


Philadelphia University Faculty of Engineering Department of Computer Engineering		Date:- 06/05/2015 Allowed time:- 50 minutes
Programming Language (630263)		Second Exam
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Lecture Time: <input type="checkbox"/> ح ٨:١٠ – ٠٩:٠٠ <input type="checkbox"/> ح ١٠:١٠ – ١١:٠٠ <input type="checkbox"/> ح ١٢:١٠ – ١٣:٠٠ <input type="checkbox"/> ح ١٤:١٥ – ١٥:٤٥		

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

1- The length of the string "computer science" is _____.
a. 14 b. 15 c. 16 d. 18

2- Which of the following is the "not equal to" relational operator?
a. ! b. | c. != d. &

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

```
int x;
x = ((5 <= 3 && 'A' < 'F') ? 3 : 4)
```

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

4- What is the output of the following C++ code?

```
int x = 35, y = 45, z;
if (x > y)
    z = x + y;
else
    z = y - x;
cout << x << " " << y << " " << z << endl;
```

a. 35 45 80 b. 35 45 10 c. 35 45 -10 d. 35 45 0

5- Which of the following is a repetition structure in C++?
a. if b. switch c. while...do d. do...while

6- The output of the statement: `cout << pow(3.0, 2.0) + 5 << endl;` is _____.
a. 11.0 b. 12.0 c. 13.0 d. 14.0

7- Suppose that `printHeading` is a function without any parameters. Which of the following is a valid function declaration?
a. `void printHeading();` b. `void printHeading()`
c. `void printHeading(noParameters);` d. `void printHeading(void)`

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

a. `for (int j = 1; j < 10; j++)`
`cout << list[j] << " ";`
`cout << endl;`

b. `for (int j = 0; j <= 9; j++)`
`cout << list[j] << " ";`
`cout << endl;`

c. `for (int j = 1; j < 11; j++)`
`cout << list[j] << " ";`
`cout << endl;`

d. `for (int j = 1; j <= 10; j++)`
`cout << list[j] << " ";`
`cout << endl;`

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

10- Consider the following recursive function.

```
int recFunc(int num)
{
if (num >= 10)
    return 10;
else
    return num * recFunc(num + 1);
}
```

What is the output of the following statement?

```
cout << recFunc(8) << endl;
```

a. 4

b. 8

c. 72

d. 720

Question 2: Find the output of the following programs:

<pre>int n = 4, k = 2; cout << ++n+k<< endl; cout << n << endl; cout <<--k+n++ << endl; cout << k << endl;</pre>	<pre>7 5 6 1</pre>
<pre>int n = -2; while (n < 1) cout << ++n << endl; cout << n << endl;</pre>	<pre>-1 0 1 1</pre>
<pre>int i = 5, j = 6, k = 7, n = 3; cout << i + j * k - k % n << endl; cout << i / n << endl;</pre>	<pre>46 1</pre>
<pre>int found = 0, count = 5; if (!found count == 0) { cout << "true" << endl; count--=3; } else { cout<<"false"<<endl; count+=3; } cout << "count = " << count << endl;</pre>	<pre>true count = 2</pre>
<pre>const int LENGTH = 12; char message[LENGTH]="hello world"; for(int i=0;i<LENGTH;i+=3) cout << message[i] << endl;</pre>	<pre>h l w l</pre>
<pre>int fun2(int b,int c) { int y=b%c+1; return y; } int fun(int a, int b = 1, int c =2) { int x; x=fun2(b,c); x+=a; return x; } int main() { cout << fun(12,5); return 0; }</pre>	<pre>14</pre>
<pre>int mod(int x,int y) { return (x%y); } int main() { for(int i=0;i<10;i+=3) cout<<i<<"\t"<<mod(i,5)<<endl; return 0; }</pre>	<pre>0 0 3 3 6 1 9 4</pre>

<pre> } int x = 10, y = 40; if (x >= 10) if (y < 40) { x--; y++; } else { x++; y--; } else y+=5; cout << x << " " << y << endl; </pre>	11 39
<pre> int x=10; switch(x%7) { case 1: case 2: cout<<x%4<<endl; break; case 3: cout<<x%5<<endl; case 4: cout<<x%6<<endl; break; case 5: case 6: cout<<x%7<<endl; } </pre>	0 4
<pre> int d = 3; do { cout<<--d<<endl; }while (d>=0); </pre>	2 1 0 -1

Question 3: Find error(s) in the following codes

Code	Correction
<pre> int A[5]={3,5,6,4,1} for(int i=0;i<=5;i--) { A[i]+=5; } </pre>	<pre> int A[5]={3,5,6,4,1}; for(int i=0;i<5;i++) </pre>
<pre> if(2<x<10) cout<<x%2<<endl; Else cout<<x%3<<endl; </pre>	<pre> if(2<x && x<10) else </pre>
<pre> int x; while(x<7); { cout<<power(x,3)<<endl; x++; } </pre>	<pre> X=3; while(x<7) cout<<pow(x,3)<<endl; </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> int A[2][4]={{1,2,3,4},{4,1,2,3}}; for(int i=0;i<2;i++) for(int j=0;j<4;j++) cout<<A[i][j]; </pre>
<pre> int fun(int x) { x=(x*5+3)/x; } void main() { cout<<fun(5,4);} </pre>	<pre> int fun(int x) { return x;} void main() { cout<<fun(5);} </pre>

Question 4: Perform the following tasks assume all variables are probably declared and initialized.

<p>Rewrite the following using do while statements</p> <pre>int sum=0; for (int x = 1; x <= 5 ; x++) { sum += x*x; }</pre>	<pre>int x=1; do { sum+=x*x; x++; } while (x<=5);</pre>
<p>Rewrite the following using if else statements</p> <pre>switch(a) { case 3: case 7: cout<<"statement 1"<<endl; break; case 5: cout<<"statement 2"<<endl; break; default: cout<<"statement 3"<<endl; }</pre>	<pre>if (a==3 a==7) cout<<"statement 1"<<endl; else if (x==5) cout<<"statement 2"<<endl; else cout<<"statement 3"<<endl;</pre>

Question 5: Write a c++ function that called search which will accepts the following parameter

- 1- An array of integer elements
- 2- An integer value that represent the number of elements in the array
- 3- An integer value called key.
- 4- An integer value called sub

The function should find every element in the array that is equal to key and replace it with sub. The function will return an integer value that represent the number of values that had replaced if non it should return 0.

```
int search(int arr[],int size,int key,int sub)
{
    int counter=0;
    for(int i=0;i<size;i++)
    {
        if(arr[i]==key)
        {
            arr[i]=sub;
            counter++;
        }
    }
    return 0;
}
```

Question 6: Write a program that perform the following:

- 1- define a 2 dimension array of 5 rows and 6 columns.
- 2- Then the program should input the elements of the array from the keyboard.
- 3- Then the program should search the array to find the elements that are multiple of 7 and divide each element on 3 and store it back in its location.
- 4- Then the program should display the result array on the screen.

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

int main()
{
    int arr[5][6];
    for(int i=0;i<5;i++)
        for(int j=0;j<6;j++)
            cin>>arr[i][j];

    for(int i=0;i<5;i++)
    {
        for(int j=0;j<6;j++)
        {
            if(arr[i][j]%7==0)
            {
                arr[i][j]=arr[i][j]/3;
            }
        }
    }

    for(int i=0;i<5;i++)
    {
        for(int j=0;j<6;j++)
        {
            cout>>arr[i][j]<<"\t";
        }
        cout<<endl;
    }

    return 0;
}
```