

## 1 Overview

You will develop and implement a program that [simulates](#) a basic login process (for example, similar to one we use for logging in our email accounts). The primary objective of this assignment is for students to demonstrate use of the [looping mechanisms](#).

## 2 Program

The username must meet the following requirements:

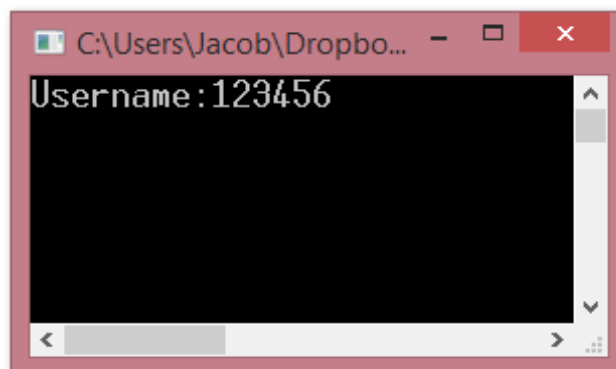
- 6 digits long
- Contains only numbers
- No spaces
- A constant value, which is 123456. It must be initialized at the declaration. This corresponds to the record that we store in our system. Please notice that you must declare a variable to read the input from the user. Then, you will compare the stored username to the user input.
- The username can NOT be changed.

The password must meet the following requirements:

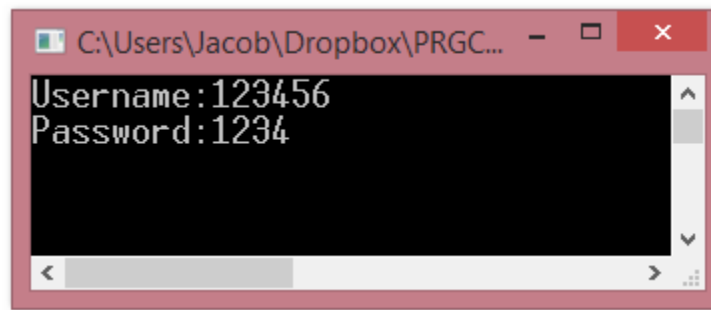
- 4 digits long
- Contains only numbers
- No spaces
- The temporary (i.e., initial) password must be 1234, and the variable must be initialized at the variable declaration. This corresponds to the record that we store in our system. Please notice that you must declare a variable to read the input from the user. Then, you will compare the stored password to the user input.
- The password must be changed at the first user login.

The program begins by having the user enter the [username](#) (i.e., 123456) first and then the [temporary password](#) (i.e., 1234). Please notice that [you need to re-enter the username and the temporary password if you re- execute the program](#).

