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LINUX COMMAND ASSIGNMENT 1

Q1. **Find out the username/userid on your machine.**
ANS: For Username:
sumit@sumit-HP-Spectre-x360:~$ whoami
sumit
For user id:
sumit@sumit-HP-Spectre-x360:~$ id
uid=1000(sumit) gid=1000(sumit)
groups=1000(sumit),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),122(lpadmin),135(lxd),136(sambashare)

Q2. **How to print the present working directory path?**
ANS:
sumit@sumit-HP-Spectre-x360:~$ pwd
/home/sumit

Q3. How to go to a given directory (change the directory)?
ANS: We can go to a given directory by using "cd" command
Ex:
sumit@sumit-HP-Spectre-x360:~$ cd Documents/PYTHON/
sumit@sumit-HP-Spectre-x360:~/Documents/PYTHON$

Q4. **What is the command to view the information about a Linux/Unix command? Try to know about the commands "ls".**
ANS:We can use man or help command to get information about a linux/Unix command.

Using man command:

sumit@sumit-HP-Spectre-x360:~/Documents/PYTHON$ man ls
LS(1)   User Commands   LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILEs (the current directory by default). Sort entries alpha-
    betically if none of -cftuvSUX nor --sort is specified.

    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        do not ignore entries starting with .

-A, --almost-all
      do not list implied . and ..

--author
      with -l, print the author of each file

-b, --escape
      print C-style escapes for nongraphic characters

--block-size=SIZE
      with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE
      format below

-B, --ignore-backups
      do not list implied entries ending with ~

-c   with -lt: sort by, and show, ctime (time of last modification of file status infor-
       mation); with -l: show ctime and sort by name; otherwise: sort by ctime, newest
       first

-C   list entries by columns

--color[=WHEN]
      colorize the output; WHEN can be 'always' (default if omitted), 'auto', or 'never';
      more info below

-d, --directory
      list directories themselves, not their contents

-D, --dired
      generate output designed for Emacs' dired mode

-f   do not sort, enable -aU, disable -ls --color

-F, --classify
      append indicator (one of */=>@|) to entries
--file-type
      likewise, except do not append '*'

--format=WORD
      across -x, commas -m, horizontal -x, long -l, single-column -1, verbose -l, vertical
      -C

--full-time
      like -l --time-style=full-iso

-g   like -l, but do not list owner

--group-directories-first
      group directories before files;

can be augmented with a --sort option, but any use of --sort=none (-U) disables grouping

-G, --no-group
    in a long listing, don't print group names

-h, --human-readable
    with -l and -s, print sizes like 1K 234M 2G etc.

--si   likewise, but use powers of 1000 not 1024

-H, --dereference-command-line
    follow symbolic links listed on the command line

--dereference-command-line-symlink-to-dir
    follow each command line symbolic link

    that points to a directory

--hide=PATTERN
    do not list implied entries matching shell PATTERN (overridden by -a or -A)

--hyperlink[=WHEN]
    hyperlink file names; WHEN can be 'always' (default if omitted), 'auto', or 'never'

--indicator-style=WORD
    append indicator with style WORD to entry names: none (default), slash (-p), file-type (--file-type), classify (-F)

-i, --inode
    print the index number of each file

-I, --ignore=PATTERN
    do not list implied entries matching shell PATTERN

-k, --kibibytes
    default to 1024-byte blocks for disk usage; used only with -s and per directory totals

-l   use a long listing format

-L, --dereference
    when showing file information for a symbolic link, show information for the file the link references rather than for the link itself

-m   fill width with a comma separated list of entries

-n, --numeric-uid-gid
    like -l, but list numeric user and group IDs

-N, --literal

print entry names without quoting

-o   like -l, but do not list group information

-p, --indicator-style=slash
       append / indicator to directories

-q, --hide-control-chars
       print ? instead of nongraphic characters

--show-control-chars
       show nongraphic characters as-is (the default, unless program is 'ls' and output is
       a terminal)

