Bern University
of Applied Sciences

394661-FS2018-0 - C++ Programming I

EXERCISE-11

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1 Introduction

This exercise of 394661-FS2018-0 will introduce STL containers and algorithms. In particular, you'll write programs counting the word and letter frequency of a text by using STL containers.

You will learn the following topics when completing this exercise:

- STL containers, (algorithms,iterators)
- Basic file I/O

In order to successfully solve this exercise, skim over **Lesson 15** - **Lesson 20** *STL* in the book.

2 Exercises

Create CMake-Projects with C++ 11 compiler support and Debug/Release build options for the exercise. Add additional files manually to the project to gain full control over the included project files. **In this exercise you have to make use of STL elements!** Otherwise you are completely free to design your programs.

2.1 Word and Letter Frequency

You have to implement a program to count the occurrences of words and letters in an arbitrary text, *i.e.* unknown size and content. Before you start programming:

- Which container do you choose and why?
- Performance?

The following functionality must be provided:

- Reading a text file to test your code
- Count the frequency of each letter occurring in the text (case insensitive)
- Use similar code to count the frequency of each word occurring in the text (case insensitive)
- Sort the occurrences of letters and words in descending order
- Print the results, *i.e.* the 5 most frequent words and letters, respectively, to a text file

2.2 Example

- Test your code with a small text file containing for example:
  `The Test is the test itself`
  You're program should output:

```
- Words -
2 test
2 the
1 is
1 itself
- Letters -
7 t
5 e
4 s
2 h
2 i
```

- Run your code on hamlet.txt. You're program should exactly output:

```
- Words -
992 the
860 and
683 to
605 of
520 i
- Letters -
16338 e
10853 t
10441 o
9027 a
8208 h
```

3 Submission

Submit your source code (as a zip-file) to Ilias EXERCISE-11 **before the deadline** specified in Ilias.