

LAB 2

Subject: OSG202

Teacher : Nguyễn Tấn Phúc

Student: Dương Hồng Quân

Student ID: SE170057

man command

- **Syntax**

```
man [OPTION][SECTION] PAGE...
```

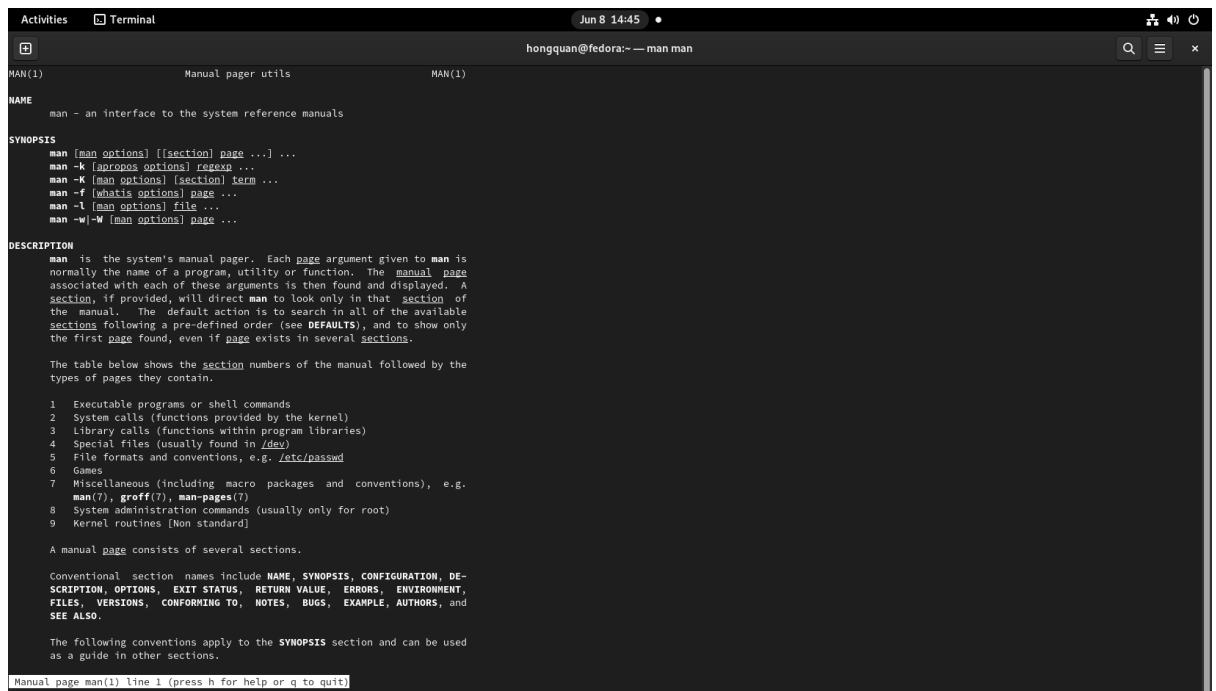
- **Funtion**

View the system's reference manual.

