Module 5 Quiz - Question 10 :

Correct Answer :

1. Lists can only contain items of the same data type.

My Answer:

1. Arrays can contain items of different data types.

My Reasoning:

1. Under the hood, all arrays are int arrays and the compiler has built in types which will tell the program how to handle the data it reads as it traverses the array. You could have your own program read through an array and output different types of data all from the same array. Imagine you had a program read through an array and cout every even index as an int and every odd index as a char. This effectively is the same thing as having multiple types in a single array.

Midterm - Question 24:

Correct Answer:

1. Prevent accessing the variable directly but via member functions, data hiding to achieve data abstraction.

My Answer:

1. So people can't change random data and break your code.

My Reasoning:

1. The only real reason you have a data member be private is to prevent another person's code access and change it thereby breaking other parts of your code. The fact that it then hides data and achieves abstraction is a byproduct of this, and not the reason you make a data member private.

Midterm - Question 25:

Correct Answer:

array indexing is not pointer operation. The correct answer is:

```
for(int i = 0; i <= 10; i++) {
        cout<< *(ptr + j);
    }
```

My Answer:

```
for(int i = 0; i <= 10; i++){

    cout<< a[i];

}

for(int* ptr = &a; ptr <= &a+10; ptr++){

    cout<< *ptr;

}
```

My Reasoning:

First, the answer he gave is verbatim what my second answer does. The question asks for "**TWO** different but equivalent statements to do the same thing: use a **'for statement'** to print the elements of an array". To me, both doing pointer arithmetic and indexing a pointer are equivalent and valid ways to traverse an array.

Midterm - Question 28:

Problem: I got 2 points off for

- "need to test if (first == nullptr) in the beginning".

My Reasoning:

- The question says we are given a singly linked list that stores integers in the nodes. This means we cannot be given a Nullptr (of which I would not consider a Nullptr as a singly linked list since it doesn't actually point to anything) since we know the list **IS STORING INTEGERS**.

Assignment 8 - Vito's Family:

Problem: I was given points off for

1. "Missing testing 0 < number of relatives < 500, missing testing 0 < street number < 30000"
2. For my first test, 3 is not a valid house number.
3. Third test case failed.

My Reasoning:

1. The problem never says you have to make sure the data is input in these ranges, it merely states it will be given within these ranges.
2. The problem does not say Vito must stay on the same street as one of his relatives, but instead to find the optimal street for his house, of which 3 is a valid solution.
3. I was never given the test in which my program failed for but I suspect it is due to the same reasoning above as the math I use for the calculations is correct.

Assignment 7 - Railway Switching System:

Problem: I was given 6 points off for

1. "This is supposed to be a stack according to assignment instructions."

My Reasoning:

1. The assignment says you must implement a stack, which I did and used for all the main calculations of the assignment (It is implemented on line 34 directly

below his comment on line 33). I used a queue for the incoming railcars of which no where in the assignment does it state that we are not allowed to do.

Assignment 9 - Encoding and Decoding:

Problem: I was given 2 points off for

1. " In the CMPSC 122 course, students are expected to apply structural programming techniques, which involves dividing the code into smaller, manageable segments through function calls. The main goal is to achieve a clear separation between input/output operations performed in the main function and well-defined functions that facilitate better programming practices. "

My Reasoning:

1. No where in the assignment description nor the syllabus is this posted, additionally for such a small problem it is more efficient to leave the calculations in the main function with no loss of readability. This is really nitpicking points for a reason which we are never made aware of.

Module 11 Quiz - Question 6:

Correct Answer:

1. a linked list then add to end and remove from end.

My Answer:

1. an array then add is O(n) worst case.

My Reasoning:

1. Worst case would be you exceed the memory limit and have to build a new array to include the new element, which would be O(n).

Module 12 Quiz - Question 1:

Correct Answer:

1. Children

My Answer:

1. Branch

My Reasoning:

1. This is semantics. I have always just referred to the nodes as branches which I believe I picked up from math classes. I feel "child/children", "branch/branches", and "node/nodes" can all be used interchangeably with no loss of meaning and all should be correct.

Assignment 11 - Algorithm Competition:

Problem: I got 11 points off for:

1. I expect your answers corresponding to (a) - (h) as required. Lack of theoretical analysis, see attached for example. The comparison of theoretical analysis to the experimental results is the key for this assignment. The consistency between them is the main conclusion.
2. Missing experimental runs output?

