

## Test 1 practice questions

### Multiple Choices:

1. What is the complexity of doing a binary search in a sorted vector?

a)  $O(1)$

b)  $O(n)$

c)  $O(n^2)$

d) None of the above

2. After the following code is run on an empty list of integers, what will be the contents of the list if iterated from the beginning to the end:

```
mylist.insert(mylist.begin(), 1);
```

```
mylist.insert(mylist.begin(), 2);
```

```
mylist.insert(mylist.end(), 3);
```

a) 1 2 3

b) 2 1 3

c) 3 2 1

d) None of the above

**True or False question: (Explanation is optional but suggested if you think the statement is false.)**

A branch in github is a unique set of code changes with a unique name. \_\_\_\_\_

The find() algorithm in STL returns the number of elements found in a container. \_\_\_\_\_

### Short Questions:

1. Please give the complexity of the following code in big O.

```
for i = 1 to n do  
    for j = i to n do  
        sum = sum + 1
```

2. Explain what the map would contain after running the codes below.

```
map<const char*, int> ages;  
  
ages["Homer"] = 38;  
ages["Homer"] ++;
```

3. What are the variable names for the two objects stored in a pair<T1, T2> for a map?
4. List one major difference between a vector and a list in STL. (What about between a list and a set?)

### **Coding:**

1. Write a function that takes in a vector of integers, and output the histogram in another vector. Also passed in is the number of bins in the output vector, and a divisor, which is the number to divide by to find out which bin a number fits in.

```
void histogram(vector<int> vin, vector<int> &vout, int N, int divisor);
```

2. Write a recursive function that returns the minimum value of a vector.