Assignment4: File System Simulator (Protection layer)

Overview statement:

The Aim of this assignment is to build up a protection layer over the simple file system you've already created on assignment 3; the protection module will be responsible of the following activities:

1- Creating Users
2- Assign capabilities to users:
   a. Each folder will have two capabilities Create/Delete

After running the application a default user will be logged in to the system this user is called "admin" with the password "admin", the commands in the table below will be added to the list of the commands from assignment 3:

New System Commands:

Command	Summary
TellUser	This command will display the name of the current logged in user.
CUser ahmed pass123	This command used to create user named "ahmed" with the password "pass123". Comments: 1- only the admin can use such command Pre-requests: 1- No user with the same name already created
Grant ahmed VFSD:\Folder1 10 <table><tr><th>Create</th><th>Delete</th><th>Comment</th></tr><tr><td>0</td><td>0</td><td>No create, No delete</td></tr><tr><td>0</td><td>1</td><td>No Create, Delete</td></tr><tr><td>1</td><td>0</td><td>Create, No Delete</td></tr><tr><td>1</td><td>1</td><td>Create, Delete</td></tr></table> • The create capability allow the user "ahmed" to create any folder or file under the folder "VFSD:\Folder1". • The delete capability allow the user "ahmed" to delete any folder or file under the folder "VFSD:\Folder1".	This command is used to grant the user "ahmed" Create and Delete Capabilities on the folder "VFSD:\Folder1". Comments: 1- only the admin can use such command 2- This command is used for folders only Pre-requests: 1- The path already exists 2- The user already exists

```Login ahmed pass123```
 	
• After this command the current logged in user will be "ahmed" instead of admin.
 	
• All assignment 3 commands now must be checked before its execution with the user "ahmed" capabilities.
 	
• **Example:**
 	
  o Right Command
    ▪ ```CFolder Folder2 VFSD:\Folder1```
  o Wrong Command –
    ▪ ```DeleteFolder Folder2 VFSD:\Folder1```
	This command is used to change the current logged in user with the user "ahmed"
	
	Pre-requests:
	  1- The User already exists
	  2- The password is correct

- The Users will be stored in a file called "user.txt" with the following format: Username , password

    Example:

        admin , admin

- The capabilities will be stored in a file called capabilities.txt with the following format: Folder path , user name 1, Create and delete capability digits, user name 2, Create and delete capability digits, …

    Example:
        VFSD:\Folder1,admed,10,bora3y,11

Submission Instructions:

1. This assignment will be submitted into groups of **(three to four students)** and the due date is on **Tuesday 31 May 2022 11:59 pm on Blackboard**. You should work in groups from the same lab.

2. You can deliver code in **(Java, c++, c#, or python)**. You should deliver a running code and match the assignment criteria.

3. You should submit your code on blackboard before the specified time. Follow this steps in your submissions or you will lose your grades **(No Excuses)**:

    a. You should deliver a folder with your program files. Do not deliver any subfolders just one folder with sub-files.

    b. Name the folder with your IDs separated by underscores **without any spaces**.

    c. Compress this folder in a **.zip** file with the same folder name and upload it.

    d. Only **one member** from the group should upload the assignment file.