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 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*
- *extension: one valid file extension needs to be provided (.C, .txt, .pdf) etc*

Print appropriate error messages.

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. fileutil.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.