- **Example**

1. View the manual page for the man command.

```
man man
```



The screenshot shows a terminal window titled "Terminal" with the command "man man" executed. The output is the manual page for the 'man' command, which includes sections for NAME, SYNOPSIS, and DESCRIPTION. The DESCRIPTION section explains that 'man' is the system's manual pager and lists various options like -k, -K, -f, -l, and -w|-W. It also provides a table of section numbers and types of pages they contain.

```
MAN(1) Manual pager utils MAN(1)
NAME
man - an interface to the system reference manuals

SYNOPSIS
man [man options] [[section] page ...] ...
man -k [man options] entry ...
man -K [man options] [section] term ...
man -f [whatis options] page ...
man -l [man options] file ...
man -w|-W [man options] page ...

DESCRIPTION
man is the system's manual pager. Each page argument given to man is normally the name of a program, utility or function. The manual page associated with each of these arguments is then found and displayed. A section, if provided, will direct man to look only in that section of the manual. The default action is to search in all of the available sections following a pre-defined order (see DEFAULTS), and to show only the first page found, even if page exists in several sections.

The table below shows the section numbers of the manual followed by the types of pages they contain.

1 Executable programs or shell commands
2 System calls (functions provided by the kernel)
3 Library calls (functions within program libraries)
4 Special files (usually found in /dev)
5 File formats and conventions, e.g. /etc/passwd
6 Games
7 Miscellaneous (including macro packages and conventions), e.g. man(7), groff(7), man-pages(7)
8 System administration commands (usually only for root)
9 Kernel routines [Non standard]

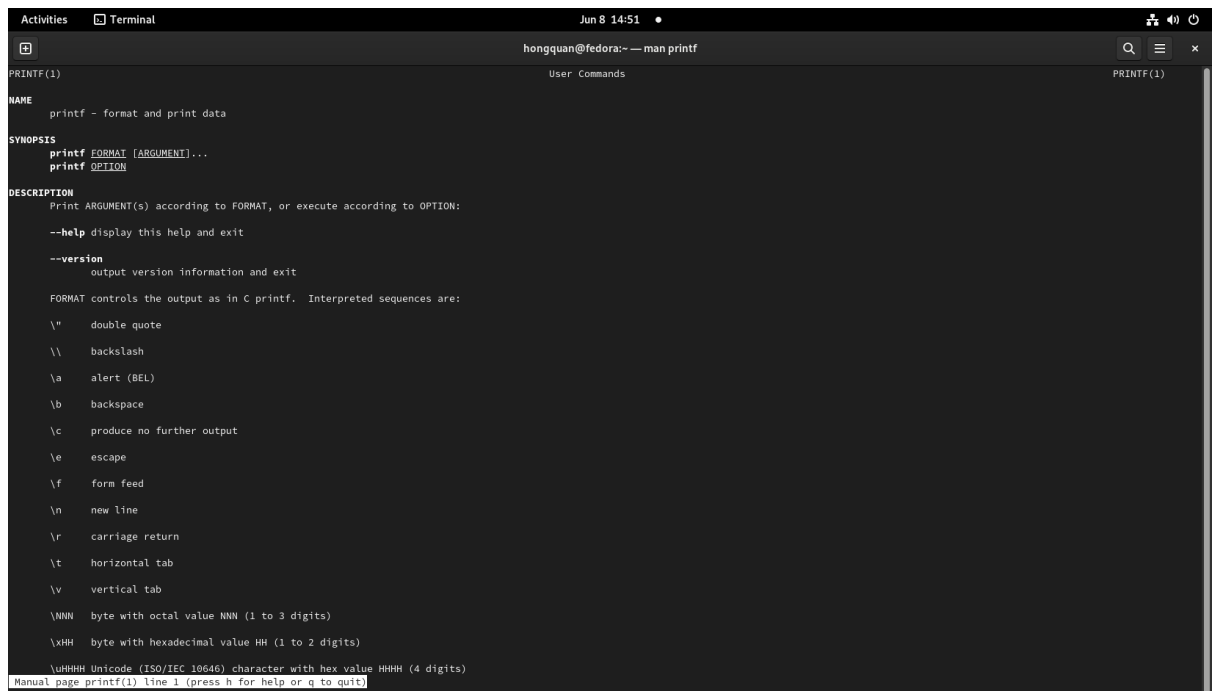
A manual page consists of several sections.

Conventional section names include NAME, SYNOPSIS, CONFIGURATION, DESCRIPTION, OPTIONS, EXIT STATUS, RETURN VALUE, ERRORS, ENVIRONMENT, FILES, VERSIONS, CONFORMING TO, NOTES, BUGS, EXAMPLE, AUTHORS, and SEE ALSO.

The following conventions apply to the SYNOPSIS section and can be used as a guide in other sections.
```

