CSE 222 HOMEWORK 4:

File & Folder Directory Tree System

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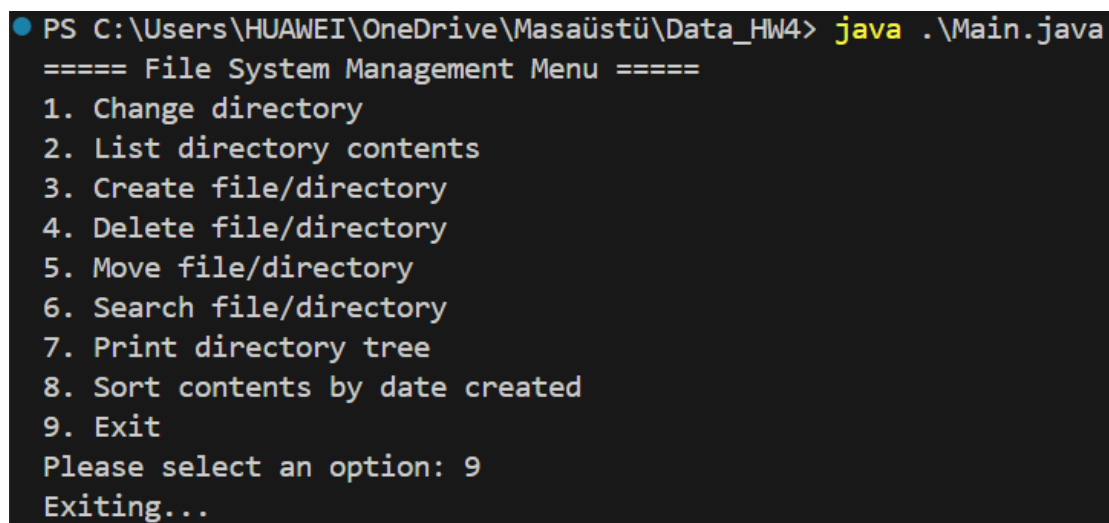
Project Report

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Introduction

This assignment involves the implementation of a File and Folder Directory Tree system using recursion and object-oriented programming. The objective is to simulate directory structures and file management operations found in real-world file systems.

Test and Results

1.User Interface / Printing Menu

```
PS C:\Users\HUAWEI\OneDrive\Masaüstü\Data_HW4> java .\Main.java
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 9
Exiting...
```

The menu depicted in the image serves as the central hub for the file system management application. It provides users with a comprehensive list of options for interacting with and manipulating files and directories within the system.

2.Change Directory

```
----------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 1
----------------------------------------
Current directory: /
Enter the path of the directory you want to change to: user
Invalid path. Please try again.
----------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: █
```

Initially, the only available directory is the root, represented by a slash ("/"). When a user attempts to change directories using option 1 from the menu, they are prompted to enter the desired directory's path. If the user inputs a path that does not exist, such as "user" in this case, the system responds with a warning: "Invalid path. Please try again." This prompt indicates that the path the user is trying to access is not recognized by the system, likely because it has not been created yet. As a result, the current directory remains unchanged, and the user is returned to the main menu to select another option or to retry the operation with a valid path.

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 3
-----------------------------------------
Current directory: /
Create file or directory (f/d): d
Enter name for new directory: user
Directory created: user/
-----------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 1
-----------------------------------------
Current directory: /
Enter the path of the directory you want to change to: /user
Current directory changed to: /user
-----------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 3
-----------------------------------------
Current directory: /user
Create file or directory (f/d): █
```

To demonstrate the use of the change directory feature, the "user" directory was created in root. and the user directory was switched. As can be seen after becoming a current

path "user", when we want to create a new file or directory, it is created in the directory we are in.

```
Please select an option: 1
----------------------------------------
Current directory: /home/user/usrBuket
Enter the path of the directory you want to change to: /home/user/usrBuket/Documents
Current directory changed to: /home/user/usrBuket/Documents
----------------------------------------
```

```
----------------------------------------
Current directory: /home/user/usrBuket/Documents
Enter the path of the directory you want to change to: /home/usrBuket/Documents
Invalid path. Please try again.
```

```
----------------------------------------
Current directory: /home/user/usrBuket/Documents
Enter the path of the directory you want to change to: /home/user
Current directory changed to: /home/user
----------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 3
----------------------------------------
Current directory: /home/user
Create file or directory (f/d): ▌
```

3.List Directory Contents

Some examples of the listing contents:

When the directory is empty

```
Please select an option: 2
Listing contents of /home/user/usrBuket/Documents/Projects:
The directory is empty.
```

Listing contents after create some file or directory.

```
Listing contents of /home/user/usrBuket/Documents/Projects:
* Project3/
* Project1/
Notes.txt
report.docx
```

4.Create File Directory

```
------------------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 3
------------------------------------------------
Current directory: /home/user/usrBuket/Documents
Create file or directory (f/d): f
Enter name for new file: project_report.pdf
File created: project_report.pdf
------------------------------------------------
```

Creating a file in the current directory

```
------------------------------------------------
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 3
------------------------------------------------
Current directory: /home/user/usrBuket/Documents
Create file or directory (f/d): d
Enter name for new directory: CSE222_HW
Directory created: CSE222_HW/
------------------------------------------------
```

Creating a directory in the current directory.