**The following 2 outputs were produced by running the program on one single occasion.**

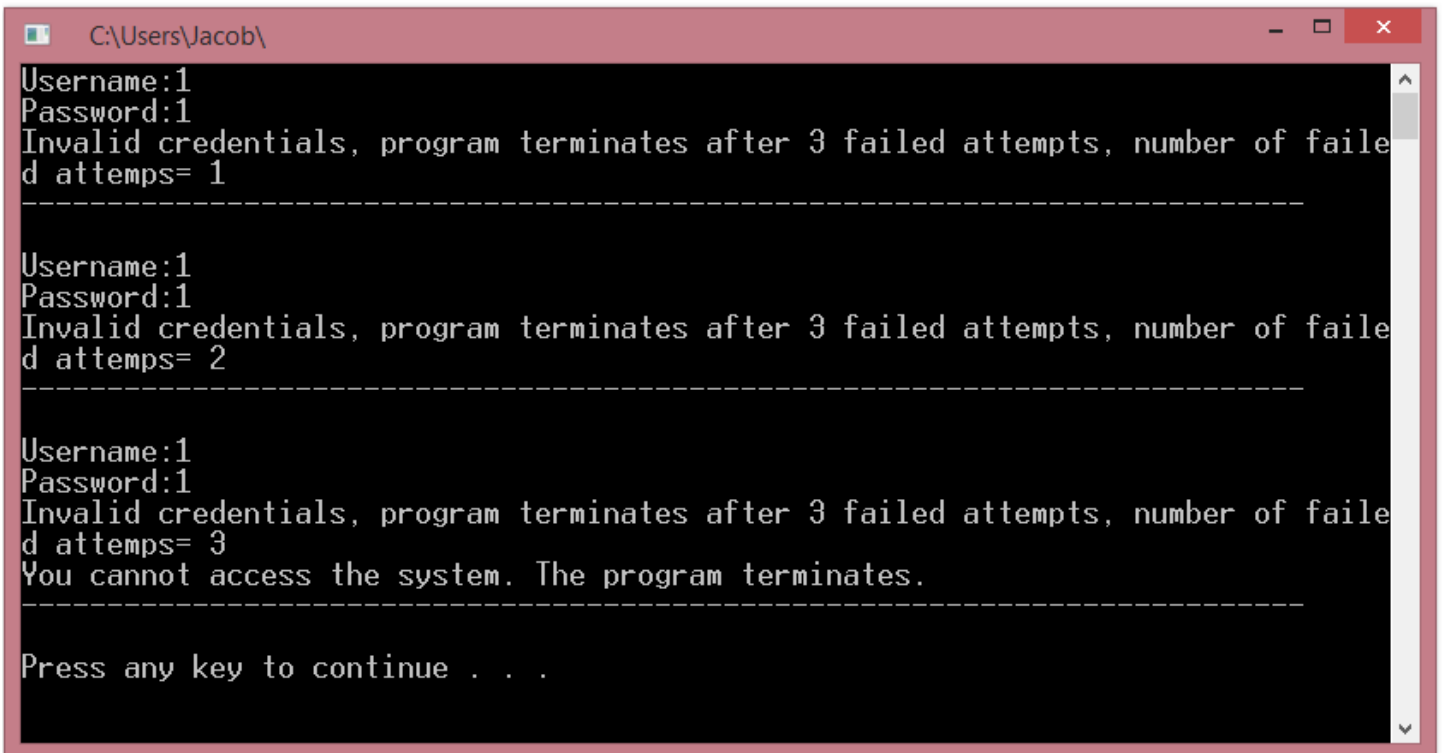


## Introduction to Computer Science • Assignment 2



Our program requires the user to change his/her password after first logging in with the temporary password. To be able to change the temporary password, the user must first enter the correct username and the temporary password combination. Our system limits the number of times a user can enter an incorrect login credentials. If the user enters incorrect combination of the username and the temporary password 3 times, the program terminates.

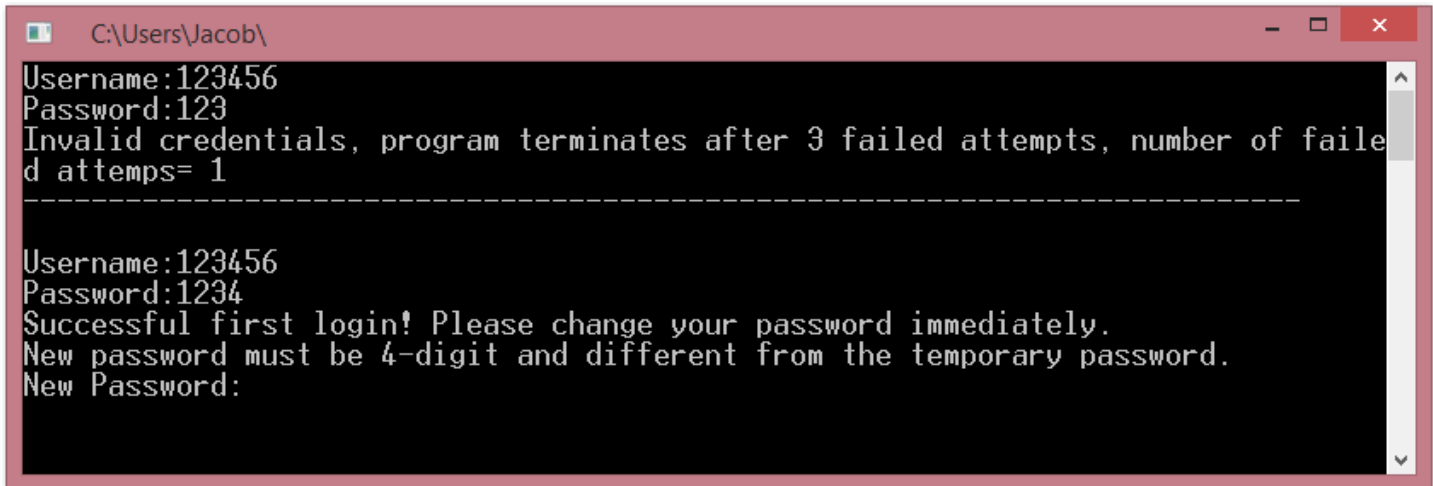
**THE FOLLOWING 1 OUTPUT IS PRODUCED BY RUNNING THE PROGRAM ON ONE SINGLE OCCASION.**



If the user enter the correct username and temporary password combination at the first, the second, or the third attempt, the user will be prompted to change the password.