-Q, --quote-name
       enclose entry names in double quotes

--quoting-style=WORD
       use quoting style WORD for entry names: literal, locale, shell, shell-always,
       shell-escape, shell-escape-always, c, escape (overrides QUOTING_STYLE environment
       variable)

-r, --reverse
       reverse order while sorting

-R, --recursive
       list subdirectories recursively

-s, --size
       print the allocated size of each file, in blocks

-S   sort by file size, largest first

--sort=WORD
       sort by WORD instead of name: none (-U), size (-S), time (-t), version (-v), exten-
       sion (-X)

--time=WORD
       change the default of using modification times; access time (-u): atime, access,
       use; change time (-c): ctime, status; birth time: birth, creation;

       with -l, WORD determines which time to show; with --sort=time, sort by WORD (newest
       first)

--time-style=TIME_STYLE
       time/date format with -l; see TIME_STYLE below

-t   sort by time, newest first; see --time

-T, --tabsize=COLS
       assume tab stops at each COLS instead of 8

-u   with -lt: sort by, and show, access time; with -l: show access time and sort by
        name; otherwise: sort by access time, newest first

-U   do not sort; list entries in directory order

-v   natural sort of (version) numbers within text

-w, --width=COLS
        set output width to COLS. 0 means no limit

-x   list entries by lines instead of by columns

-X   sort alphabetically by entry extension

-Z, --context
        print any security context of each file

-1   list one file per line. Avoid '\n' with -q or -b

--help display this help and exit

--version
        output version information and exit

The SIZE argument is an integer and optional unit (example: 10K is 10*1024).   Units are
K,M,G,T,P,E,Z,Y (powers of 1024) or KB,MB,... (powers of 1000). Binary prefixes can be
used, too: KiB=K, MiB=M, and so on.

The TIME_STYLE argument can be full-iso, long-iso, iso, locale, or +FORMAT. FORMAT is
in-
        terpreted like in date(1). If FORMAT is FORMAT1<newline>FORMAT2, then FORMAT1
applies to
        non-recent files and FORMAT2 to recent files. TIME_STYLE prefixed with 'posix-' takes ef-
        fect only outside the POSIX locale. Also the TIME_STYLE environment variable sets the de-
        fault style to use.

Using color to distinguish file types is disabled both by default and with --color=never.
With --color=auto, ls emits color codes only when standard output is connected to a termi-
nal. The LS_COLORS environment variable can change the settings. Use the dircolors com-
mand to set it.

  Exit status:
        0   if OK,
 1   if minor problems (e.g., cannot access subdirectory),

        2   if serious trouble (e.g., cannot access command-line argument).

AUTHOR
        Written by Richard M. Stallman and David MacKenzie.

REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report any translation bugs to <https://translationproject.org/team/>

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    <https://gnu.org/licenses/gpl.html>.
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SEE ALSO
    Full documentation <https://www.gnu.org/software/coreutils/ls>
    or available locally via: info '(coreutils) ls invocation'

GNU coreutils 8.32   February 2024   LS(1)

