CMPE110, Quiz II, Sample Questions

Q1) A/ Complete the following code that reads an integer number N from keyboard and then calls a function with the prototype

    int FindProduct(int N);

to compute the product of all integers from 1 and N, i.e.,

Product=1*2*3*……*N

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

// Define FindProduct function [40pts]

    ----

int main( )

```cpp
{int N, Product;
cin>>N;
```

// Call the function FindProduct to compute Product [10pts]

```cpp
cout<<"Product = "<< Product;
return 0;}
```

B/ Using the function **FindProduct** from part A, write down the C++ statement to compute the following:

Result=(1 x 2 x 3 x 4 x … x N) - (1 x 2 x 3 x 4 x … x M)

Q2) A/ Trace and show the output of the code shown below. Use the following input:

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

int F1(int x,int y)
{int A;
A=x*y;
cout << "A=" << A << endl;
return A;}

int main(){
int S1,S2, A1,A2,TA;
cin >> S1 >> S2;
A1=F1(S1,S2);
cin >> S1;
A2=F1(S1,S1);
TA=A1+A2;
cout << "TA=" << TA << endl;
return 0;}
```

Trace section

S1	S2	A1	A2	TA	x	y	A

Output section

b) Explain what this code do?

Q3) A/ Trace the following code and show its output. Use the following input:
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```cpp
#include<iostream>

using namespace std;

int F1(int M)

{

int r=0,i;

for (i = 1; i <= M; i++)

    if (i%3==0)

     {cout<<i<<endl;

      r+= i;}


return r;}


int main(){

int N,R;

cin >> N;

R=F1(N);

cout << "R= " << R << endl;

return 0;

}
```

Trace section						
N	R	M	i	i<=M	i%3==0	r

Output section

B/ Explain what does this code do?

Q4) Complete the given code that finds the maximum of three numbers.

```cpp
#include <iostream>
using namespace std;
// function prototype
double maximum( double, double, double );
int main(){
double n1,  n2,  n3, Max;
cin >> n1 >> n2 >> n3;
// Activate the function maximum to find the largest
// number


    ------------------------------------------------------

cout<<"Maximum is: "<< Max;
return 0;  }


// maximum function definition
    -------------------------------------------------------
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    -------------------------------------------------------
    -------------------------------------------------------
    -------------------------------------------------------
    -------------------------------------------------------
```

Q5) Write a C++ function that will calculate and display the real roots of the quadratic equation

$$ax^2 + bx + c = 0$$

using the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

Assume that a, b, and c are double arguments whose values are given, and that x_1 and x_2 are double local variables. Also, assume that $b^2 > 4ac$, so that the calculated roots will always be real.

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(b) Write a C++ main() function together with all the necessary #include directives and declarations to find the roots of $2x^2 + 3x + 1 = 0$ using the function you defined above.

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