



*Philadelphia University*  
*Faculty of Engineering*

## **Marking Scheme**

Examination Paper  
Department of CE  
**Module: Programming Language (630203)**

Final Exam

Second Semester

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Sections 1,2,3,4 and 5

Weighting 50% of the module total

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# Marking Scheme

## Programming Language (630203)

The presented exam questions are organized to overcome course material, the exam contains 6 questions; *all questions* are compulsory requested to be answered. Thus, the student is permitted to answer any question out of the existing ones in this section.

### Marking Assignments

The following scheme shows the marks assignments for each question. They show also the steps for which a student can get marks along the related procedure he/she achieves.

**Question 1** This question is attributed with 10 marks if answered properly

The answer for this question as the following:

- Variables that can be accessed and altered only within the function in which they are defined are called:  
a) User defined variables                      b) Static variables  
c) **Local variables**                              d) Global variables
- What character is used to indicate that a function parameter is call-by-reference?  
a) **&**    b) [ ]    c) \*    d) %
- Suppose x is 5 and y is 7. Choose the value of the following expression:  
(x != 7) && (x <= y)  
a. false    c. 0  
b. **true**    d. null
- The data type returned by a function is dictated by its:  
a) **prototype**                                      b) constructor                                      c) return statement                              d) address
- Which of the following is not allowed in overloading a function?  
a) Two functions can have the same name.  
b) Two functions have the same name and the same type of parameters, but one function takes two parameters while the other takes only one parameter.  
c) Two functions have the same name and one takes parameters of type integer while another takes parameters of type double.  
d) **Two functions have identical parameter lists but different return types.**
- The C++ data type that can take on either one of only two possible values is known as:  
a) binary    b) character    c) short    d) **boolean**
- Consider the following C++ program.  

```
int a[10] = {1,3,2,0,5,-2,6,8,7,11};  
int sum, p;     int c = 1;     sum = p = a[0];  
for ( int i = 1; i < 10; i++){  
    if (a[i] > p) {  
        sum += a[i];     p = a[i];     c++;     } }  
cout << c << " " << sum;
```

Which of the following is the resulting output?  
a) 10 41    b) 9 30    c) 4 7    d) **6 34**
- What gets output when the following statement executes? cout<<(2 \* 3 / 5);  
a) 0    b) **1**    c) 2    d) 8
- Which of the following is a valid use of cin or cout, assuming that var is a variable of type int?  
a) cout >> ~Hello World!";                      b) cin << ~Hello World!";  
c) **cin >> var;**                                      d) cout >> var;
- Given the following function prototype: int myFunc(int, int); which of the following statements is valid? Assume that all variables are properly declared.  
a. cin >> myFunc(y);  
b. **cout << myFunc(myFunc(7, 8), 15);**  
c. cin >> myFunc('2', '3');  
d. cout << myFunc(myFunc(7), 15);

**Question 2** This question is attributed with 15 marks if answered properly

The answer for this question as the following:

a)	Code	Output
1.	<pre>int x = 55; int y = 5; //2 marks switch (x % 7) { case 0: case 1: y++; case 2: case 3: y = y + 2; case 4: break; case 5: case 6: y = y - 3; } cout &lt;&lt; y &lt;&lt; endl;</pre>	2
2.	<pre>count = 1; num = 25; //2 marks while (count &lt; 25) {     num = num - 1;     count++; } cout &lt;&lt; count &lt;&lt; " " &lt;&lt; num &lt;&lt; endl;</pre>	25 1
3.	<pre>int alpha[5] = {2, 4, 6, 8, 10}; //2 marks int j; for (j = 4; j &gt;= 0; j--)     cout &lt;&lt; alpha[j] &lt;&lt; " "; cout &lt;&lt; endl;</pre>	10 8 6 4 2
4.	<pre>int main() //2 marks {     double F[5]={6,-2,-8,2,-5};     int i;     for (i=1; i &lt; 4 ; i ++ )         F[i] = F[i] * i;     for (i=0; i &lt; 5 ; i ++ )         cout &lt;&lt; F[i] &lt;&lt; endl;     return 0; }</pre>	6 -2 -16 6 -5
5.	<pre>include &lt;iostream&gt; //2 marks using namespace std; int SomeFunA(int x); int SomeFunB(int y); int SomeFunC(int z); int main() {int rc=3; int n = 3;   rc = SomeFunA(n);   cout &lt;&lt; "The result is " &lt;&lt; rc &lt;&lt; "\n";   return 0; } int SomeFunA(int x) {x = x + 3;  x = SomeFunB(x);  return x; } int SomeFunB(int y) {y = y + 3;  y = SomeFunC(y);  return y; } int SomeFunC(int z) {z = z + 3;  return z; }</pre>	12

b) For the following questions assume these declarations:

(5 marks)

```
int   qqsv[] = {2, 3, 1, 5};
float nums[] = {3.5, 1.0, 1.5};
float wips[] = {200, 30, -55, 0.0, 1.99};
```

What is printed by these statements?

