Project 4: User Login

CPSC 131 Fall 2020

### Introduction

This project uses hash tables to build a username and password authenticatication system.

### Objective

You are given one header file, userLogin.hpp and one data file, userDetails.txt and a main.cpp.

### Header file

**userLogin.hpp**

This file has the userLogin class. It has a private data member to implement our hash table.

**unordered\_map< string, string > table**

**This project uses the C++ Standard Library unordered\_map. Using this is mandatory**

table, which is a hash table, stores a userName, which is a string as a *key* and the passWord, which is also a string, as its *value*. Your task is to complete the class implementation:

You are given the implementation of one function:

* **userLogin() {} -** default constructor

Implement the following functions:

* **void readIn(const string& filename)** - This function should open up the given file and read in the data, and use it to fill the table. The file has a userName and corresponding passWord on each line. You should store each userName as a key, and the corresponding passWord as its value in the hash table.
* **size\_t numberOfUsers() -** return the number of users
* **string passWordCheck(const string& userName) -** return the passWord of the user with the given userName. If the user does not exist, then return “Non-existent User”.
* **size\_t wordBucketIdMethod1(const string& userName) -** return the bucket number where the user with the given userName is located
* **size\_t wordBucketIdMethod2(const string& userName) -** There are more than one ways to find the bucket number where the user with the given userName is located. This implementation should be another way, different from the previous function.
* **bool validateUser(const string& userName) -** return true if the user with the given userName exists in the table, false otherwise
* **bool authenticateUser(const string& userName, const string& passWord) -** return true if given userName, passWord combination exists in the table, false otherwise

### Source Code Files

You are given “starter” code files with function definitions that are missing their implementation. Write the code, where it says “TO DO”.

* UserLogin.hpp: This is to be completed
* One input text file:
  + userDetails.txt
* main.cpp: The main function tests the output of your functions. You may wish to add additional tests.

Your UserLogin.hpp will be graded by the main.cpp file, and userDetails.txt files that were **originally** provided to you.

### Obtaining and submitting code

The skeleton code is available in Project 4 folder in Titanium. When you have completed the project, upload the completed file in the Project 4 folder.

#### Submitting the project

**Only submit the following file on Titanium in the folder provided for Project 4:**

**1) UserLogin.hpp**

### Testing (either of the two below)

1. **On Tuffix:**

Use the following command to compile your program:  
**clang++ -g -std=c++17 main.cpp -o test**  
  
To attempt to run the compiled test program, use the following command:  
**./test**

##### **You can use Visual Studio:**

Free download: Community 2019

<https://visualstudio.microsoft.com/downloads/>

### You can write, debug, run your project in Visual Studio.

### Group work

There is no group work allowed for this project. Your work on this project is individual.

### Grading Rubric

Your grade depends on how correct the code is. While passing tests is a good indicator, I still look at the code and mark on the basis of how correct it is.

**You absolutely HAVE to use std::unordered\_map as the main data structure.**

**No points for using anything else.**

### Deadline

The project deadline is **Friday, Dec 18, 2020, 11:59 PM.**

**Your code must compile/build for it to be tested and graded. If you only complete part of the project, make sure that it compiles before submitting.**

### Blurb for your resume

Use your GitHub account as a ready-to-show portfolio of your programming projects to potential employers. You can also add a blurb to your resume after successfully completing this project by describing your project in your own words.