2. Manual pages of the command “printf” are simply returned.

```
man printf
```



The screenshot shows a terminal window titled "Activities" and "Terminal" with the date "Jun 8 14:51". The terminal is displaying the man page for the `printf` command. The page is titled "PRINTF(1)" and "User Commands". It includes sections for NAME, SYNOPSIS, and DESCRIPTION. The SYNOPSIS section shows the command syntax: `printf FORMAT [ARGUMENT]...` and `printf OPTION`. The DESCRIPTION section explains that `printf` prints `ARGUMENT(s)` according to `FORMAT`, or executes according to `OPTION`. It lists options like `--help` and `--version`. It also details the interpreted sequences for `FORMAT`, such as `\n` for new line, `\t` for horizontal tab, and `\xHH` for hexadecimal values. The bottom of the screen shows the footer: "Manual page printf(1) line 1 (press h for help or q to quit)".

```
PRINTF(1)
User Commands
PRINTF(1)

NAME
    printf - format and print data

SYNOPSIS
    printf FORMAT [ARGUMENT]...
    printf OPTION

DESCRIPTION
    Print ARGUMENT(s) according to FORMAT, or execute according to OPTION:

    --help display this help and exit
    --version output version information and exit

    FORMAT controls the output as in C printf.  Interpreted sequences are:

    \" double quote
    \\ backslash
    \a alert (BEL)
    \b backspace
    \c produce no further output
    \e escape
    \f form feed
    \n new line
    \r carriage return
    \t horizontal tab
    \v vertical tab
    \NNN byte with octal value NNN (1 to 3 digits)
    \xHH byte with hexadecimal value HH (1 to 2 digits)
    \uHHHH Unicode (ISO/IEC 10646) character with hex value HHHH (4 digits)

Manual page printf(1) line 1 (press h for help or q to quit)
```

Sudo command

- Syntax

```
sudo [command]
```

- Example:

1. lists the user's privileges, or checks a specific command

```
sudo -l
```

```
Activities Terminal Jun 8 14:58 hongquan@fedora:~  
[hongquan@fedora ~]$ sudo -l  
Matching Defaults entries for hongquan on fedora:  
!visiblepw, always_set_home, match_group_by_gid, always_query_group_plugin, env_reset, env_keep="COLORS DISPLAY HOSTNAME HISTSIZE KOEDIR LS_COLORS", env_keep="MAIL QDIR USERNAME LANG LC_ADDRESS  
LC_CTYPE", env_keep="LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT LC_MESSAGES", env_keep="LC_MONETARY LC_NAME LC_NUMERIC LC_PAPER LC_TELEPHONE", env_keep="LC_TIME LC_ALL LANGUAGE LINGUAS  
_XKB_CHARSET XAUTHORITY", secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/var/lib/snap/snap/bin  
User hongquan may run the following commands on fedora:  
(ALL) ALL  
[hongquan@fedora ~]$
```

2. displays syntax and command options

sudo --help

```
Activities Terminal Jun 8 15:01 hongquan@fedora:~  
[hongquan@fedora ~]$ sudo --help  
sudo - execute a command as another user  
  
usage: sudo -h | -K | -k | -V  
usage: sudo -v [-ABkns] [-g group] [-h host] [-p prompt] [-u user]  
usage: sudo -l [-ABkns] [-g group] [-h host] [-p prompt] [-u user] [command]  
usage: sudo [-ABbEHknps] [-r role] [-t type] [-C num] [-D directory] [-g group] [-h host] [-p prompt] [-R directory] [-T timeout] [-u user] [VAR=value] [-i|-s] [command]  
usage: sudo -e [-ABkns] [-r role] [-t type] [-C num] [-D directory] [-g group] [-h host] [-p prompt] [-R directory] [-T timeout] [-u user] file ...  
  
Options:  
-A, --askpass use a helper program for password prompting  
-B, --background run command in the background  
-b, --bell ring bell when prompting  
-C, --close-from=num close all file descriptors >= num  
-D, --chdir=directory change the working directory before running command  
-E, --preserve-env preserve user environment when running command  
--preserve-env-list preserve specific environment variables  
-e, --edit edit files instead of running a command  
-g, --group=group run command as the specified group name or ID  
-H, --set-home set HOME variable to target user's home dir  
-h, --help display help message and exit  
-H, --host=host run command on host (if supported by plugin)  
-i, --login run login shell as the target user; a command may also be specified  
-K, --remove-timestamp remove timestamp file completely  
-k, --reset-timestamp invalidate timestamp file  
-l, --list list user's privileges or check a specific command; use twice for longer format  
-n, --non-interactive non-interactive mode, no prompts are used  
-P, --preserve-groups preserve group vector instead of setting to target's  
-p, --prompt=prompt use the specified password prompt  
-R, --chroot=directory change the root directory before running command  
-r, --role=role create SELinux security context with specified role  
-S, --stdin read password from standard input  
-s, --shell run shell as the target user; a command may also be specified  
-t, --type=type create SELinux security context with specified type  
-T, --command-timeout=timeout terminate command after the specified time limit  
-U, --other-user=user in list mode, display privileges for user  
-u, --user=user run command (or edit file) as specified user name or ID  
-V, --version display version information and exit  
-v, --validate update user's timestamp without running a command  
- , stop processing command line arguments  
[hongquan@fedora ~]$
```