1. `cout << qqsv[2];`

Output: 1

2. `cout << nums[qqsv[2]];`

Output: 1.0

3. `int n = 1;`  
`for (int i=0; i<3; i++)`

```
    {n = n + qqsv[i]; }
```

```
cout << n;
```

Output: 7

4. `int n = 0;`  
`for (int i=0; i<4; i++)`

```
    {if (wips[i] > wips[i+1])
```

```
        {n++;}
```

```
    }
```

```
cout << n;
```

Output: 2

5. `int n = 0;`  
`for (int i=0; i<3; i++)`

```
    { if (nums[i] > wips[i])
```

```
        break;
```

```
        n++;
```

```
    }
```

```
cout << n;
```

Output: 2

**Question 3** This question is attributed with 5 marks, if answered properly.

The answer for this question as the following:

T	The default case is optional in the switch statement.
T	After a break statement executes, the program continues to execute with the first statement after the structure.
F	An array can store many different types of values.
F	The following statement creates alpha to be a two-dimensional array of 25 rows and 10 columns. <code>int alpha[10][25];</code>
F	Function overloading refers to several functions with different names but the same set of parameters.

**Question 4** This question is attributed with 6 marks, if answered properly.

The complete code for this question as the following:

	The Given Code	The corresponding required Code:
1.	<pre>for(int i=0; i&lt;5; i++)     cout&lt;&lt;"test"&lt;&lt;endl;</pre>	<p>Using while statement only:</p> <pre>int i=0; while(i&lt;5) {     i++;     cout&lt;&lt;"test"&lt;&lt;endl; }</pre>
2.	<pre>if( x &lt; 30)     if(y == 20)         if( z != 10)             cout&lt;&lt;"Help";</pre>	<p>Using one if statement only:</p> <pre>if ( x &lt; 30 &amp;&amp; y == 20 &amp;&amp; z != 10)     cout &lt;&lt;"help";</pre>
3.	<pre>switch(category) {     case 1:         cout &lt;&lt; "Class 1";         break;     case 2:         cout &lt;&lt; "Class 2";         break;     case 3:         cout &lt;&lt; "Class 3";         break;     default:         cout &lt;&lt; "error"; }</pre>	<p>Using if..else statement only:</p> <pre>if (category == 1)     cout&lt;&lt;"Class 1"; else if (category == 2)     cout&lt;&lt;" Class 2"; else if (category == 3)     cout&lt;&lt;" Class 3"; else     cout&lt;&lt;"error";</pre>
4.	<pre>while(f &lt; 5)     cout&lt;&lt;++f;</pre>	<p>Using do/while only:</p> <pre>do {     cout &lt;&lt; ++f; } while( f &lt; 5);</pre>

**Question 5** This question is attributed with 5 marks, if answered properly.

The complete code for this question as the following:

```
#include <iostream>
#include <cmath>
using namespace std;
int calFun (int, int);
int main ( )
{
    int n,m,k;
    cout << "enter n  ";
    cin >> n;
    cout << "enter m  ";
    cin >> m;
    k = calFun (n,m);
    cout << "The value of z = " << k << endl;
    return 0; }
```

(1.5 marks)

```
int calFun (int a ,int b)
{
    return pow (a,5) +pow(2*a+b,7); }
```

(1.5 marks)

```
int calFun (int a ,int b)
{
    return pow (a,5) +pow(2*a+b,7); }
```

(2 marks)

**Question 6** This question is attributed with 9 marks, if answered properly.

The complete code for this question as the following:

```
#include <iostream>
using namespace std;
void ShowMenu ();
void GetChoice (int &c);
int findMin (const int x [], int size);
int calcAver (const int x [], int size);
bool IsOdd (int n);
int x,Choice, Result;
```

```

const int count =6;
int array [count]={11,12,34,56,78,32};
int main ()
{
    ShowMenu ();
    GetChoice (Choice);
    return 0;
}
void ShowMenu ()
{
    cout << "\t\tMain Menu\n\n";
    cout << "\t 1. Find the Minimum of all numbers in the array:\n";
    cout << "\t 2. Calculate the average of all numbers in the array:\n";
    cout << "\t 3. Odd number \n";
    cout << "\t 4. Exit Program.\n";
}
void GetChoice (int &c)
{
    cin >> c;
    while (c!=4)
    {
        switch(c)
        {
            case 1:
                Result = findMin (array, count);
                cout << "The the Minimum = :\t " << Result;
                break;
            case 2:
                Result = calcAver (array, count);
                cout << "The the Average = :\t " << Result;
                break;
            case 3:
                cout << "Enter an integer Number: \t";
                cin >> x ;
                cout << IsOdd (x);
                break;
            default :
                cout << "You must enter valid number\t";
        }
        ShowMenu ();
        cin >> c;
    }
}
int findMin (const int x [], int size)
{
    int m = x[0];
    for(int i=1;i<size;i++)
        if(x[i]<m)
            m=x[i];
    return m;
}
int calcAver (const int x [], int size)
{
    int s = 0;
    for(int i=0;i<size;i++)
        s+=x[i];
    return s/size;
}
bool IsOdd (int n)
{
    if(n%2==0)
        return true;
    return false;}

```

(2 marks)

(1 mark)

(1 mark)

(2 marks)

(1 mark)

(1 mark)

(1 mark)