Course COMP-8567
Assignment 01
Winter 2024
Due Date: Feb/12/2024, 11 PM
Plagiarism Detection Software: MOSS

Write a C program **fileutil** that performs the following operations depending on various arguments and options.

Please Note: All paths and directories in this assignment belong to the home directory (subtree) of the overall file directory tree of the OS.

Synopsis :

fileutil [*root_dir*] *filename*

Searches for a file and displays the absolute path of the file if the search is successful, else prints "Search Unsuccessful"

- *Root_dir is the absolute/relative path(relative to the home directly only) of the **root of the directory subtree** that belongs to the home directory*

Example: **$fileutil ~/chapter4 check.txt** should print

/home/username/chapter4/dir2/check.txt (if check.txt was found in /home/username/chapter4/dir2 (exit after the first successful search)

Else print

Search Unsuccessful

fileutil [*root_dir*] [*storage_dir*] [*options*] *filename*

Searches for *filename* in the directory subtree represented by *root_dir* , displays the absolute path of *filename* if the search is successful , and copies or moves it to the *storage_dir* based on *options*

- *root_dir is the path(absolute or relative the home directory) of the **root of the directory subtree** that belongs to the directory tree rooted at the home directory*
- *storage_dir is the path (absolute or relative to the home directory) of the directory into which the file is copied or moved after the successful search*
- *options : -cp (to copy), -mv (to move)*

Prints "Search Unsuccessful" otherwise

fileutil [*root_dir*] [*storage_dir*] *extension*

Searches all files that belong to the listed extension in the subdirectory rooted at *root_dir*, lists the absolute path of each file that meets the search criteria, and creates a tar file a1.tar out of them in the *storage_dir* (The files are not deleted from their original location)

- *root_dir is the path(absolute or relative the home directory) of the **root of the directory subtree** that belongs to the directory tree rooted at the home directory*
- *storage_dir is the path (absolute or relative to the home directory) of the directory into which the file is copied or moved after the successful search. (In the absence of this path, a path must be created by creating the respective directories/subdirectories).*
- *extension: one valid file extension needs to be provided (.C, .txt, .pdf) etc*

Print appropriate error messages in all cases.

Additional Requirements and Submission Instructions

You must use the **function nftw()** that allows you to traverse a file tree. This will recursively visit all the files/directories present in the tree and will call you own function (a function that you pass as a parameter).

You need to read the Linux manual on nftw() before you start working on your assignment.

Comments and explanation of the program

- You are required to include adequate and appropriate comments to explain the working of the program.
- Please see the assignment rubrics for more information

Submission Instructions:
You are required to submit the following:
1. A1_Fname_Lname_SID.c
3. Zoom/Google Drive recording link explaining the following with your camera on (10 minutes)
   - Overall working of the code and various modules (around 5 minutes)
   - Execution of the code under various inputs/conditions as per the requirements of the assignment (around 5minutes)
   - Other forms of links/MP4 files will NOT be acceptable.

- Include the link in the COMMENTS section.

Please see A1-Illustration.pdf for specific examples.