Chown command

- **Syntax**

```
chown [OPTION]...[OWNER]:[GROUP] FILE...
```

```
chown [OPTION]...--reference = RFILE FILE...
```

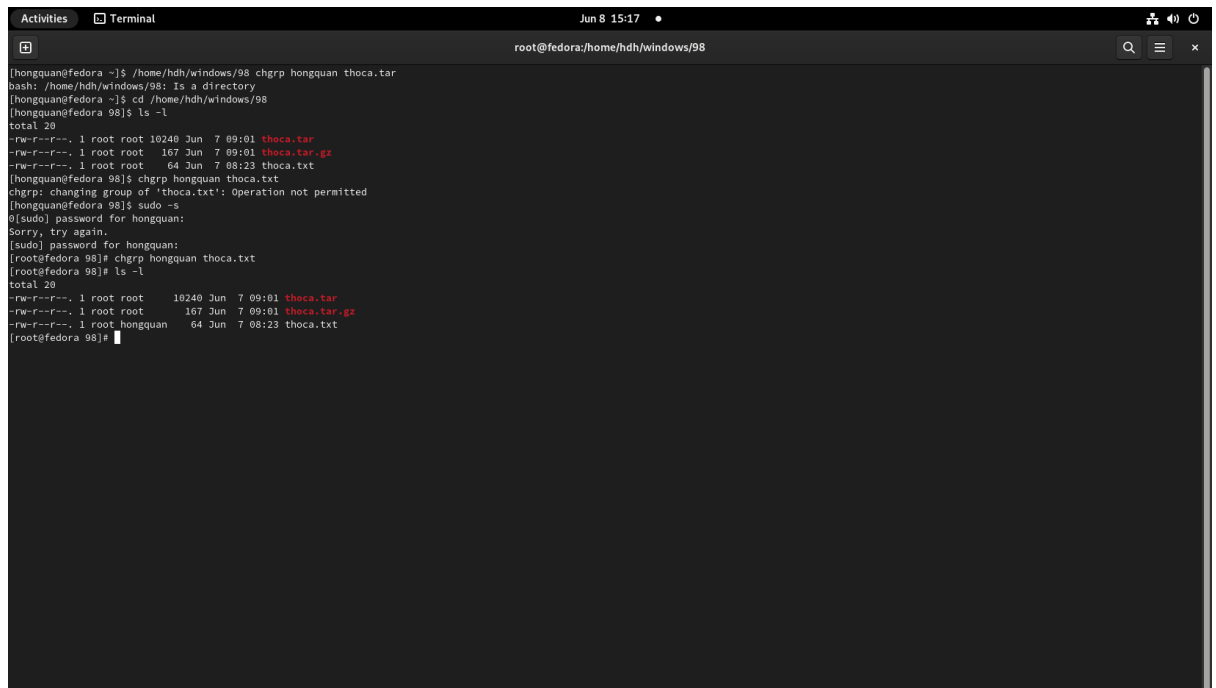
- **Funtions**

Change the ownersip of files and directories in a filesystem.

