COSC 1437 (DL)- Fall 2016
Quiz 1- Chapters 1-7 & Notes
Total Points: 70

Due: Saturday, September 17th @ 11:59PM. Look at Syllabus/ICR about late work.

Directions: For Questions 1-26, clearly mark answers on a separate word (or notepad) document. See sample file/directions provided by your professor and submit to the appropriate location on the MyTCC (BlackBoard) site.

– Assume all variables are properly declared- unless otherwise mentioned.

Multiple Choice. Mark the one best answer for each question. **(2 pts. each)**

1. Assume you have three `int` variables: `x = 2, y = 6,` and `z`. Choose the value of `z` in the following expression:

```
z = (y / x > 0) ? x : y;
```

A. `2`
B. `3`
C. `4`
D. `6`

2. Given the function prototype:

```
double testAlpha(int u, char v, double t);
```

which of the following statements is legal?

A. `cout << testAlpha(5, 'A', 2);`
B. `cout << testAlpha( int 5, char 'A', int 2);`
C. `cout << testAlpha('5.0', 'A', '2.0');`
D. `cout << testAlpha(5.0, "65", 2.0);`

3. In the following table:

```
int table[3][4] = {3,7,0,2,4,9,8,1,3,6,5,4};
```

what is the value of `table[2][1]`?

A. `4`
B. `7`
C. `6`
D. `1`

4. What is the output of the following code fragment?

```
int n = 1;
while (n <= 5)
   cout << n << ' ';
n++;
```

A. `1 2 3 4 5`
B. `1 2 3 4`
C. `1 1 1` forever
D. `2 3 4 5`

5. How many times does the statement below execute?

```
int x = 27;
int y = 10;

do
    x = x / 3;
while (x >= y);
```

A. none
B. once
C. twice
D. three times

6. The code that will swap the first two elements of an array called `friends` is:

A.
```
friends[0] = friends[1];
friends[1] = friends[0];
```
B.
```
temp = friends[1];
friends[2] = friends[1];
friends[1] = temp;
```
C.
```
temp = friends[0];
friends[1] = friends[0];
friends[0] = temp;
```
D.
```
temp =  friends[0];
friends[0] = friends[1];
friends[1] = temp;
```

7. With respect to the loop in the following `main` function, what is missing?

```
int main()
{
  int loopCount;
  while (loopCount <= 8)
  {
     cout << "Hi";
     loopCount++;
  }
  return 0;
}
```

A. the initialization of the loop control variable
B. the testing of the loop control variable
C. the incrementation of the loop control variable
D. nothing is missing.

8. Passing by reference is used if a parameter's data flow is

A. one-way, into the function.
B. two-way, into and out of the function.
C. one-way, out of the function.
D. B and C above

9. Assuming that `x` is equal to 4, which of the following statements will not result in `y` containing the value 5 after execution?

A. `y = 5;`
B. `y = x++;`
C. `y = ++x;`
D. `y = x + 1;`

10. Which is a valid variable name?
    A. `Spider!Man`
    B. `Sp1d3rM4n`
    C. `_Spider Man`
    D. `5p1d3rM4n`

11. An `int` variable `someInt` contains a value from 0 through 9. Which of the following stores the corresponding digit character into `someChar`?
    A. `someChar = char('0' + someInt);`
    B. `someChar = char(someInt);`
    C. `someChar = someInt;`
    D. `someChar = char(someInt - '0');`

12. Which of the following is the complement of:

```
(x < 3) || tag
```

    A. `!(x < 3) || tag`
    B. `(x > 3) && !tag`
    C. `(x >= 3) || !tag`
    D. `(x >= 3) && !tag`

13. What is wrong with this function?

```
void Multiply(int x, int y)
{
   int z;
   z = x * y;

   return z;
}
```

    A. You can't have two input arguments.
    B. The return type is `void`.
    C. `Multiply` doesn't know what `z` is.
    D. There is nothing wrong with it.