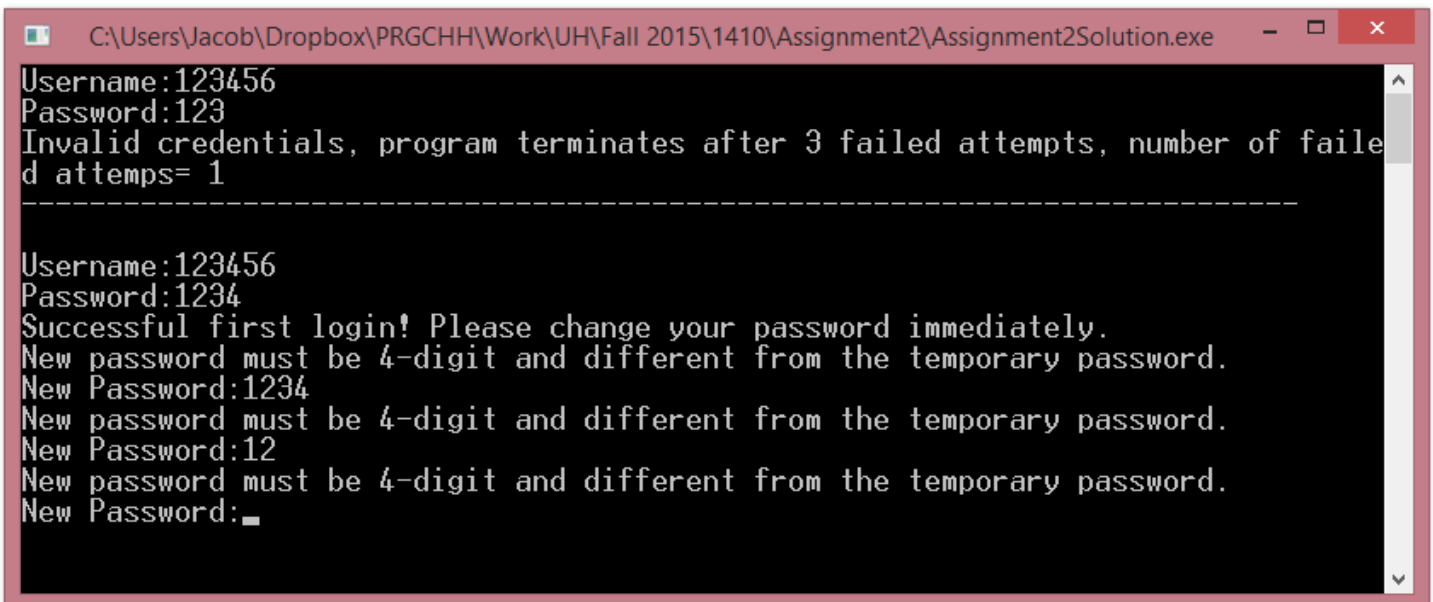
## Introduction to Computer Science • Assignment 2

THE FOLLOWING 5 OUTPUTS ARE PRODUCED BY RUNNING THE PROGRAM ON ONE SINGLE OCCASION.



