

Explanation:

Filesystem: is the methods and data structures that an operating system uses to keep track of files on a disk or partition; that is, the way the files are organized on the disk. The word is also used to refer to a partition or disk that is used to store the files or the type of the filesystem. Thus, one might say I have two filesystems" meaning one has two partitions on which one stores files, or that one is using the "extended filesystem", meaning the type of the filesystem.

File descriptors: is a number that uniquely identifies an open file in a computer's operating system. It describes a data resource, and how that resource may be accessed.

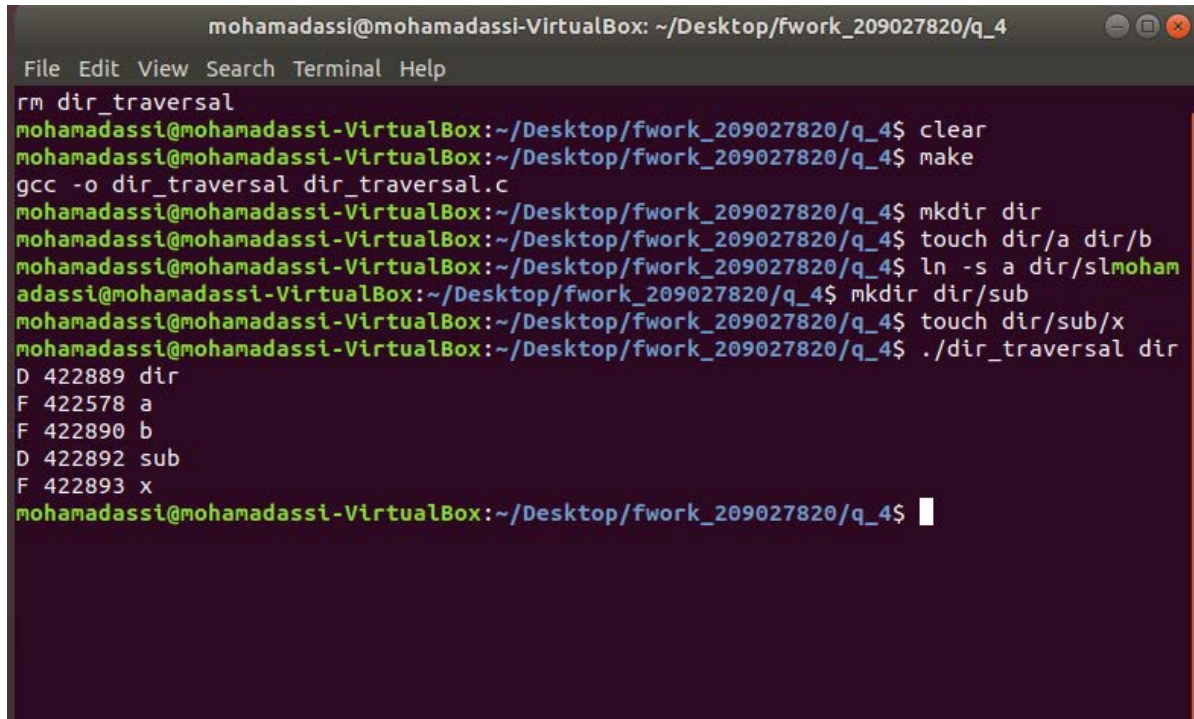
When a program asks to open a file or another data resource, like a network socket the kernel.

Hard links: A hard link is a file that points to the same underlying inode, as another file. In case you delete one file, it removes one link to the underlying inode. Whereas a symbolic link (also known as soft link) is a link to another filename in the filesystem.

Soft links: A soft link is something like a shortcut in Windows. It is an indirect pointer to a file or directory. Unlike a hard link, a symbolic link can point to a file or a directory on a different filesystem or partition.

Inode: is a data structure that stores various information about a file in Linux, such as the access mode (read, write, execute permissions), ownership, file type, file size, group, number of links, etc. Each inode is identified by an integer number. An inode is assigned to a file when it is created.

Screenshot:



```
mohamadassi@mohamadassi-VirtualBox: ~/Desktop/fwork_209027820/q_4
File Edit View Search Terminal Help
rm dir_traversal
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ clear
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ make
gcc -o dir_traversal dir_traversal.c
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ mkdir dir
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ touch dir/a dir/b
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ ln -s a dir/slmo
adassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ mkdir dir/sub
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ touch dir/sub/x
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$ ./dir_traversal dir
D 422889 dir
F 422578 a
F 422890 b
D 422892 sub
F 422893 x
mohamadassi@mohamadassi-VirtualBox:~/Desktop/fwork_209027820/q_4$
```