IN-Memory File System

Basic :

On every Operating System data is stored in a Tree like structure(hierarchical) file system of directories and subdirectories. A IN-File management system is the program used to arrange/manage these files, move them, and create them.....etc. it takes care of how the files are organized in system.

Data structures Used:-

Trees are the best suitable data structure to implement this because nodes and leaves of the tree resemble the directories and sub-directories containing files in them.

Now Question is

why tree ?? why not binary tree???..

Solution :A binary tree cannot do the job here as it restricts to only having two children. N-ary Tree should be implemented solve this. Since we do not know what will be the value of n, each node cannot have a fixed child links..
But if we think that keeping the contents of a directory as a linked list and only storing the first child's address, then each node can have exactly 2 links. This makes it possible to use algorithms of Binary Tree as well.(Take reference from Readme.md file already mentioned).
There is also a need to traverse upwards to its root. This can be solved by creating another link with the parent directory. Although this technically becomes a Graph, but implementation will be like a binary tree in a broad level and like linked list in a directory level.

Solution :

The solution is inspired from Linux shell that has some commands to manage these file oprations.... The program resembles the shell which contains the present working directory on left and prompt at end. The user can use following commands just like these commands in terminal of computers. key commands are:

- cd - to navigate through directories
- ls - to list the files and sub-directories in a directory
- mkdir – to create a new directory
- touch – to create a new file
- rm / rmdir – to remove a file / directory respectively
- cp / mv – to copy / move a file or directory respectively

Algorithms and their Time and space complexity : already mentioned in repo

https://github.com/manishkumawat2655/INITO

To Run / Test the program

Copy the code from github repo (inito_project.cpp) file .

Paste it on online C++ compiler for best expirence ➖> https://www.onlinegdb.com/online_c++_compiler

https://www.tutorialspoint.com/compile_cpp_online.php

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