Using help command:
sumit@sumit-HP-Spectre-x360:~/Documents/PYTHON$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.
 -a, --all   do not ignore entries starting with .
 -A, --almost-all   do not list implied . and ..
    --author   with -l, print the author of each file
 -b, --escape   print C-style escapes for nongraphic characters
    --block-size=SIZE   with -l, scale sizes by SIZE when printing them;
                      e.g., '--block-size=M'; see SIZE format below
 -B, --ignore-backups   do not list implied entries ending with ~
 -c   with -lt: sort by, and show, ctime (time of last
                      modification of file status information);
                      with -l: show ctime and sort by name;
                      otherwise: sort by ctime, newest first
 -C   list entries by columns
    --color[=WHEN]   colorize the output; WHEN can be 'always' (default
                      if omitted), 'auto', or 'never'; more info below
 -d, --directory   list directories themselves, not their contents
 -D, --dired   generate output designed for Emacs' dired mode
 -f   do not sort, enable -aU, disable -ls --color
 -F, --classify   append indicator (one of */=>@|) to entries
    --file-type   likewise, except do not append '*'
    --format=WORD   across -x, commas -m, horizontal -x, long -l,
                      single-column -1, verbose -l, vertical -C
    --full-time   like -l --time-style=full-iso
 -g   like -l, but do not list owner
    --group-directories-first
                      group directories before files;
                       can be augmented with a --sort option, but any

```
                              use of --sort=none (-U) disables grouping
-G, --no-group            in a long listing, don't print group names
-h, --human-readable      with -l and -s, print sizes like 1K 234M 2G etc.
    --si                  likewise, but use powers of 1000 not 1024
-H, --dereference-command-line
                          follow symbolic links listed on the command line
    --dereference-command-line-symlink-to-dir
                          follow each command line symbolic link
                           that points to a directory
    --hide=PATTERN        do not list implied entries matching shell PATTERN
                          (overridden by -a or -A)
    --hyperlink[=WHEN]    hyperlink file names; WHEN can be 'always'
                          (default if omitted), 'auto', or 'never'
    --indicator-style=WORD  append indicator with style WORD to entry names:
                           none (default), slash (-p),
                           file-type (--file-type), classify (-F)
-i, --inode               print the index number of each file
-I, --ignore=PATTERN      do not list implied entries matching shell PATTERN
-k, --kibibytes           default to 1024-byte blocks for disk usage;
                           used only with -s and per directory totals
-l                        use a long listing format
-L, --dereference         when showing file information for a symbolic
                           link, show information for the file the link
                           references rather than for the link itself
-m                        fill width with a comma separated list of entries
-n, --numeric-uid-gid     like -l, but list numeric user and group IDs
-N, --literal             print entry names without quoting
-o                        like -l, but do not list group information
-p, --indicator-style=slash
                          append / indicator to directories
-q, --hide-control-chars  print ? instead of nongraphic characters
    --show-control-chars  show nongraphic characters as-is (the default,
                           unless program is 'ls' and output is a terminal)
-Q, --quote-name          enclose entry names in double quotes
    --quoting-style=WORD  use quoting style WORD for entry names:
                           literal, locale, shell, shell-always,
                           shell-escape, shell-escape-always, c, escape
                           (overrides QUOTING_STYLE environment variable)
-r, --reverse             reverse order while sorting
-R, --recursive           list subdirectories recursively
-s, --size                print the allocated size of each file, in blocks
-S                        sort by file size, largest first
    --sort=WORD           sort by WORD instead of name: none (-U), size (-S),
                           time (-t), version (-v), extension (-X)
    --time=WORD           change the default of using modification times;
                           access time (-u): atime, access, use;
                           change time (-c): ctime, status;
                           birth time: birth, creation;
                          with -l, WORD determines which time to show;
                          with --sort=time, sort by WORD (newest first)
    --time-style=TIME_STYLE  time/date format with -l; see TIME_STYLE below
```

```
 -t                  sort by time, newest first; see --time
 -T, --tabsize=COLS       assume tab stops at each COLS instead of 8
 -u                  with -lt: sort by, and show, access time;
                     with -l: show access time and sort by name;
                     otherwise: sort by access time, newest first
 -U                  do not sort; list entries in directory order
 -v                  natural sort of (version) numbers within text
 -w, --width=COLS         set output width to COLS.  0 means no limit
 -x                  list entries by lines instead of by columns
 -X                  sort alphabetically by entry extension
 -Z, --context         print any security context of each file
 -1                  list one file per line.  Avoid '\n' with -q or -b
    --help     display this help and exit
    --version  output version information and exit
```

The SIZE argument is an integer and optional unit (example: 10K is 10*1024).
Units are K,M,G,T,P,E,Z,Y (powers of 1024) or KB,MB,... (powers of 1000).
Binary prefixes can be used, too: KiB=K, MiB=M, and so on.

