Homework 05

Re-submit Assignment

Due Mar 2 by 11:59pm **Points** 10 **Submitting** a file upload

Develop a class called **USLength** that is an abstract data type (ADT) for a length.

- The complete class will include all the following **public member functions** :
  - A constructor to set yards, feet and inches; ex. 2yd 2ft 3in can be set as **USLength item1(2,2,3)**;
  - A constructor to set feet and inches; ex. 4ft 3in can be set as **USLength item1(4,3)**;
  - A constructor to set inches; ex. 23in can be set as **USLength item1(23)**;
  - A default constructor (takes no input) that sets 0yd 0ft 0in.
  - Public member function, "**getYards()**" that returns the yard part of length.
  - Public member function, "**getFeet()**" that returns the foot part of length.
  - Public member function, "**getInches()**" that returns the inch part of length.
  - Public member function, **setLength(1,2,3)** that sets 1yd 2ft 3in.
- You may define private member functions. (helper functions)
- It is **your decision** how to store the length information, yard, feet, and inches.
- You can assume that yard, feet, and inches are all integers.
- All member variables must be **private**.
- Note: 12inches = 1foot, 3feet = 1yard.

Use following main function to test your class.

```
int main(int argc, const char * argv[]) {
    USLength bar1(100);
    USLength bar2(3,8);
    USLength bar3(3,13);
    USLength bar4(1,2,23);

    std::cout << "bar1 : " << bar1.getYards() << " yards, " << bar1.getFeet() << " feet, " << bar1.getI
nches() << " inches\n";
    std::cout << "bar2 : " << bar2.getYards() << " yards, " << bar2.getFeet() << " feet, " << bar2.getI
nches() << " inches\n";
    std::cout << "bar3 : " << bar3.getYards() << " yards, " << bar3.getFeet() << " feet, " << bar3.getI
nches() << " inches\n";
    std::cout << "bar4 : " << bar4.getYards() << " yards, " << bar4.getFeet() << " feet, " << bar4.getI
nches() << " inches\n";

    USLength bar12;
    bar12.setLength(bar1.getYards() + bar2.getYards(), bar1.getFeet() + bar2.getFeet(), bar1.getInches(
)+ bar2.getInches());
    std::cout << "bar12 : " << bar12.getYards() << " yards, " << bar12.getFeet() << " feet, " << bar12.
getInches() << " inches\n";
    return 0;
}
```

The output must be:

```
bar1 : 2 yards, 2 feet, 4 inches
bar2 : 1 yards, 0 feet, 8 inches
bar3 : 1 yards, 1 feet, 1 inches
bar4 : 2 yards, 0 feet, 11 inches
bar12 : 4 yards, 0 feet, 0 inches
```

You see, for example, 'bar1' is set 100 inches and the output shows 2 yards, 2 feet and 4 inches. That is 100/12=8 feet, the remeinder is 4 inches, 8/3=2 yards, the remeinder is 2 feet.