

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

Write a C program ncpmvdir 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 do not delete the directory (and contents) rooted at source_dir
 - **-mv** move the directory rooted at source_dir to destination_dir and delete 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 copied onto the destination_dir.
 - All the folders/sub-folders/files must be copied onto destination_dir as per the original hierarchy at source_dir.
 - If destination_dir 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 moved onto the destination_dir.
 - All the folders/sub-folders/files must be moved onto destination_dir as per the original hierarchy at source_dir.

- If destination 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

- \$ ncpmdir ./folder1 ./folder2/folder3 -cp txt pdf
 - This will copy the directory tree rooted at ./folder1 to ./folder2/folder3 as per the *source_dir* hierarchy and will **not copy** the .txt and .pdf files
- \$ ncpmdir ~/folder1 ~/folder3 -mv
 - This will move 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 your 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.

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:

You need to submit two files: //Include your full name, Section# and Student ID at the top of each file

- ncpmdir.c
- ncpmdir.pdf