CS4414 Fall 2024: Homework Problem 1

Due 08 September 2024

Overview

The goal of this assignment is to become familiar with writing code in C++ for some common tasks, such as using command-line arguments, reading files, using stdout, and working with strings. This will also familiarize you with C++ syntax for loops, branch statements, and functions.

Your program will read data from a CSV file containing pairs of strings and integers. For example:

```
Ken,1
Alicia,4414
Pengyue,42
Noam,1729
```

Your program will be responsible for two sets of output to stdout (the standard output stream, to which you'll write using `std::cout`'s `<<` operator), described below. Your output must match the format shown below, or the autograder won't give you credit. Your code should be written in a file named `main.cpp`.

Programming description

Your program will take in a filename and a positive integer `n`. Recall that to use command-line arguments, your main function must take two extra arguments, an `int` and a `char**` (usually called `argc`, for "argument count", and `argv`, for "argument vector", respectively). The first command-line argument is `argv[0]`, the name of the executable. The second command-line argument `argv[1]` is the CSV filename, and the third argument `argv[2]` is `n`.

1. Output "==========" (followed by a newline).

2. Output the length-`n` strings. For the four-line CSV above with `n` = 6, this part of the output should just have one line with the string `Alicia`.

3. Output the sum of the integers whose strings have length at least `n`. For the same CSV and `n` still 6, this will be the integer `4456` = 4414 + 42.

4. Output "==========" (again, followed by a newline).

Example:
./main myFile 6
==========
Alicia
4456
==========

Note: We might test it with a different file name, and a different value of n.

Submission requirements and grading

What to Submit:

- One file, `main.cpp`, containing your C++ source code

  The autograder should also accept a zip file, as long as it contains `main.cpp`, which will be good to get used to for later assignments.

How to Submit:

- Upload the file to Gradescope by the due date.

Grading Criteria:

- **Correctness:** the program compiles and correctly loads the data, handles command-line arguments, and outputs the correct strings and integers

  Note that your code will be autograded. This means we will compile your code with the following command:

  ```
  g++ -std=c++2a -Wall -o main main.cpp
  ```

  And run it with this command:

  `./main <filename> <n>`,
  where `<filename>` and `<n>` are the command-line arguments described above.