The TIME_STYLE argument can be full-iso, long-iso, iso, locale, or +FORMAT.
FORMAT is interpreted like in date(1). If FORMAT is FORMAT1<newline>FORMAT2,
then FORMAT1 applies to non-recent files and FORMAT2 to recent files.
TIME_STYLE prefixed with 'posix-' takes effect only outside the POSIX locale.
Also the TIME_STYLE environment variable sets the default style to use.

Using color to distinguish file types is disabled both by default and
with --color=never. With --color=auto, ls emits color codes only when
standard output is connected to a terminal. The LS_COLORS environment
variable can change the settings. Use the dircolors command to set it.

Exit status:
 0 if OK,
 1 if minor problems (e.g., cannot access subdirectory),
 2 if serious trouble (e.g., cannot access command-line argument).

GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Full documentation <https://www.gnu.org/software/coreutils/ls>
or available locally via: info '(coreutils) ls invocation'

**Q5. View the man page for command 'id' and find the options for printing all the
groups associated to a user with name.**
ANS:
sumit@sumit-HP-Spectre-x360:~/Documents/PYTHON$ man id

ID(1)   User Commands   ID(1)

NAME
    id - print real and effective user and group IDs

SYNOPSIS
    id [OPTION]... [USER]...

DESCRIPTION

Print user and group information for each specified USER, or (when USER omitted) for the cur-
rent user.

-a   ignore, for compatibility with other versions

-Z, --context
       print only the security context of the process

-g, --group
       print only the effective group ID

-G, --groups
       print all group IDs

-n, --name
       print a name instead of a number, for -ugG

-r, --real
       print the real ID instead of the effective ID, with -ugG

-u, --user
       print only the effective user ID

-z, --zero
       delimit entries with NUL characters, not whitespace;

       not permitted in default format

--help display this help and exit

--version
       output version information and exit

Without any OPTION, print some useful set of identified information.

AUTHOR
Written by Arnold Robbins and David MacKenzie.

REPORTING BUGS
GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Report any translation bugs to <https://translationproject.org/team/>

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the extent permitted by law.

SEE ALSO
    Full documentation <https://www.gnu.org/software/coreutils/id>
    or available locally via: info '(coreutils) id invocation'

GNU coreutils 8.32   February 2024   ID(1)

command to print all the groups associated to a user with name:

sumit@sumit-HP-Spectre-x360:~/Documents/PYTHON$ id -Gn
sumit adm cdrom sudo dip plugdev lpadmin lxd sambashare

Q6. Create a file called "ctest". Modify the access permissions as: "user - rwx", "group - rx", and "others - nothing".
ANS:
* command to create ctest file :
sumit@sumit-HP-Spectre-x360:~$ touch ctest
* setting permissions:
sumit@sumit-HP-Spectre-x360:~$ chmod 750 ctest

verification of permissions:
sumit@sumit-HP-Spectre-x360:~$ ls -la ctest
-rwxr-x--- 1 sumit sumit 0 Sep 17 23:42 ctest

Q7. Create a 3 level directory in your home directory as shown in the structure below with single command.
mydir
|
Subdir1
|
Subdir2

Now move the whole directory i.e. mydir to mydir1 and change the permissions as owner-rwx, group-rx, others-x.

ANS:
command to create 3 level directory:
sumit@sumit-HP-Spectre-x360:~$ mkdir -p mydir/Subdir1/Subdir2

setting permission:
sumit@sumit-HP-Spectre-x360:~$ chmod 751 mydir1/
Verification:
sumit@sumit-HP-Spectre-x360:~$ ls -la mydir1/
total 12
drwxr-x--x 3 sumit sumit 4096 Sep 17 23:54 .
drwxr-x--- 24 sumit sumit 4096 Sep 17 23:54 ..
drwxrwxr-x 3 sumit sumit 4096 Sep 17 23:49 mydir

Q8. Create a text file using an editor with content as:
Welcome to ACTS courses.

