Course COMP-8567
Assignment 01
Winter 2023
Due Date: Feb/09/2023

Write a C program **dircmx** that copies or moves an entire directory sub-tree rooted at a specific path in the home directory to a specific destination folder (also in the home directory) along with only those file types specified by the extension list.

Synopsis :

dircmx [*source_dir*] [*destination_dir*] [*options*] <extension list>

- Both *source_dir* and *destination_dir* can be either absolute or relative paths, but must belong to the home directory hierarchy.
- If the *destination_dir* folder is not present in the home directory hierarchy, it must be created
- ***Options***
    - **-cp** copy the directory rooted at *source_dir* to *destination_dir* and do not delete the directory rooted at *source_dir*
    - **-mv** move the directory rooted at *source_dir* to *destination_dir* and delete the sub-tree rooted at *source_dir*
- **Extension List**: up to 6 file extensions can provided (c , pdf, txt etc.)
    - **If the file extensions are listed with -cp**, only those file types listed in the extension must be copied (along with the tree rooted at *source_dir* to the *destination_dir*. All the folders must be copied as per the hierarchy.
    - **If extensions are listed with -mv** , only those file types must be moved (along with the tree rooted at *source_dir* to the *destination_dir*. All the folders must be copied as per the original hierarchy and the directory sub-tree rooted at *source_dir* must be deleted.
    - **If the extension list is not provided**, all files and folders must copied or moved depending on -cp or -mv

Requirement:

You must use the system call nftw() that allows you to traverse a file tree. This system call 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 manual of nftw() before you start working on your assignment.**

Sample Runs

- $ dircmx ./folder1 ./folder2/folder3 -cp txt pdf
    - This will copy the entire directory tree rooted at ./folder1 to ./folder2/folder3 and will only copy .txt and .pdf files into the respective folders in the hierarchy
- $ dircmx ~/folder1 ~/folder3 -mv
    - This will move the entire directory tree rooted at ~/folder1 to ~/folder3 (along with all the files and folders as per the *source_dir* hierarchy. The original directory tree rooted at *source_dir* will be deleted.

Appropriate error messages must be displayed by the program based on the specifications.

Submission:

You need to submit only one file : dircmx.c