CS2400 Homework 4 Tickets
30 Points

Objectives:

Use files, searching, and reference parameters.

A police department keeps track of tickets issued to violators in a text file. Each line in the file contains a driver license number followed by the fine amount. The license number consists of two capital letters followed by six digits. The department would like to know how much a person owes by finding the total amount of fines for a particular license number. Write a C++ program that finds the number violations by counting the number of times a driver license number occurs in the data file and the total amount of fines. The program should read the data file name and the driver license and determine the number of violations along with the total amount of fines. Display an error message if the driver license entered is invalid (wrong format) or the file does not exist.

The number of violations is equivalent to the number of occurrences that particular license appears in the file. If the license has 6 or more violations, print a message indicating that the license should be suspended.

A sample data file ("violations.txt") is supplied with your initial repository.

Your program must include the following functions (Hint: implement them in the given order):

- A function that converts the letters in a license number to capital letters.
- A function called `isValid` that returns true if a license number is valid, false otherwise. This function should be called prior to processing the license number.
- A function that takes an input stream, a valid license number, and returns the number of violations, and the total amount of violations (Hint: use reference parameters). It should return 0 for the count if the license is not found.
- A function that prints the results.
    - License number, the number of violations, and the amount of fines
    - Whether the license needs to be suspended or not

Hints:

- Convert the first two letter in the license string to uppercase using the `toupper` function.
- Make sure you check the length of the license and all the characters in it. The length of the string can be determined using the length function:
  `int licenseLength = license.length();`
- You can manipulate the individual characters in a string using the member function `at` as follows:

```
ch = license.at(0); //copies the first character in the string license to ch
license.at(0) = ch; //copies ch into position 0 of the string license
```

Sample interaction:

```
./a.out
Enter the data file name: violations.txt
Enter a license number: xz908976

Driver license XZ908976 has 0 violations.
Total fines: $0.00

./a.out
Enter the data file name: violations.txt
Enter a license number: aB112233

Driver license AB432908 has 11 violations.
Total fines: $1310.00
Driver license AB432908 should be suspended

./a.out
Enter the data file name: violations123.txt
Error: File name violations123.txt does not exist

./a.out
Enter the data file name: violations.txt
Enter a license number: Xyz120988
Error: Xyz120988 invalid license number

./a.out
Enter the data file name: violations.txt
Enter a license number: 120988
Error: 120988 invalid license number

./a.out
Enter the data file name: violations.txt
Enter a license number: AB1234567
Error: AB1234567 invalid license number

./a.out
Enter the data file name: violations.txt
Enter a license number: AB120Z88
Error: AB120Z88 invalid license number
```

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Grading:
Programs that contain syntax errors will earn zero points.
Programs that do not include the above functions will also earn zero points.
Programs that use any library that was not discussed in class will earn zero points.

Your grade will be determine using the following criteria:

- Correctness (20 points)
    - 5 points for each of the required functions listed above.

- (5 points) Clarity and format of the output including good error messages
- (5 points) Style & Documentation

Follow the coding style outline on GitHub:
https://github.com/nasseef/cs2400/blob/master/docs/coding-style.md