

CPE 325: Embedded Systems Laboratory

Laboratory Assignment #8

Assignment

[100 pts]

1. [80 pts]: Write and test a program in C that displays the following message in HyperTerminal (You may use Putty, realterm, MobaXterm etc).

"Please enter the username:"

The program should then wait for user to enter user-name. Your program should display following message after the user-name is entered.

"Enter the password:"

After the user is done entering password (you can check if the user pressed "Enter" key to determine the end of user-name and password), you should display following messages:

"Welcome to CPE 325!!!" if the combination of username and password is correct

"Incorrect username or password!!!" if the username or password is incorrect.

After any of the above outputs, you should go back to displaying the initial message prompting for user-name.

Hint: Your program must have at least two predefined usernames and passwords in your code.

Instructors may make appropriate deductions in the points awarded if the solutions to compare the user-input password and stored password are deemed not robust.

2. [20 pts] Update your code in Q1 above to use a timer to timeout the input of passwords. [As soon as the user enters the username, you can enable a timer (may be watchdog timer or timer A), and if certain duration passes set a flag that displays the original prompt to enter the user name. This should automatically disable the user to input password]

Bonus

[upto 20 pts]

3. Extra 5 points will be awarded if you echo * when the user types to enter the password. i.e. consider the user's password is "quiz". As the user types 'q', an * should be displayed in HyperTerminal screen, as the user types 'u', another * should be displayed and so on. Your goal is that the password should not be revealed to any onlookers.
4. Extra 5 points will be awarded if you print the text in colors. For example: The message **"Welcome to CPE325!!!"** can be printed in green text while the message **"Incorrect username or password"** can be printed in red text. The prompt to enter user-name and password can be printed in blue, etc. You are free to make your own choice, but use of multiple colors will be given more value.
5. Extra 10 points will be awarded to students who integrate following capabilities:

- a. Change the password of a current username. *Hint: You may need to create a simple menu offering for a password change after displaying the message "Welcome to CPE325!!!"*. [5 points]
- b. Add a new user to the list of users. *Hint: You may need to add another option to add a new user. Make sure you take as input a new password for this new user and test if these new credentials work for a new login.* [5 points]

Questions To Be Addressed

Please make sure that you have addressed following questions in your demonstration:

1. In a single demonstration, show the full operation of Q1 and Q2 above.

Topics For Thoery

1. Serial Communication and UART
2. UAH Serial App

Deliverables

1. Lab report which includes:
 - a. Flowchart
 - b. Answers to the questions from the tutorial if any
 - c. Screenshots of final outputs if any
2. Source files (C files) or as instructed.