- **Example**

1.Change the owning group of the file thoca.txt to the group named **hongquan**

```
chgrp hongquan thoca.txt
```

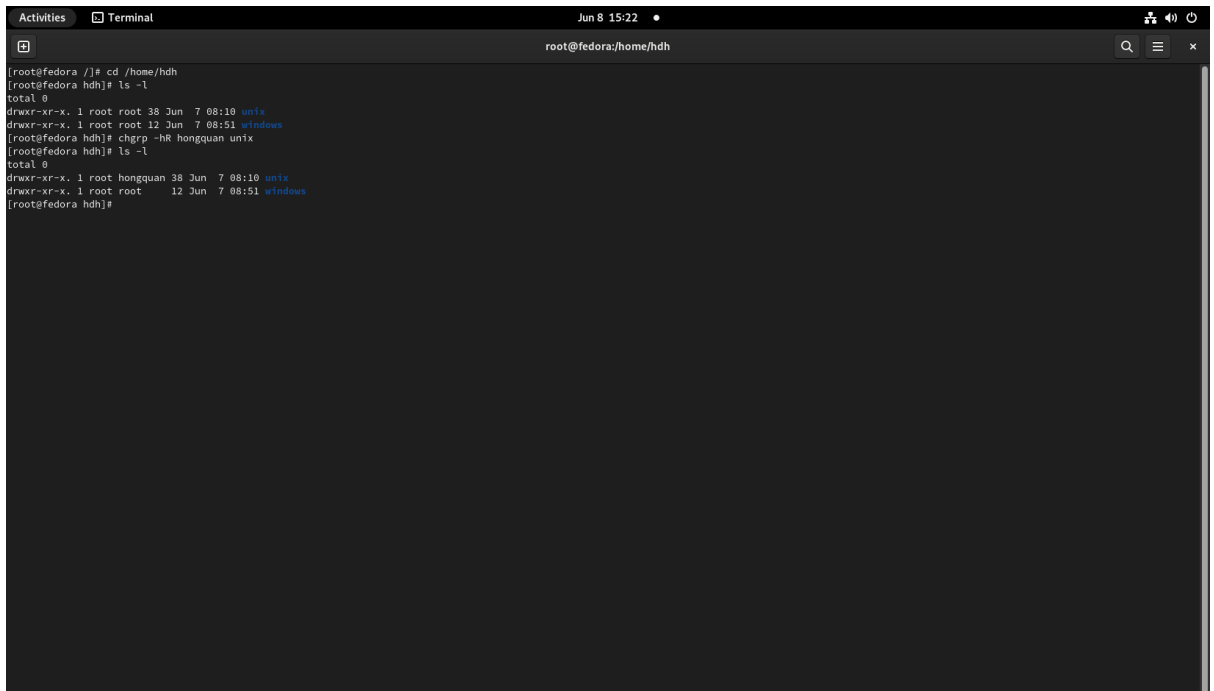


```
Activities  Terminal  Jun 8 15:17
root@fedora:/home/hdh/windows/98

[hongquan@fedora ~]$ /home/hdh/windows/98 chgrp hongquan thoca.tar
bash: /home/hdh/windows/98: is a directory
[hongquan@fedora ~]$ cd /home/hdh/windows/98
[hongquan@fedora 98]$ ls -l
total 20
-rw-r--r--. 1 root root 10240 Jun  7 09:01 thoca.tar
-rw-r--r--. 1 root root 167 Jun  7 09:01 thoca.tar.gz
-rw-r--r--. 1 root root 64 Jun  7 08:23 thoca.txt
[hongquan@fedora 98]$ chgrp hongquan thoca.txt
chgrp: changing group of 'thoca.txt': Operation not permitted
[hongquan@fedora 98]$ sudo -s
[sudo] password for hongquan:
Sorry, try again.
[sudo] password for hongquan:
[root@fedora 98]# chgrp hongquan thoca.txt
[root@fedora 98]# ls -l
total 20
-rw-r--r--. 1 root root 10240 Jun  7 09:01 thoca.tar
-rw-r--r--. 1 root root 167 Jun  7 09:01 thoca.tar.gz
-rw-r--r--. 1 root hongquan 64 Jun  7 08:23 thoca.txt
[root@fedora 98]#
```

