>
<td>user003 33.1 93568</td>
<td>The highest amount: 280</td>
</tr>
</tbody>
</table>

Answer

```cpp
#include<iostream>
#include<fstream>
using namespace std;

int main()
{
    ifstream fin;
    fin.open("transaction.txt");
    string username;
    float amount;
    int number;

    float sum = 0;
    int count = 0;
    float max = 0;

    fin>>username; // while ( fin && username!= "user99")
    while ( fin )
    {
        if ( username=="user99") break;
        fin>>amount >> number;
        sum += amount;
        if ( amount > max )
            max = amount;
        count++;
        fin>>username;
    }
cout<<"Number of users: "<< count << endl;
cout<<"Transactions total amount: "<< sum << endl;
cout<<"The highest amount: "<< max << endl;

fin.close();
return 0;
}