CSci 1113: Introduction to C/C++
Programming for Scientists and Engineers
Homework 4
Fall 2018

Due Date: Wednesday, October 24, 2018 before 11:00pm.

Instructions: This is an individual homework assignment. There are two problems worth 20 points each. Solve the problem below by yourself (unlike the labs, where you work collaboratively), and submit the solution as a C++ source code file. Here are a few more important details:

1. Unlike the computer lab exercises, this is not a collaborative assignment.

2. Because all homework assignments are submitted and tested electronically, the following are important:
   - You follow any naming conventions mentioned in the homework instructions.
   - You submit the correct file(s) through Moodle by the due deadline.
   - You follow the example input and output formats exactly given in each problem description.
   - **Regardless of how or where you develop your solutions, your programs compile and execute on cselabs computers running the Linux operating system.**

3. You should test your program on other test cases (that you make up) as well. Making up good test cases is a valuable programming skill, and is part of ensuring your code solution is correct.

Problem A: Giving out grades (20 points)
Write a C++ program that asks for both a file and name of a student. Then:
- If you cannot open the file, display "File does not exist." and stop the program.
- If the student is not in the file, display "No student with that name."
- If the student is in the file, show their grade.

You may assume the format of the file is the same as the given example "grades.txt". You cannot make any assumptions on the number of students in the file. You can assume each student's name in the file is unique.

Example 1 (user input is underlined):
```
What file?
iDontExist.txt
Whose name?
Jacob
File does not exist.
```

Example 2 (user input is underlined):
```
What file?
grades.txt
Whose name?
Jacob
No student with that name.
```

Example 3 (user input is underlined):

```
What file?
grades.txt
Whose name?
Anisha
Grade:
C
```

When you are done, name the source code file <username>_4A.cpp. Here you replace <username> with your U of M email address; for example, if your email address is smithx1234@umn.edu, your file should be named smithx1234_4A.cpp. Then submit your program using the HW 4 Problem A submission link in Moodle.

Problem B: File by command (20 points)

Write a C++ program that repeatedly accepts single word commands and then sentences until the user tells the program to stop. You should create a text file called "out.txt" from these commands. There are four commands you need to handle:

- new – will create a new blank file with just the following sentence in it.
- append – will add the sentence to the end of the file.
- prepend – will add the sentence to the start of the file.
- exit – will cease asking questions and stop the program. In this case, there will not be a sentence following the command.

Your program should be able to handle any combination of these commands. You can create temporary text files if you think this would be useful, but the final "out.txt" needs to follow the commands as described. You can assume the "new" command will always be run first. Make the "out.txt" in the current directory with the cpp file (i.e. do not assume any directory structure).

Example 1 (user input is underlined):

```
Command?
new
Hello
Command?
append
there
Command?
prepend
asdf
Command?
exit
```

Resulting "out.txt" for example 1:

```
asdf
Hello
there
```

Example 2 (user input is underlined):

```
Command?
new
this is a worthless sentence
Command?
new
i like apples
Command?
prepend
i like berries
Command?
prepend
i like carrots
Command?
append
i like danishes
Command?
prepend
i like eggs
Command?
exit
```

Resulting “out.txt” for example 2:

```
i like eggs
i like carrots
i like berries
i like apples
i like danishes
```

When you are done, name the source code file <username>_4B.cpp. Here you replace <username> with your U of M email address; for example, if your email address is smithx1234@umn.edu, your file should be named smithx1234_4B.cpp. Then submit your program using the HW 4 Problem B submission link in Moodle.