



San Francisco Bay University

CS360L - Programming in C and C++ Lab Lab Assignment #5

Due day: 4/5/2024

Instruction:

1. Push the answer sheets/source code to Github
2. Please follow the code style rule like programs on handout.
3. Overdue lab assignment submission can't be accepted.
4. Take academic honesty and integrity seriously (Zero Tolerance of Cheating & Plagiarism)

1. Write a function that takes a vector of integers as argument and reverses its elements.

```
void rvrs(Vector<int>& vct){  
    //Complete your program  
}
```

Here is the Output and the main code is in the cpp file

```
Original Vector: 1 2 3 4 5  
Reversed Vector: 5 4 3 2 1
```

2. Find a function with one argument, vector of vectors named *vals*, for coordinates of one of its elements in *row* and *col* to print the values that lie on the lower-left to upper-right **diagonal** of *vals*. After that, verify it in *main* function.

Here is the Output and the main code is in the cpp file

```
Diagonal values starting from (1, 0): 4 8  
Diagonal values starting from (0, 0): 1 5 9
```

3. Create a class *Tensor* with a method *sort* to sort a vector input argument and print it out. Please verify this correctness in *main* function

Here is the Output and the main code is in the cpp file

```
Original Vector: 3 1 4 1 5 9 2 6 5 3 5
Sorted Vector: 1 1 2 3 3 4 5 5 5 6 9
```

4. Find the errors in the following class and explain how to correct them. Please test it in main function

```
class Example{
public:
    Example( int y = 10 ): data( y ){
        // empty body
    } // end Example constructor
    int getIncrementedData() const{
        return data++;
    } // end function getIncrementedData
    static int getCount(){
        cout << "Data is " << data << endl;
        return count;
    } // end function getCount
private:
    int data;
    static int count;
}; // end class Example
```

The provided class "Example" has a few errors. Firstly, the `getIncrementedData` method is trying to modify the member variable `data` within a `const` method, which is not allowed. Secondly, the `getCount` method is trying to access the non-static member variable `data` in a static context, which is also not allowed. Additionally, the `count` variable is declared as static, but its definition is missing. Lastly, the `cout` and `endl` in the `getCount` method should be prefixed with `std::` due to the missing using namespace `std`; or the explicit `std::` namespace.

To correct these errors, the `getIncrementedData` method should not be declared as `const` and the `getCount` method should be modified to operate on the instance variable `data` or made non-static. The static member variable `count` should be defined outside the class. Lastly, the `cout` and `endl` should be prefixed with `std::` to indicate the `std` namespace.

Here is the Output and the main code is in the cpp file

```
Data is 10
Incremented data: 11
Count is 1
```

