# HACETTEPE UNIVERSITY

## DEPARTMENT OF COMPUTER ENGINEERING

### FALL 2018

# BBM 203 PROGRAMMING LAB. ASSIGNMENT 4 REPORT

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| *Subject:* | Login System with Character Tree |
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The goal of this assignment is designing a Login System with Character Tree. Besides this is a practice on the tree data structure. Here are how the functions works after the program is started:

A new node "root" is created for further operations. File "output.txt" is created to write the outputs. For each line of the input execute_command function is called. Some function explanations:

**delete_user:**

This function is called recursively until the end of the word is reached. When it reaches the end: The function checks if the current node has children. If this is not the case, it is deleted from the linked list and freed. If the node has children, the password is set to NULL. Until the end is reached: The function is called recursively with the proper child. If this node no longer has a child after the process node has been deleted. If the word is not found, the function returns 0, returns 1 and deleted if it is found.

**list_tree:**

If the node is not a tree root, the letter is added to the word. If the current-¿ child is NULL then it has no child, this means that a leaf node is reached. The function displays only the word. If current-¿child-¿sibling is NULL then it has only one child, this is an internal node. The function is called recursively with current-¿child. Each child is called with degree+1 after the indent function. At the end of the function, the last character of the word is deleted.

**execute_command:**

If the command start with -a: add_user function is called. If it returns 0 an error message is displayed. Otherwise a approval message is displayed.

If the command start with -q: User is found with find_user. If user is found and has a password, password is compared with the given password and a confirmation or error message is displayed. If it doesn't have a password "not enough username" error is displayed. If the user is not found and its first letter is not a root child, "no record" error is displayed. Otherwise "incorrect username" error is displayed.

If the command start with -s: User is found with find_user. If it is found and has a password, the password is displayed. If it doesn't have a password "not enough username" error is displayed. If the user is not found and the first letter is not a root child "no record" error is displayed. Otherwise "incorrect username" error is displayed.

If the command starts with -l: list_tree function is called.

If the command start with -d: delete_user function is called. If it doesn't have a password "not enough username" error is displayed. If the user is not found and its first letter is not a root child, "no record" error is displayed. Otherwise "incorrect username" error is displayed.