

Programming Design Homework Assignment S14

Due: 2022/6/15 23:00

※Notice:

1. Please follow the rules for homework assignments announced on the course website.
2. The standard template library and unrelated macros are not permitted in this assignment.

There are one question in this assignment.

- Programming formats : (20%)

1. The structure of your program (5%)
2. Clear and readable code layout (5%)
3. Clear comments for understanding your program (5%)
4. The copyright and short description of each question (5%)

- Question 1: (80%)

Write a class “MyVector” and provide several operators for vector manipulations. The class “MyVector” indicate a three dimensional vector which has a pointer which point to a dynamic array (float*) as private member. Please write the declaration and definitions in the file named “MyVector.h” and “MyVector.cpp”, respectively. The class member functions might include at least:

1. Constructors //need to provide at least 2 different constructor
2. Copy constructor
3. Destructor
4. Assignment operator //to assign a MyVector to another MyVector.
5. Subscript operator //to access vector elements, such as vector_a[1].
6. Binary operator
 - a. Addition operator //to add together two vectors.
 - b. Addition assignment operator //to add a vector to a vector.
 - c. Subtraction operator //to subtract one vector from another.
 - d. Multiplication operator //to do inner product on two vectors, or multiply a vector by a real number, vice versa.
 - e. Division operator //to divide a vector by a real number.
 - f. Greater than operator //to compare the length of two vectors, or compare the length of vector to a real number, vice versa.

g. `operator<<` //to print out the information of vector.

7. Unary operator

a. Minus operator //to reflect the direction of vector

8. A function to calculate the length of vector.

Use “const” to protect reassignment of variables and parameters. Please write a main function in “HWS14.cpp” to test all the member functions above. In each line of main function, please add comments to explain which function of class is called.