Assignment 3

CPSC 2620
Department of Mathematics and Computer Science
University of Lethbridge

1 Description

Assignment 3 is due on Thursday October 28 , 2021 by 23:55.

This assignment is worth 5% of your final grade.

In this assignment you are asked to design, implement, and test a C++ class named `WordSet` to realize an ADT to represent a "set of words". A word can be represented by a STL `string`. A set of words can be represented by a dynamic array of strings. The class `WordSet` must support the following operations.

1. A default constructor to create an object of type `WordSet` in an "empty state".
2. A copy constructor
3. A destructor
4. An overloaded assignment operator
5. A constructor that takes a parameter of type vector of string, constructs a `WordSet` object consisting of the words of the vector parameter.
6. A function to add a word to the `WordSet` object
7. A function remove a word from the `WordSet` object
8. A function to clear the `WordSet` object of the words contained in it and make it empty
9. A function to return the number of words in the `WordSet` object
10. A function to display the words in the `WordSet` object to standard output.
11. Overloaded operator `+` so that it returns the set union of the words in two `WordSet` objects
12. Overloaded operator `*` so that it returns the set intersection of the words in two `WordSet` objects

In your .h file, give justification of the choice of data members of your class. Additionally, justify each member function implemented as a `public` or `private` member, or as a nonmember.

2 What to submit

1. Write the definition for `C++` class `WordSet` in a text file named `wordset.h` that meets the given specification.
2. Implement the class `WordSet` in the corresponding `.cc` file.
3. Write a test program in a file named `test_wordset.cc` to test the member functions of class `WordSet`. You should write a function in this file to read at least 10 words from users interactively, store the words in a `WordSet` object and return this `WordSet`object from the function.

3 Grading

The assignment will be graded as follows.

1. The program is complete and compiles without errors and warnings: 10 points.
2. The class definition and implementation meets the problem specification: 40 points.
3. The explanation for the choice of members as well as their access restriction (public, private, or nonmember) and other assumptions (if any) made are convincing : 20 points.
4. Program is appropriately commented and indented: 10 points.
5. The file `test_wordset.cc` contains code that demonstrates the correct working of each member function: 20 points.

Total: 100 points