Documentation of Assignment 1

Krishna Somani

2021058

Description of Systems:

• Code is contained in 6 C code files.

• This Linux Shell implements the following commands:

- Internal commands:

    1) cd   : changes the working directory

        i) cd ..   : used to move to the parent directory of current directory

        ii) cd ~ : change directory to the home directory.

        iii)cd   : same as cd~

    2) echo   : prints the given text

        i) echo -n   : omits printing the trailing newline

        ii) echo --help   : displays help menu

    3) pwd   : prints the name of working(current) directory

        i) pwd -P   : prints absolute path, avoids symlinks

        ii) pwd -L   : use PWD from environment, even if it contains symlinks.

- External:
    1)   ls   : lists(prints) directory contents.

        i) ls -r : lists directory contents in reverse order .

        ii) ls -l : lists comma separated directory contents.

    2) cat   : concatenate files and print on the standard output

        i) cat -n   : numbers all output lines.

        ii)cat -E   : display $ at end of each line.

    3) date   : print or set the system date and time

        i) i) date +%d-%m-%y : output date in format (DD-MM-YY).

        ii) date -u   : (prints Universal Time (UTC))

    4) rm   : remove files or directories

i) rm -i   : asks for a confirmation message before removing.

ii) rm -v   : gives a message explaining what is being done.

5) mkdir : make directories

• mkdir -v   : prints a message whenever a directory is created.

• mkdir -p   :make parent directories

- Assumptions made:

After changing directory using cd external commands mentioned are not used again.

- Some of the major errors/corner cases handled are mainly:
    1. Wrong commands/ Command not found.
    2. Missing operands for commands.
    3. Wrong command line options used.

    Specifically, for mkdir:

        1. Directory already exists(in case of mkdir).
        2. mkdir can be used to make multiple directories/files.

    Specifically, for rm:

        1. It is a directory (directories cannot be removed by rm in some cases).
        2. File/Directory doesn't exist.

    Specifically for ls:

        1. Command can be executed using both command line options at the same time too.
        2. Wrong command line option entered for ls.

    Specifically for date:

        1. Wrong command line option entered for date.
        2. Command not found.

    Specifically for cat:

        1. File doesn't exist.
        2. Error in opening the file.

    Specifically for cd:

        1. (cd) option is also provided.
        2. No such file/directory.(provided as path).

    Specifically for pwd:

        1. Wrong command line option entered for pwd.
        2. Wrong command.

Specifically for echo:

1. Wrong command.
2. Command not found.

• Test Cases:

- ls
- ls -r
- ls -m
- ls -r path
- ls -m path
- cat filename
- cat -E filename
- cat -n filename
- date
- date +%d-%m-%y
- date -u
- rm file1
- rm -i filename
- rm -v filename
- mkdir directory1
- mkdir directory1 directory2
- mkdir -v directory1
- mkdir -p directory1/directory2
- cd
- cd ..
- cd path
- cd ~
- echo text
- echo -n text
- echo --help
- pwd
- pwd -P
- pwd -L
- exit

All these test cases can be executed via threads (&t) too.