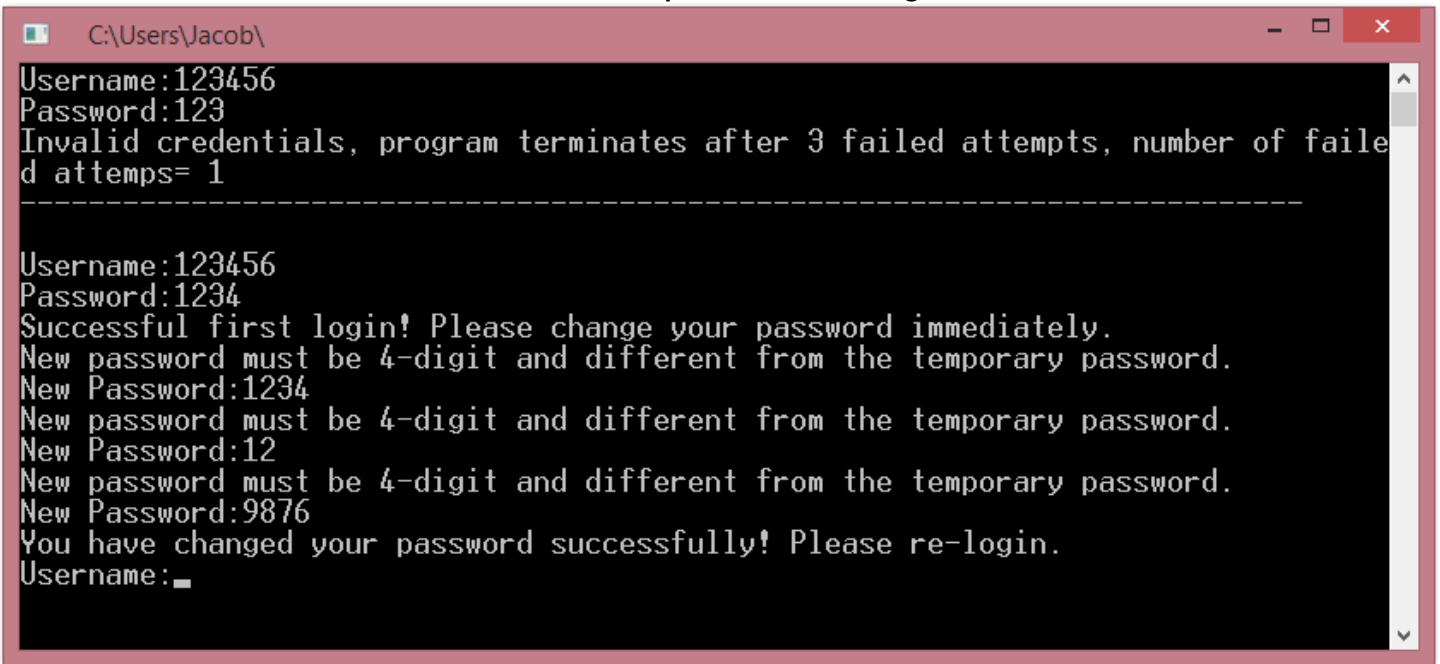
```
C:\Users\Jacob\  
Username:123456  
Password:123  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:123456  
Password:1234  
Successful first login! Please change your password immediately.  
New password must be 4-digit and different from the temporary password.  
New Password:
```

The new password must be a 4-digit number and different from the temporary password. If the user tries to enter the temporary password as the new password, the system warns the user and ask for a new password. Similarly, the user must enter 4-digit password, the system warns the user and ask for a new password.



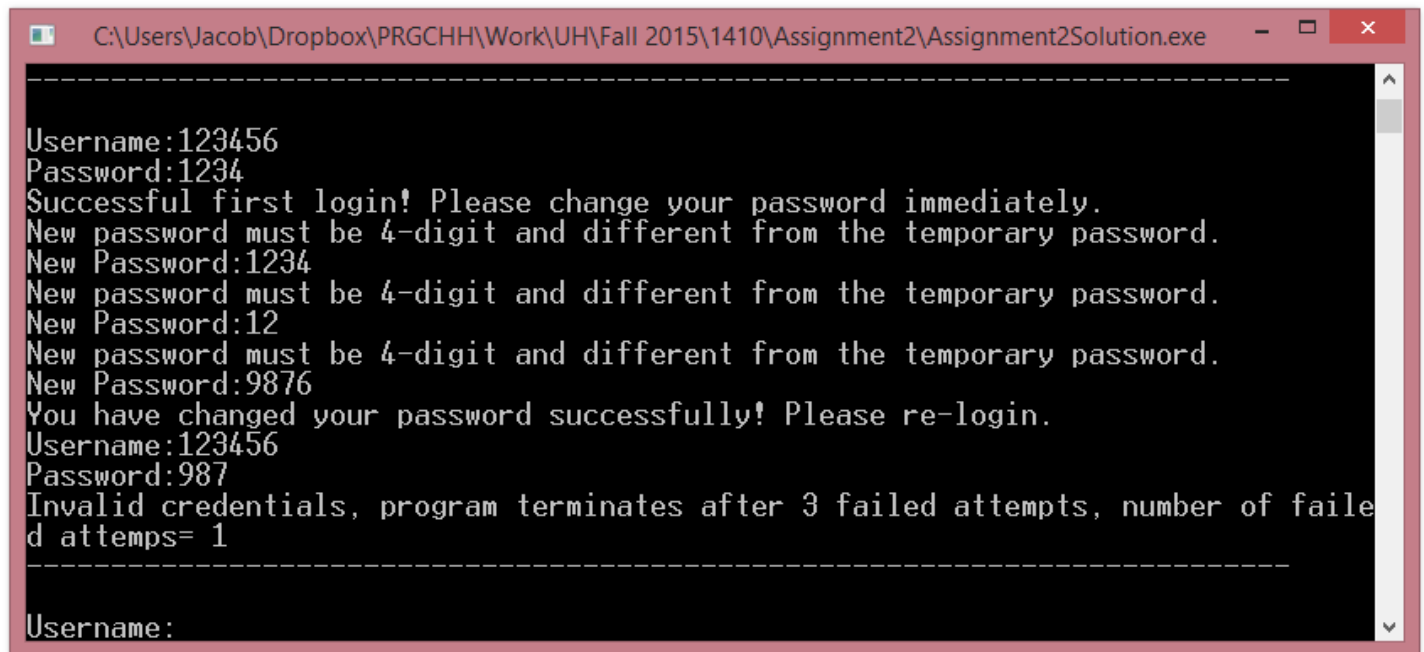
```
C:\Users\Jacob\Dropbox\PRGCHH\Work\UH\Fall 2015\1410\Assignment2\Assignment2Solution.exe  
Username:123456  
Password:123  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:123456  
Password:1234  
Successful first login! Please change your password immediately.  
New password must be 4-digit and different from the temporary password.  
New Password:1234  
New password must be 4-digit and different from the temporary password.  
New Password:12  
New password must be 4-digit and different from the temporary password.  
New Password:█
```