2.Change the root group to the group hongquan

```
chgrp -hR hongquan unix
```

A terminal window titled 'Terminal' with a dark background. The prompt is 'root@fedora: /home/hdh'. The user enters 'ls -l' and the output shows two files: 'unix' and 'windows'. Then the user enters 'chgrp -hR hongquan unix' and runs 'ls -l' again. The output now shows the 'unix' file's group has changed to 'hongquan'.

```
[root@fedora /]# cd /home/hdh
[root@fedora hdh]# ls -l
total 0
drwxr-xr-x. 1 root root 38 Jun  7 08:10 unix
drwxr-xr-x. 1 root root 12 Jun  7 08:51 windows
[root@fedora hdh]# chgrp -hR hongquan unix
[root@fedora hdh]# ls -l
total 0
drwxr-xr-x. 1 root hongquan 38 Jun  7 08:10 unix
drwxr-xr-x. 1 root root    12 Jun  7 08:51 windows
[root@fedora hdh]#
```

Date command

- **Syntax:**

```
date [OPTION]...[+FORMAT]
```

```
Date [-u | --utc | --universal]
[MMDDhhmm[[CC|YY][.ss]]
```

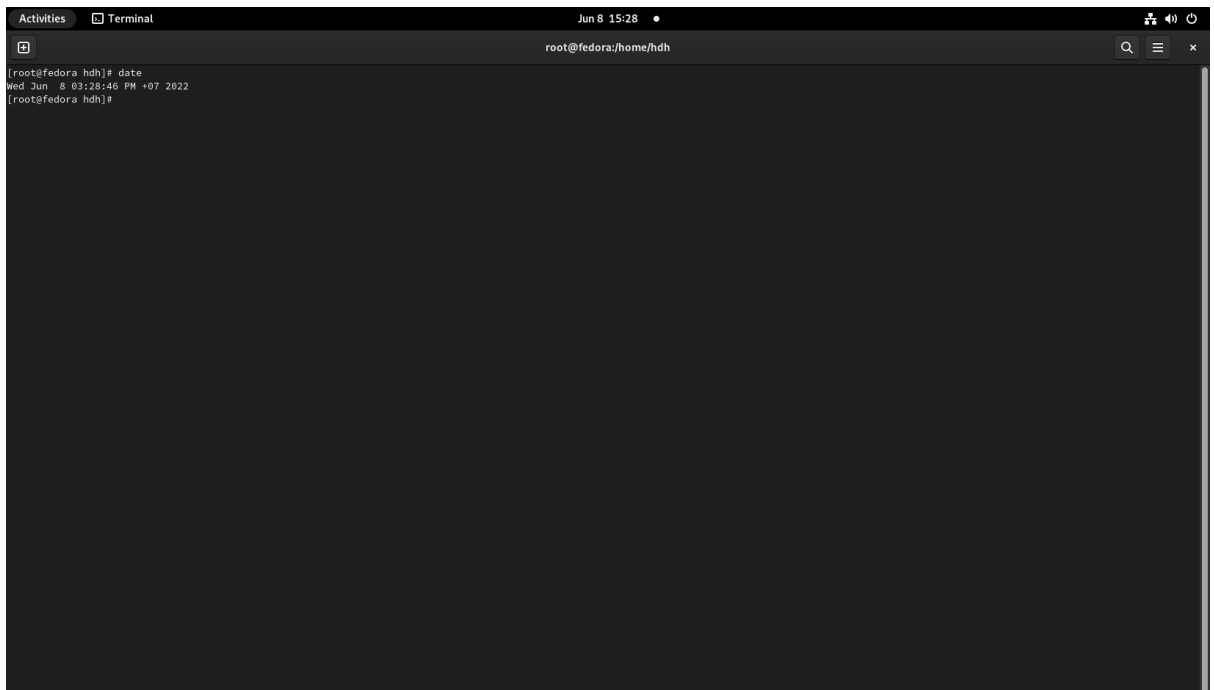
- **Funtion:**

Print out, or change the value of the system 's time and date information

- **Example:**

1. **Print the system date and time**

```
date
```

A screenshot of a Linux terminal window. The window title is "Terminal" and the current directory is "root@fedora:/home/hdh". The terminal shows the command "date" being executed, which outputs "Wed Jun 8 8 03:28:46 PM +07 2022". The prompt "[root@fedora hdh]#" is visible before and after the command.

```
[root@fedora hdh]# date
Wed Jun 8 8 03:28:46 PM +07 2022
[root@fedora hdh]#
```

