


Philadelphia University Faculty of Engineering Department of Computer Engineering		Date:- 19/06/2017 Allowed time:- 2 Hours
Programming Language (630263) Final Exam		
Student Name: -		ID: -
Instructor:-	<input type="checkbox"/> Dr. Nasser Halasa	<input type="checkbox"/> Dr. Ali Al-Khawaldeh
	<input type="checkbox"/> Eng. Sultan Al-Rushdan	
Lecture Time:-	<input type="checkbox"/> 10:10-11:10 حتم	<input type="checkbox"/> 11:10-12:10 حتم
	<input type="checkbox"/> 15:10-16:10 حتم	<input type="checkbox"/> 12:10-13:10 حتم
	<input type="checkbox"/> 12:45-14:15 نر	<input type="checkbox"/> 14:15-15:45 نر

Question 1: Identify the choice that best completes the statement or answers the question. **10 Points**

1- Which of the following function prototypes is valid?

- a. `int funcTest(int x, int y, float z){}` b. `funcTest(int x, int y, float){}`;
c. `int funcTest(int, int y, float z)` d. `int funcTest(int, int, float);`

2- Which of the following is the "and" operator?

- a. `!` b. `||` c. `!=` d. `&&`

3- What is the value of x after the following statements execute?

`int x = (0 <= 3 && 'A' < 'F') ? 2 : 4;`

- a. 2 b. 3 c. 4 d. 5

4- Which of the following is not a function of the `break` statement?

- a. To exit early from a loop b. To skip the remainder of a switch structure
c. To eliminate the use of certain flag variables in a loop d. To ignore certain values and go to the next iteration.

5- Which of the following is a selection statement in C++?

- a. `for` b. `switch` c. `do...while...do` d. `while`

6- Choose the invalid variable name from the below

- a. `Int` b. `char` c. `DOUBLE` d. `__0__`

7- How many times "hello" is get printed?

```
for(int x=-1; x<=10; x++)
{
    if(x < 5)
        continue;
    else
        break;
    cout<<"hello";
}
```

- a. Infinite times b. 11 times c. 0 times d. 10 times

8- Suppose that `list` is an array of 10 components of type `int`. Which of the following codes correctly outputs all the last 3 elements of `list`?

- a. `for (int j = 8; j < 10; j++)`
`cout<<list[j]<<" ";`
b. `for (int j = 7; j <= 9; j++)`
`cout<<list[j]<<" ";`
c. `for (int j = 8; j <= 10; j++)`
`cout<<list[j]<<" ";`
d. `for (int j = 7; j <= 10; j++)`
`cout<<list[j]<<" ";`

9- Which of the following correctly declares and initializes `alpha` to be an array of four rows and three columns and the component type is `int`?

- a. `int alpha[4][3] = {{0,1,2,3},{1,2,3,4},{2,3,4,5}};`
b. `int alpha[3][4] = {{0,1,2,3},{1,2,3,4}{2,3,4,5}};`
c. `int alpha[4][3] = {{0,1,2},{1,2,3},{2,3,4},{3,4,5}};`
d. `int alpha[3][4] = {0,1,2,1,2,3,2,3,4,3,4,5};`

10- Consider the following function.

```
int Fun(int num)
{
    if (num >= 10)
        return (num+2);
    else
        return (num+3);
}
```

What is the output of the following statement `cout << Fun(Fun(8)) << endl;`

- a. 10 b. 11 c. 12 d. 13

Question 2: Find error(s) in the following codes**5 Points**

Code	Correction
<pre>int A[5]={3;5;6;4;1}; for(int i=0;i<=5;i++) { A[i]+=5; }</pre>	
<pre>char x; if('c'<x && x<'t') cout<<x%2<<endl; Else cout<<x%3<<endl;</pre>	
<pre>double x=1; while(x<7); { cout<<power(x,3)<<endl; x+=1; }</pre>	
<pre>int A[2][3]={{1,2,3,4},{4,1,2,3}}; for(int i=0;i<3;i++) for(int j=0;j<2;j++) cout<<A[i][j];</pre>	
<pre>float fun(int x) { float a=(x*5.0+3.0)/x; } void main() { cout<<fun(5,4); }</pre>	