First day is about Linux.
It's a very commonly used OS.
Simple to understand and work.
Many os are based on LINUX.
All linux OS are open source and freely available.
ANS:
sumit@sumit-HP-Spectre-x360:~$ touch sample.txt
sumit@sumit-HP-Spectre-x360:~$ nano sample.txt

8. a) a) From the file get the count of word "Linux" it must also include LINUX while counting.
ANS:
sumit@sumit-HP-Spectre-x360:~$ grep -ci 'linux' sample.txt
3

8. b) b) Display lines that exactly have the word 'OS'.
ANS:
sumit@sumit-HP-Spectre-x360:~$ grep -w 'OS' sample.txt
It's a very commonly used OS.
All linux OS are open source and freely available.

8. c) Display the line number where appears word 'Linux' irrespective of case.
ANS:
sumit@sumit-HP-Spectre-x360:~$ grep -ni 'Linux' sample.txt
2:First day is about Linux.
5:Many os are based on LINUX.
6:All linux OS are open source and freely available.

Q9. Create sample files ending with ".txt" in your directory. Now run a command to list all the files ending with "txt".
ANS:
sumit@sumit-HP-Spectre-x360:~$ touch file{1..5}.txt
sumit@sumit-HP-Spectre-x360:~$ ls
ctest   Documents file1.txt file3.txt file5.txt mydir1   Public   snap   Videos
Desktop Downloads file2.txt file4.txt Music   Pictures sample.txt Templates
sumit@sumit-HP-Spectre-x360:~$ ls *.txt
file1.txt file2.txt file3.txt file4.txt file5.txt sample.txt

Q10. Create a file "test" in the directory /home/cdac/mydir1/subdir1/test. Go to the home directory and now find the file "test" executing the appropriate command.
ANS: Create file command:
sumit@sumit-HP-Spectre-x360:~$ touch mydir1/Subdir1/test

Find command:
sumit@sumit-HP-Spectre-x360:/home$ find ./ -name test
./sumit/mydir1/mydir/Subdir1/test

Q11. From home directory list all the files including the hidden files.
ANS:
sumit@sumit-HP-Spectre-x360:/home$ ls -a ~

```
.            .config  file2.txt  .lesshst    .pki           Templates
..           ctest    file3.txt  .local      .profile       Videos
.bash_history Desktop  file4.txt  .mongodb    Public              .vscode
.bash_logout Documents file5.txt  Music       sample.txt
.bashrc      .dotnet  .fontconfig mydir1      snap
.cache       Downloads .gnupg     .mysql_history .ssh
.cassandra   file1.txt .ipython   Pictures    .sudo_as_admin_successful
```

Q12. Create a file with the following content:
You absolutely must run these exercises in the bash shell, or results will not be as expected.
1. Display first 2 lines from the file.
Ans:
2. Display last 2 lines from the file.
Ans:
3. Display exactly the tenth line in the file.

ANS:
code of bash file:

```
#!/bin/bash
echo first two lines:
head -n 2 sample.txt

echo last two lines:
tail -n 2 sample.txt

echo 10th line is :
cat sample.txt | sed -n '10p'
```

output (i`ve repeated the paragraph for 10th line)):
sumit@sumit-s-hp-spectre-x360:~/linux_assign$ ./script1.sh
first two lines:
Welcome to ACTS courses.
First day is about Linux.
last two lines:
Many os are based on LINUX.
All linux OS are open source and freely available.
10th line is :
Simple to understand and work.

Q13.Create a set of 3 files and tar them to myfirst.tar. Untar the tar file myfirst.tar and check the extracted files.
ANS:
craeting 3 files:
sumit@sumit-s-hp-spectre-x360:~/linux_assign$ touch {1..3}}
now creating tar file :
sumit@sumit-s-hp-spectre-x360:~/linux_assign$ tar -cvf myfirst.tar {1..3}

command to extract the file :
sumit@sumit-s-hp-spectre-x360:~/linux_assign/unzip$ tar -xvf myfirst.tar