My Reasoning:

1. I did a theoretical analysis, just as I would in a math class when solving for limits. I feel it is unreasonable to just expect with little to no instruction given that we are to put the O(...) for every single line in our code, even saying that initializing a variable is O(1). Constants are not included in Big O notation so anything that is constant should not be considered. All of my analyses are correct and ended up giving the proper big O notation, with a reasoning for why, which I then go on to demonstrate in my program.
2. I have my runs not only give a prediction at every run for the x in O(n^x), but I also rewrote the driver so that the runs will give either the first 6 runs or stop if the program is getting too big and the runs taking too long, instead of only having a single input run. I feel I went above and beyond and clearly all my results point towards me understanding runtime complexity.

Assignment 15 - Which sorting algorithm is better?:

Problem: I got 10 points off for

1. Incorrect timing output
2. Ranking?

My Reasoning:

1. I should not be given points off because one of my sorts performed faster than another one even if it goes against theoretical runtime analysis. If my code is wrong then I understand giving the points off but after checking my code against the lecture notes and multiple online references both of my algorithms are correct.
2. I went above and beyond to make each run its own object and then sort the object before it prints into the correct ranking. **THE OUTPUT IS RANKED**. I don't understand the points off for this.

Final Exam - Question 23:

Correct Answer:

1. An array then elements are added to back position mod array size and removed from the front position.

My Reasoning:

1. There are different ways to implement a queue as an array. The answer says **CAN** be O(n). You could easily shift every element in the array for add remove for O(n) if you wanted to build a queue that way. I understand there are more efficient ways to build a queue but this is poor wording for the question and I should not get points off for this.

Final Exam - Question 31:

Correct Answer:

1. Search generally takes O(log n) computing time.

My Reasoning:

1. Insertion into a binary search tree (note it does not say balanced) is O(n) worst case. If every element is greater than the previous element and you are inputting a new largest element, at worst you search the tree for O(n), and then have to allocate more memory to insert for O(n), of which constants drop so the time complexity is O(n) worst case.

Final Exam - Question 38:

Correct Answer:

2. Organizations, data types

My Reasoning:

2. Things, objects make a lot more sense. You can have multiple objects of the same data type. At the end of the day both answers can be used interchangeably and mean the same thing.

Final Exam - Question 46:

Correct Answer:

1. Missing explanations

My Reasoning:

1. The entire purpose of this problem was to track referencing and dereferencing pointers. There was only 1 single line that was not directly “cout << …” and required you to understand the entire purpose of this problem. Obviously I thought at this point we aren’t going to be tested on whether we can read a simple cout statement and instead he would want the reasoning for why one of them would cout differently because of a ptr reference.

Final Exam - Question 47:

Correct Answer:

1. Iterators are necessary because they provide a consistent and generic way to iterate over different types of containers, enabling code reuse and abstraction of container implementation details.

My Reasoning:

1. What I put is equivalent to his answer, again I feel this is a semantics argument. In the call he said the reason I didn't get points is because I didn't write out the word "abstraction", but I put the definition of what abstraction is for my answer.

Final Exam - Question 52:

Correct Answer:

1. "Need more description on both cases."
2. "rec(int i) should be int rec(int i)

My Reasoning:

1. It did not ask for an in depth description, it just says describe. I gave a general, **CORRECT** description of both parts of a recursive function.
2. It asks for code which **DOES NOT WORK**. how do I get points off for writing code which does not work then? The function is a recursive function which will not run.

Final Exam - Question 48:

Correct Answer:

1. Hidden

My Reasoning:

1. After going over the final with my instructor I feel this is just a semantics issue. Both of our reasons mean the same thing in english. I didn't fully understand what he was saying and felt he was discussing a topic which did not apply to this scenario. During which I had brought up counter points that he then rushed through saying he had to go soon instead of addressing.

Participation:

My Grade: 79

My Reasoning:

This is an online class. I am unsure why participation is even a grade. I wrote questions in the discussion board when I felt they could be seen by the general public, and wrote emails to the professor when I felt they were private. I was told I was supposed to "respond to other peoples questions." I feel this should be a 100, I participated where needed and should not be expected to answer other

kids questions. To me it is extremely immoral and unethical to provide answers without knowing for sure you are correct or not, and goes against what I believe in. I am not going to disregard my morals and beliefs for a single class nor do I think it is appropriate for any single class to require that of me.

Conclusion:

A lot of my points off I feel are unfair. Multiple times throughout the semester I had to rewrite drivers, headers, and code from the notes all of which he gave to us to use because they had bugs/errors. On top of this a lot of the questions are vague and not well defined. Additionally I feel that I am being scrutinized to a level the other students are not and am confident no one else in the class is demonstrating mastery of the material taught like I am.