2. **displays syntax and command options**

```
date --help
```

```
Activities Terminal Jun 8 18:59 hongquan@fedora:~  
[hongquan@fedora ~]$ date --help  
Usage: date [OPTION]... [+FORMAT]  
or: date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]  
Display the current time in the given FORMAT, or set the system date.  
  
Mandatory arguments to long options are mandatory for short options too.  
-d, --date=STRING      display time described by STRING, not 'now'  
--debug                annotate the parsed date,  
                        and warn about questionable usage to stderr  
-f, --file=DATEFILE    like --date; once for each line of DATEFILE  
-I([FMT]), --iso-8601[=[FMT]] output date/time in ISO 8601 format.  
                        FMT='date' for date only (the default),  
                        'hours', 'minutes', 'seconds', or 'ns'  
                        for date and time to the indicated precision.  
                        Example: 2006-08-14T02:34:56-06:00  
-R, --rfc-email         output date and time in RFC 5322 format.  
                        Example: Mon, 14 Aug 2006 02:34:56 -0600  
--rfc-3339=FMT         output date/time in RFC 3339 format.  
                        FMT='date', 'seconds', or 'ns'  
                        for date and time to the indicated precision.  
                        Example: 2006-08-14 02:34:56-06:00  
-r, --reference=FILE    display the last modification time of FILE  
-s, --set=STRING        set time described by STRING  
-u, --utc, --universal  print or set Coordinated Universal Time (UTC)  
--help                 display this help and exit  
--version              output version information and exit  
  
FORMAT controls the output.  Interpreted sequences are:  
  
%%      a literal %  
%a      locale's abbreviated weekday name (e.g., Sun)  
%A      locale's full weekday name (e.g., Sunday)  
%b      locale's abbreviated month name (e.g., Jan)  
%B      locale's full month name (e.g., January)  
%c      locale's date and time (e.g., Thu Mar 3 23:05:25 2005)  
%C      century; like %Y, except omit last two digits (e.g., 20)  
%d      day of month (e.g., 01)  
%D      date; same as %m/%d/%y  
%e      day of month, space padded; same as %_d  
%F      full date; like %+4Y-%m-%d  
%g      last two digits of year of ISO week number (see %G)  
%G      year of ISO week number (see %V); normally useful only with %V  
%h      same as %b  
%H      hour (00..23)  
%I      hour (01..12)  
%j      day of year (001..366)  
%k      hour, space padded ( 0..23); same as %_H  
%l      hour, space padded ( 1..12); same as %_l
```

Grep “thaison” thoca.txt

```
Activities Terminal Jun 8 15:43 root@fedora:/home/fhdh/windows/2003  
[root@fedora 2003]# whereis grep  
grep: /usr/bin/grep /usr/share/man/man1/grep.1.gz /usr/share/man/man1p/grep.1p.gz /usr/share/info/grep.info.gz  
[root@fedora 2003]#
```

