

CSCI 311 Data structures and Algorithms

Lab 1 Assignment

Project Design : The project has 2 classes FileReader and WordCount.

Class FileReader :

The FileReader class has a function readFile :- **std::string readFile(char *)**

readFile function will read the file contents , remove the special characters as per the requirement, and return the final string. The output of this function is passed as an input to the function count in WordCount class.

Class WordCount:

The class WordCount has a function count :- **void count(string);**

Count function will take the output of function readFile and insert into map. The map sorts the string alphabetically and inserts the element as <key,value> pair.

Pair<map<string,int>::iterator,bool> returnValue :- Checks the return value for insert function. It returns false if the element already exists. Finally it prints the output on the console.

The project is designed using object oriented methodology that separates out data and functions. The project includes 3 files:

- Lab1.h : Header file that contains all the class and member function declarations.
- Lab1.cpp: Definition of the classes and member functions.
- Main.cpp: Entry point of the program. Class instantiation and calla to functions given here.

Memory Usage: The project extensively uses C++ streams for reading and manipulating data. Streams give us the functionality to read and manipulate string through the use of stringstream. All the input is read once using fstream. Fstream uses its internal buffer to store the data which it reads.

Potential Design changes: One aspect of the project I would like to improve is read a file using c style fread because of the performance associated. Further I would also like to modularize the code a bit. The class FileReader can include few more member functions, to handle the File operations and perform the additional operations on string.