```
------------------------------------------------
Current directory: /home/user/usrBuket/Documents
Create file or directory (f/d): ssss
Invalid choice. Please try again.
------------------------------------------------
```

When the user enter an invalid input when creating a file or directory.

Contents of Documents before create some file or directory:

```
Listing contents of /home/user/usrBuket/Documents:
MeetingNotes.txt
project_report.pdf
* CSE222_HW/
```

After creating "CSE344" directory and ExampleQuizes.txt files

```
Listing contents of /home/user/usrBuket/Documents:
MeetingNotes.txt
project_report.pdf
* CSE222_HW/
* CSE344/
ExampleQuizes.txt
```

5.Delete File Directory

Contents of Documents before delete some file or directory:

```
Listing contents of /home/user/usrBuket/Documents:
MeetingNotes.txt
project_report.pdf
* CSE222_HW/
* CSE344/
ExampleQuizes.txt
```

Delete the CSE344 directory

```
--------------------------------------------
Current directory: /home/user/usrBuket/Documents
Enter name of file/directory to delete: CSE344
Directory deleted: CSE344/
--------------------------------------------
```

Delete the MeetingNotes.txt

```
Current directory: /home/user/usrBuket/Documents
Enter name of file/directory to delete: MeetingNotes.txt
File deleted: MeetingNotes.txt
```

When we try to delete a "directory" or "file" that does not exist

```
--------------------------------------------
Current directory: /home/user/usrBuket/Documents
Enter name of file/directory to delete: not-present.doc
File/directory not found. Please try again.
```

Contents of Documents after delete CSE344 directory and MeetingNotes.txt file:

```
Listing contents of /home/user/usrBuket/Documents:
project_report.pdf
* CSE222_HW/
ExampleQuizes.txt
```

6. Move File/Directory

There is three of all directory three:

*root/

    *home/

        *user/

            *usrBeyza/ (usrBeyza is empty)

            *usrBuket/(have a Documents(directory))

                *Documents(hava a report.pdf)

Result of move report.pdf (report.pdf is in /home/user/usrBuket/Documents/reports.pdf) to usrBeyza:

Before moving:

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 2
Listing contents of /home/user/usrBuket/Documents:
* CSE222/
report.pdf
```

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 2
Listing contents of /home/user/usrBeyza:
The directory is empty.
```

After moving:

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 5
Current directory: /home/user/usrBuket/Documents
Enter the name of the file/directory to move: report.pdf
Enter the new directory path where to move: /home/user/usrBeyza
Successfully moved report.pdf to /home/user/usrBeyza
Moved 'report.pdf' to '/home/user/usrBeyza'
```

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 2
Listing contents of /home/user/usrBeyza:
report.pdf
```

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 2
Listing contents of /home/user/usrBuket/Documents:
* CSE222/
```

7.Search File/Directory

User directory have 2 directories first is usrBuket and Second is usrBeyza.

UsrBuket have Documents and Musics directories. and Documents includes directory of CSE222 and file of report.pdf. Result of searching Musics(directory), Report.pdf(file) and usrBeyza(directory) when current directory is user:

Some search results

1.Search Musics:

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 6
Enter the name of the file/directory to search: Musics
Search query: Musics
Searching from root...
Found: /home/user/usrBuket/Musics
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: ▌
```

2.Search report.pdf:

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 6
Enter the name of the file/directory to search: report.pdf
Search query: report.pdf
Searching from root...
Found: /home/user/usrBuket/Documents/report.pdf
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: ▮
```

3.Search usrBeyza

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 6
Enter the name of the file/directory to search: usrBeyza
Search query: usrBeyza
Searching from root...
Found: /home/user/usrBeyza
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: █
```

8.Print Directory Tree

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 7
* root/
  * home/
    * user/
      * usrBuket/
        * Documents/ (Current directory)
          * CSE222_HW/
            report.pdf
```

Print tree works like this: It writes the directories above the current directory until it reaches the root directory. and it also writes the contents of the current directory.

But it does not print the contents of parent directories. It only writes the parents containing the current directory.
It indicates directories with * sign.

If we change to path like /home/user/usrBuket , directory tree looks like:

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 1
Current directory: /home/user/usrBuket/Documents
Enter the path of the directory you want to change to: /home/user/usrBuket
Current directory changed to: /home/user/usrBuket
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 7
* root/
  * home/
    * user/
      * usrBuket/ (Current directory)
        * Documents/
        * Musics/
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: █
```

9.Sort Contents by Date Created

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 8
Sorted contents of /home/user/usrBuket by date created:
* Documents/ (2024-04-22 20:32:03.452)
* Musics/ (2024-04-22 20:32:33.516)
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: ▌
```

Another output in different directory (Documents):

```
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 1
Current directory: /home/user/usrBuket
Enter the path of the directory you want to change to: /home/user/usrBuket/Documents
Current directory changed to: /home/user/usrBuket/Documents
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: 8
Sorted contents of /home/user/usrBuket/Documents by date created:
* CSE222_HW/ (2024-04-22 20:33:25.128)
report.pdf (2024-04-22 20:33:32.7)
===== File System Management Menu =====
1. Change directory
2. List directory contents
3. Create file/directory
4. Delete file/directory
5. Move file/directory
6. Search file/directory
7. Print directory tree
8. Sort contents by date created
9. Exit
Please select an option: █
```