Question 3: Perform the following tasks assume all variables are probably declared and initialized. **6 Points**

<p>Rewrite the following using for statements</p> <pre>int sum=0,x=1; do { sum += x*x; x++; }while(x<=5);</pre>	
<p>Rewrite the following using <u>switch statements</u></p> <pre>char ch='V'; if(ch>='A' && ch<='C') cout<<"statement 1"<<endl; else if(ch=='X' ch=='Y' ch=='Z') cout<<"statement 2"<<endl; else cout<<"statement 3"<<endl;</pre>	
<p>Define a one dimension array of type integer that contains 15 elements and initialize it using $A[i] = 3^i$ where i is the index of the element in the array.</p>	

Question 4: Find the output of the following programs:**10 Points**

<pre>int n = 4, k = 2; cout << n--*++k<<endl; cout << n << endl; cout <<n/2*3+k++<< endl; cout << k << endl;</pre>	
<pre>int n = 4; while (n > 1) cout << --n << endl; cout << n << endl;</pre>	
<pre>int i = 5, j = 6, k = 7, n = 3; bool a=(i>5) (j>0)&&(k!=7); bool b=(n==i) (! (k==j)) cout << a <<"\n"<< b << endl;</pre>	
<pre>int f = 0, c = 5; if (!f && c == 0) { cout << "true" << endl; c-=3; } else { cout<<"false"<<endl; c+=3; } cout << "c = " << c << endl;</pre>	
<pre>const int L = 10; char m[L]={'h','e','l','l','o','w','o','r','l','d'}; for(int i=4;i<L;i+=3) cout << m[i] << endl;</pre>	
<pre>int fun2(int b,int c) { int y=b+c; return y; } int fun(int a, int b , int c) { int x; x=fun2(b,c); x=a/x; return x; } void main() { cout << fun(12,9,5) << endl; cout << fun2(5,4) << endl; }</pre>	
<pre>int mod(int x,int y) { return (x%y); } void main() { for(int i=4;i<10;i+=3) cout<<mod(i,5)<<endl; }</pre>	
<pre>int x = 1, y = 4; if (x >= 1) if (y <= 4) { x++; y--; } else { x--; Y++; } else y+=10; cout << x << " " << y << endl;</pre>	
<pre>int d = 7; do { cout<<--d<<endl; }while (d>5);</pre>	

```
int x=17;
switch(x%7)
{
case 1:
case 2:
    cout<<x%2<<endl;
    break;
case 3:
    cout<<x%3<<endl;
case 4:
    cout<<x%4<<endl;
    break;
case 5:
case 6:
    cout<<x%5<<endl;
}
```

Question 5: Write a program that perform the following tasks:

4 Points

- 1- Define a function called `calc_avg` that calculate the average of three double numbers and return their average.
- 2- Define the function `double calc_stdv(double x,double y,double z,double m)` that calculate and returns the `sd` value using the following equation.

$$sd = \sqrt{\frac{(x - m)^2 + (y - m)^2 + (z - m)^2}{3}}$$

- 3- Write the main function which will ask the user to enter 3 real numbers then it will call `calc_avg` to calculate the average of the three numbers entered by the user, then it will call the `calv_stdv` to calculate the standard deviation of the three numbers, then it will display the average and standard deviation on the screen.

Question 6: Write a program that perform the following tasks:

5 Points

- 1- define a 2 dimension array of 5 rows and 6 columns.
- 2- The program should ask the user to enter the first row of the array from keyboard.
- 3- The program should initialize the remaining rows of the array using following function

$$A[\text{row}][\text{col}] = (\text{row} + 1) * A[0][\text{col}];$$

as the following:

$$\begin{bmatrix} a & b & c & d & e & f \\ 2a & 2b & 2c & 2d & 2e & 2f \\ 3a & 3b & 3c & 3d & 3e & 3f \\ 4a & 4b & 4c & 4d & 4e & 4f \\ 5a & 5b & 5c & 5d & 5e & 5f \end{bmatrix}$$

- 4- Find the average of all elements in the array.
- 5- Display the array and the average.