CS 1428 Credit By Exam: Sample Questions

The exam covers all material typically taught in CS 1428. The programming language used is C++. The exam is paper-based. The duration of the exam is 2 hours 30 mins.

Following are some sample questions. [Note, this is not a full exam]

SECTION I: MULTIPLE CHOICE

Circle the best answer to each of the following. [3 points each]

1. In any program that uses the cin object, you must include the ___________.
   a. compiler
   b. iostream header file
   c. linker
   d. >> and << operators
   e. None of the above

2. In the following C++ statement, what will be executed first according to the order of precedence.
   \[ \text{result} = 6 - 3 * 2 + 7 - 10 / 2 ; \]
   a. 6 - 3
   b. 3 * 2
   c. 2 + 7
   d. 7 - 10
   e. 10 / 2

3. A variable whose value can be either true or false is of this data type.
   a. binary
   b. bool
   c. T/F
   d. float
   e. None of the above.
4. How many times will the following loop display “Hello”?

```cpp
for (int i = 0; i < 20; i++)
    cout << "Hello!" << endl;
```

a. 20  
b. 19  
c. 21  
d. An infinite number of times

5. A function can have zero to many parameters, and it can return this many values.

a. zero to many  
b. No  
c. only one  
d. a maximum of ten  
e. None of these

7. A function __________ eliminates the need to place a function definition before all calls to the function.

a. header  
b. prototype  
c. argument  
d. parameter  
e. None of these

8. Which of the following is a valid C++ array definition?

a. int array[0];  
b. float $payments[10]$;  
c. void numbers[5];  
d. int array[10];  
e. None of these
SECTION II: PROGRAMMING QUESTIONS

1. [15 pts.] Write a function that when passed an integer exam score will return (not print out) a character letter grade. Use the 90-80-70-60 scale, e.g. if the function were passed 87, ‘B’ would be returned. The function should also validate the exam score and ensure that lies between 0 and 100. If the exam score is out of range the should return an error value (represented with a alphabetic character).
2. [15 points] Write the following function:

// Function - isOdd
//
// returns true if the input parameter is odd, otherwise false
//
// input parameter - positive integer > 0

bool isOdd (int n)
3. [15 pts.] Trace the following program (draw boxes!) and put the EXACT output in the box provided. The file “test.txt” contains the following:

```cpp
int main () {
    int foo;
    string str = "Junk";
    float foo2 = 6.5;
    int nums[4] = {9, 13, 11, 8};

    ifstream inFile;
    inFile.open("test.txt");
    inFile >> foo;

    while (foo > 2) {
        if (foo > foo2)
            cout << foo << " Go for it!" << endl;
        else {
            cout << foo << " " << str << endl;
            foo2 = foo2 - 1;
        }
        int index = foo % 4;
        nums[index] = foo;

        inFile >> foo;
    }

cout << endl;

    for (int i=0; i < 4; i++)
        cout << i << " - " << nums[i] << endl;

    return 0;
}
```

```
3
6
2
-1
```
4. (50 points) Write a program that lets the user enter four quarterly sales figures for six divisions of a company, perform computing, display information and write data into files. The **main** function should define needed variables including a two dimensional array `sales [Num_DIVISIONS] [Num QUARTERS]` and call following functions to perform tasks:

i) A function **getSalesData** to input (from keyboard) sales figures and validate them (using while loops by not accepting negative numbers for sales figures). Store these sales figures in the two dimensional array called `sales` as well as write them to a file.

ii) A function **SalesByDiv** to display on the screen a list of the sales figures by division.

iii) A function **totalQtrSales** to compute and write to a file the total sales of all divisions for each quarter.

iv) A function **divIncDec** to compute and write to a file each division’s increase or decrease in sales from the previous quarter. This will not be done for the first quarter.

v) A function **colIncDec** to compute and write to a file the company’s increases or decreases in sales from the previous quarter. This will not be done for the first quarter.

vi) A function **average** to compute and write to a file the average sales for each quarter.

vii) A function **highest** to compute and write to a file the division with the highest sales for each quarter.