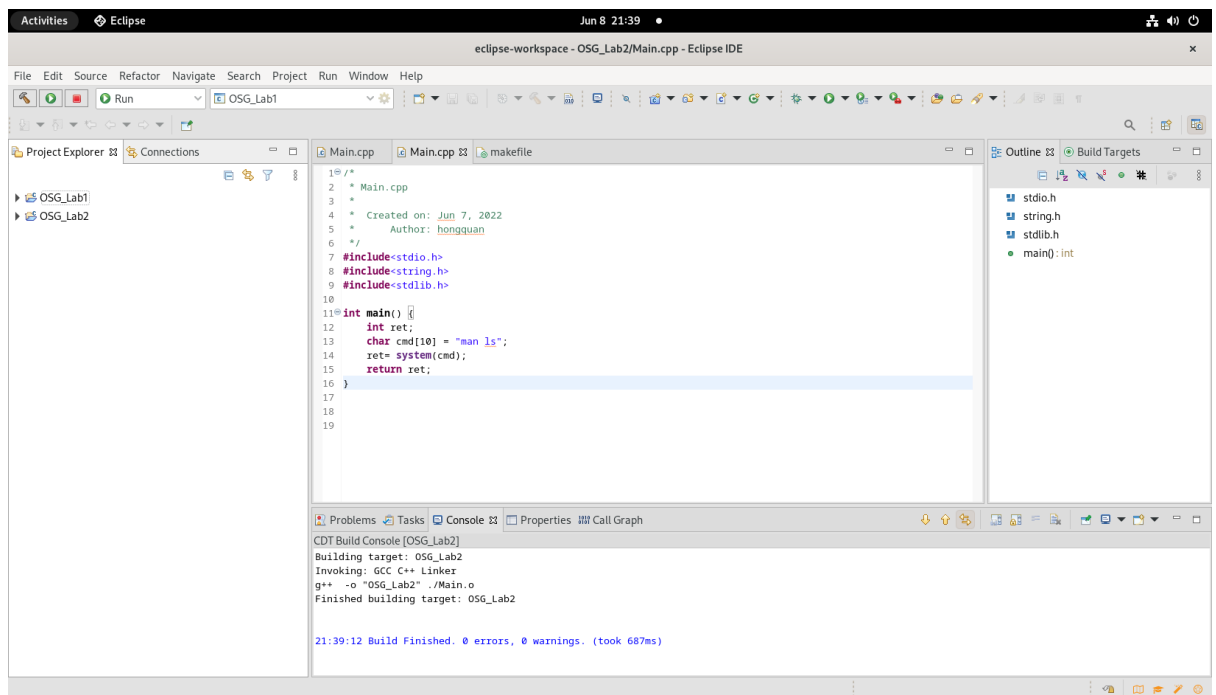
Explain:

The grep command is used to print out the line in the text file that matches a specified pattern.

In this context, the file and the pattern are thoca.txt and “thai son”. After entering the grep command, it processed the text in thoca.txt line by line to find the line that have the string “thai son” in it.

Finally, it printed out the result, which is the line “cong cha nhu nui thai son” with “thai son” in red.

C files:



The image consists of two terminal window screenshots. The top screenshot shows the manual page for the 'ls' command, displaying its synopsis, description, and various options like -a, -l, -s, etc. The bottom screenshot shows the terminal output of the 'ls' command being executed in a directory named 'OSG_Lab2', listing files 'Main.cpp' and 'main.out'.

```
Activities Terminal Jun 8 18:49 hongquan@fedora:~/eclipse-workspace/OSG_Lab2 — ./main.out
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 alphabetically if none of -cftuvSUX nor --sort is speci-
fied.
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
Manual page ls(1) line 1 (press h for help or q to quit)
```

```
Activities Terminal Jun 8 18:50 hongquan@fedora:~/eclipse-workspace/OSG_Lab2
[hongquan@fedora /]$ cd /home/hongquan/eclipse-workspace/OSG_Lab2
[hongquan@fedora OSG_Lab2]$ ls
Main.cpp  main.out
[hongquan@fedora OSG_Lab2]$ g++ -o main.out Main.cpp
[hongquan@fedora OSG_Lab2]$ ./main.out
q[hongquan@fedora OSG_Lab2]$
```

Explain:

The `system()` function in C is used to pass the commands that can be executed in the command processor or terminal of the operating system. Then, it executes the command and finally returns

the status of the command, or -1 if there is an error.

In this case, we passed the `man ls` command in the `system()` function. Then, the computer executed the command and printed out the manual page of `ls` command in the output. After that, the `system()` function returned the status of the executed command, which was 0 for success. Next, the `ret` variable stored the return value of the `system()` function. Finally, the program returned the value of variable `ret`, which was 0.