

Operating Systems

Assignment 2.1

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1)

a)

`opendir` returns a pointer to the first element of the open directory as an opaque data type.

Quote from Linux's Programmers Manual:

„The `opendir` function opens a directory stream corresponding to the directory name, and returns a pointer to the directory stream. The stream is positioned at the first entry in the directory.“

b)

It is, because `opendir` and `open` return similar information about multiple or one files:

`opendir` returns information about filenames and their location, whereas `open` returns a file descriptor, making it possible to read and write to a file. Both functions prepare the usage of a directory / file while only giving basic information about them.

2)

It's not, because `readdir` returns `NULL` when it reaches the end of a `DIR*` from `opendir`. The `DIR*` may be subjected to corruption which may lead to `readdir` to return `NULL`. For example an application may call `readdir` after `closedir` on accident which results in undefined behavior.

3)

- normal files (like user made files)
- device files (like some files under `/dev/`)
- directory files (like link files)
- communication channels (like `/dev/stdout`)

4)

- Size
- Blocks used
- Type of file
- Linkcounter

5)

a)

A hard link stores information about the inode of a file.

b)

A soft link stores information about the path of a file.

6)

„-l: use a long listing format“, which also makes it display the sizes of each file, last written date and time, total bytes and permissions.

-R executes ls for each directory in the current directory, that is not „.“.

-r executes ls but lists in reversed order.

-1 executes ls but lists in single-collum format.