14. 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;
```

15. Consider the statement `int list[10][8];`. Which of the following about `list` is true?
    A. `list` has 10 rows and 8 columns.
    B. `list` has 8 rows and 10 columns.
    C. `list` has a total of 18 components.
    D. `list` has a total of 108 components.

Short Answer. Clearly mark answers as directed. Partial Credit will be given. (**20 @ 2 each)**

16. The loop created by the statement `for (i = 0; i < 59; i++)` executes how many times?

17. Write one statement to do the following:
    - create a two-dimensional array called `letters`
    - each element will be of the `char` data type
    - there will be 2 rows and 2 columns
    - each element will be initialized to `'x'`

18. Given the declarations below, write a nested loop using two `for` loops to sum all of the elements in the array below. Use `row` and `col` for your loop variables.

```
int scores[3][3] = {{92, 87, 91}, {88, 72, 93}, {100, 94, 97}};
int sum = 0;
```

19. The code below prints 15 asterisks on the screen, one per line. Modify the code to print 3 lines containing 5 asterisks each.

```
for (int outer = 1; outer <= 5; outer = outer + 1)
   for (int inner = 1; inner <= 3; inner = inner + 1)
         cout << "*" << endl;
```

20. Write the `switch` statement equivalent to the following set of code.

```
if (x == 1)
  cout << "one" << endl;
if (x == 2)
  cout << "two" << endl;
if (x == 3)
  cout << "three" << endl;
```

21. Write a C++ statement that will create a random number between 135 and 150, including 135 and 150.

22. Write a `void` function called `getAge` that has one formal parameter of the `int` data type. The function should prompt the user for their age and return the value through the parameter.

    An example of the call to the function could be as follows, where the variable `age` has been declared to be of the `int` data type.

```
getAge(age);
```

23. How should the average calculation below be modified to compute the correct average of the two numbers?

```
int num1 = 10;
int num2 = 20;

double average = 0.0;

average = num1 + num2 / 2;                //Fix me, please!
```

24. Eliminate the `break` and `continue` statements below to produce equivalent readable code:

```
int x;
for (x = 1; x <= 10; x++) {
  if (x == 7)
    break;
  if (x == 3)
    continue;

  cout << x << " ";

}
cout << endl << "The final value of x is: " << x << endl;
```

25. Write a function that swaps three numbers without using extra variables.

```
void swap (int &a, int &b, int c)
{

  //Fill me in

}
```

Note: Do not call any other functions or use bitwise operations.

26. Write a C++ program to test a function called `hopscotch()` that accepts an integer number of hops as its parameter and prints a pattern of numbers that resembles a hopscotch board. A hop is three-number sequence where the output show two numbers on a line, followed by one number on its own line. 0 hops is a board up to 1; one hop is a board up to 4; two hops is board up to 7, and so on. A call of `hopscotch(0)` should only print the number 1. Output should look similar to below.

Sample Run:

```
Enter number of hops: 2

   1
 2   3
   4
 5   6
   7
```

Fill in the missing parts of the program below to solve the problem as stated above. Do not add any additional lines of code. **(10 @ 2 each)**

```
//Hopscotch.cpp

#include <iostream>
_____________________                                          //1
using namespace std;

void hopscotch(int hops);

int main()
{
   int value;

   _________________                                           //2
   cin >> value;

   _________________                                           //3

   return 0;
}

void hopscotch(int hops) {
  for (int i = 1; i <= hops * 3 + 1; i++) {
      if (i % 3 == 1)
        _____________________                                  //4
      else if (_______________)                                //5
        cout << setw(2) << i;
      else
        cout << setw(4) << i << endl;
  }
}
```

Pre Test- This part has already been taken. Your score will be added to the quiz. **(10 pts.)**

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Extra Credit: Implement the following program. Follows same program guidelines and graded on the same scale as program sets. Submit only your `.cpp` file- no test runs/folder required. Partial credit given. (**10 points)**

Gray code is a binary number system where the two successive values differ in only one bit (reflected binary code). Write a C++ program to generate all the Gray code values entered from a positive integer (0- 8). The program will generate the code, beginning at zero and flipping the right most bit. The program should loop continuously and terminate upon entering a sentinel value of -1. Output should look similar to below.

Sample Runs:

```
Enter Gray code size (-1 to quit): 2

00
01
11
10

Enter Gray code size (-1 to quit): 3

000
001
011
010
110
111
101
100


Enter Gray code size (-1 to quit): -1
```

Name the program: `PrintGrayCodeXX.cpp`, where `XX` are your initials.