This repeats until the user enters a valid new password. After a NEW VALID password is entered, the program will prompt the user to login using the updated credentials.



```
C:\Users\Jacob\  
Username:123456  
Password:123  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:123456  
Password:1234  
Successful first login! Please change your password immediately.  
New password must be 4-digit and different from the temporary password.  
New Password:1234  
New password must be 4-digit and different from the temporary password.  
New Password:12  
New password must be 4-digit and different from the temporary password.  
New Password:9876  
You have changed your password successfully! Please re-login.  
Username: _
```

Similar to above, the user has 3 chances to enter the correct user name and password combination.



```
C:\Users\Jacob\Dropbox\PRGCHH\Work\UH\Fall 2015\1410\Assignment2\Assignment2Solution.exe  
-----  
Username:123456  
Password:1234  
Successful first login! Please change your password immediately.  
New password must be 4-digit and different from the temporary password.  
New Password:1234  
New password must be 4-digit and different from the temporary password.  
New Password:12  
New password must be 4-digit and different from the temporary password.  
New Password:9876  
You have changed your password successfully! Please re-login.  
Username:123456  
Password:987  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:
```

```
C:\Users\Jacob\  
Username:123456  
Password:123  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:123456  
Password:1234  
Successful first login! Please change your password immediately.  
New password must be 4-digit and different from the temporary password.  
New Password:1234  
New password must be 4-digit and different from the temporary password.  
New Password:12  
New password must be 4-digit and different from the temporary password.  
New Password:9876  
You have changed your password successfully! Please re-login.  
Username:123456  
Password:987  
Invalid credentials, program terminates after 3 failed attempts, number of failed attempts= 1  
-----  
Username:123456  
Password:9876  
  
Access is granted! :-) :-) :-)  
Press any key to continue . . .
```

If the user enter valid new password and username, the program displays the success message.

Please notice that you may design a better user interface for the assignment.

### Hints:

- You can use any number of loops in the program.
- You can use bool variables (i.e., `bool isFirstLoginSuccess` )

### 3 Grading

A correct solution: worth 100 points

#### Deductions:

ERROR	
Program cannot be compiled	40
Program terminates unexpectedly during runtime	40
User interface does not have required information	5
No prompt for entering invalid data	10
Code is not commented	10
Proper indentation is not used	20
Proper variable types are not used	5
3-attempt policy for the first login not implemented properly	10
Password cannot be changed	20
3-attempt policy for 2nd login (after the change) not implemented properly	10
No looping mechanism is used	35
Missing access granted message	5
Login with invalid credentials allowed	20
Password 4-digit rule not implemented properly	10
New password not different from the temporary password	10

1. Feel free to discuss ideas and implementations with your classmates, however **DO NOT** share code.
2. If you have a question about the assignment, do not wait until the last minute to ask.
3. Normal deductions for late submissions will be in effect. Please see Assignment Guidelines.
4. **ANY** kind of plagiarism or cheating, will result in a grade of 0.