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To read the given input I used the argparse library. In the –dc option, I use helper function (def for_contents_of_directories(y):), this function takes path as parameter and firstly traverses all files and directories to reach the end of the tree leaf. Because at the end of tree there is no any directory,firstly traverse files by hashing them and put into (contents_of_directories_showed_with_root) dictionary at the index related to their root-path. If directory has no any stuff(file-directory),it is hashed with empy string. Then if the content of all files and sub-directories of parent directories are hashed, their values are summed as string and hashed again to put value parent directory index.
So this process continues until reach given root directory.I use helper function (def names_of_directories_for_duplicate(k)) to find duplicate names of directories. That function again traverses all tree in the post-order method and hashes all files and directories by starting from tree leaf. When this sub process is finish, all hashes are sorted and combined into "s" stiring and then it is hashed again and put it into dictionary (name_of_directories={}) and at the end returns it.
def name_of_files_for_dublicate(z): and (def for_contents_of_files(x))
These functions traverse all sub directories start from root directory to leaf directories and hash them accoring to their name and contents and return name_of_files and contents_of_files dictionaries accordingly. def split_into_groups(result): this function takes dictinonary as parameter and seperates elements and split into associated groups according to their hash values and return them. def write_display(result): this function prints results of options by sorting and splitting into groups. def my_sort(ll): this helper function sort duplicate groups according to their sizes and the paths and then returns them. def filecontent(files_addres):this funciton read files and hashes the content and returns. def trasla(list1,list2): this function is used only in the –cn option and this function combines name and content hash value into single hash value and returns. def size_of_files(x): and def size_of_directories(starting_path): these functions return the size of files and directories. The main function coordinates all options and helper functions.