Course COMP-8567
Assignment 01
Summer 2023
Due Date: Jun/09/2029

Write a C program <u>ncpmvdir</u> that **copies or moves** an entire directory tree rooted at a specific path in the home directory to a specific destination folder in the home directory **minus** the file types specified in the extension list.

Synopsis :

ncpmvdir [*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* is not present in the home directory hierarchy, it should be newly created.

- *options*
  - **-cp** copy the directory rooted at source_dir to destination_dir and <u>do not delete</u> the directory (and contents) rooted at *source_dir*
  - **-mv** move the directory rooted at <u>source_dir</u> to <u>destination_dir</u> and <u>delete</u> the directory (and contents) rooted at *source_dir*

- **extension list:** up to 6 file extensions can provided (c , pdf, txt etc.)

  - **If the extension list is provided with -cp**:
    - The entire sub-tree rooted at *source_dir* along with all its folders/sub-folders/files (**minus** the file types listed in the extension list) must be <u>copied</u> onto the *destination_dir*.
    - All the folders/sub-folders/files must be <u>copied</u> onto *destination_dir* as per the original hierarchy at <u>*source_dir*</u>.
    - If <u>*desintation_dir*</u> does not exist, it must be created.

  - **If the extension list is provided with -mv**:
    - The entire sub-tree rooted at *source_dir* along with all its folders/sub-folders/files (**minus** the file types listed in the extension list) must be <u>moved</u> onto the *destination_dir*.
    - All the folders/sub-folders/files must be <u>moved</u> onto *destination_dir* as per the original hierarchy at <u>*source_dir*</u>.

- If *desintation_dir* does not exist, it must be created.
- The original subtree rooted at *source_dir* **must be deleted** entirely along with its folders/sub-folders/files etc.

○ **If the extension list is not provided**, all files and folders must be copied or moved as per the option chosen.

Sample Runs

- $ ncpmvdir ./folder1 ./folder2/folder3 -cp txt pdf
  ○ This will <u>copy</u> the directory tree rooted at ./folder1 to ./folder2/folder3 as per the *source_dir* hierarchy and will **not copy** the .txt and .pdf files
- $ ncpmvdir ~/folder1 ~/folder3 -mv
  ○ This will <u>move</u> the entire directory tree rooted at ~/folder1 to ~/folder 3 along with all the files and folders as per the *source_dir* hierarchy

If the source directory does not exist or does not belong to the home directory hierarchy, an appropriate error message must be displayed.

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.

Submission:

You need to submit only one file : ncpmvdir.c