Task1.Part1

1) Log in to the system as root.


```
student@CsnKhai:~$ sudo su
[sudo] password for student:
root@CsnKhai:/home/student#
```

2) Use the passwd command to change the password. Examine the basic parameters of the command. What system file does it change *?


```
root@CsnKhai:/home/student# passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@CsnKhai:/home/student# passwd -help
Usage: passwd [options] [LOGIN]

Options:
  -a, --all                    report password status on all accounts
  -d, --delete                 delete the password for the named account
  -e, --expire                 force expire the password for the named account
  -h, --help                   display this help message and exit
  -k, --keep-tokens            change password only if expired
  -i, --inactive INACTIVE      set password inactive after expiration
                               to INACTIVE
  -l, --lock                   lock the password of the named account
  -n, --mindays MIN_DAYS       set minimum number of days before password
                               change to MIN_DAYS
  -q, --quiet                  quiet mode
  -r, --repository REPOSITORY  change password in REPOSITORY repository
  -R, --root CHROOT_DIR        directory to chroot into
  -S, --status                 report password status on the named account
  -u, --unlock                 unlock the password of the named account
  -w, --warndays WARN_DAYS     set expiration warning days to WARN_DAYS
  -x, --maxdays MAX_DAYS       set maximum number of days before password
                               change to MAX_DAYS
```

```
root@CsnKhai:/etc# cat shadow
root:$6$jamHNtvU$3hi5.5e26fyM2WW9VLgoQ.HR/VAVyWdepWYr8qFoSsraxZXjnwwAB9LONByiVyjcgO80NlXkbx0oEeuRkI.zh/:19583:0:99999:7:::
daemon:*:16693:0:99999:7:::
bin:*:16693:0:99999:7:::
sys:*:16693:0:99999:7:::
sync:*:16693:0:99999:7:::
games:*:16693:0:99999:7:::
man:*:16693:0:99999:7:::
lp:*:16693:0:99999:7:::
mail:*:16693:0:99999:7:::
news:*:16693:0:99999:7:::
uucp:*:16693:0:99999:7:::
proxy:*:16693:0:99999:7:::
www-data:*:16693:0:99999:7:::
backup:*:16693:0:99999:7:::
list:*:16693:0:99999:7:::
irc:*:16693:0:99999:7:::
gnats:*:16693:0:99999:7:::
nobody:*:16693:0:99999:7:::
libuuid:!:16693:0:99999:7:::
syslog:*:16693:0:99999:7:::
messagebus:*:16693:0:99999:7:::
sshd:*:16693:0:99999:7:::
student:$6$xEUhj3q.$ETR1D3FlD0i14mJcGI37fDnEX1VjZYHVhbKtAThUyL7/LNmwLw2UcQ6Zs1.z3Ajgjh4aVjMsZ4viwbT6UEeNA.:16693:0:99999:7:::
```

3) Determine the users registered in the system, as well as what commands they execute. What additional information can be gleaned from the command execution?

```
root@CsnKhai:/etc# w
 19:58:12 up 49 min,  3 users,  load average: 0.00, 0.00, 0.00
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
student  tty1                      19:08   31:49  0.06s  0.04s -bash
student  pts/0    192.168.1.104    19:13    1.00s 0.11s  0.03s ssh -i id_rsa.pub student@192.168.1.103
student  pts/1    192.168.1.103    19:25    1.00s 0.09s  0.04s sshd: student [priv]
root@CsnKhai:/etc# who
student  tty1         2023-08-14 19:08
student  pts/0        2023-08-14 19:13 (192.168.1.104)
student  pts/1        2023-08-14 19:25 (192.168.1.103)
root@CsnKhai:/etc# whoami
root
root@CsnKhai:/etc# id
uid=0(root) gid=0(root) groups=0(root)
```

4) Change personal information about yourself.

```
root@CsnKhai:/etc# chfn
Changing the user information for root
Enter the new value, or press ENTER for the default
        Full Name [root]: Yulia
        Room Number []: 53
        Work Phone []: 123
        Home Phone []: 1234
        Other []: _
```

```
root@CsnKhai:/etc# finger
The program 'finger' is currently not installed. You can install it by typing:
apt-get install finger
root@CsnKhai:/etc# apt-get install finger
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libpvm3 libreadline-dev libreadline6-dev libtinfo-dev pvm
Use 'apt-get autoremove' to remove them.
The following NEW packages will be installed:
  finger
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 17.0 kB of archives.
After this operation, 67.6 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu/ trusty/universe finger i386 0.17-15 [17.0 kB]
Fetched 17.0 kB in 1s (10.4 kB/s)
Selecting previously unselected package finger.
(Reading database ... 54877 files and directories currently installed.)
Preparing to unpack .../finger_0.17-15_i386.deb ...
Unpacking finger (0.17-15) ...
Processing triggers for man-db (2.6.7.1-1ubuntu1) ...
Setting up finger (0.17-15) ...
root@CsnKhai:/etc# finger
Login     Name           Tty       Idle  Login Time   Office     Office Phone
student   Student KhAI   *tty1       34  Aug 14 19:08
student   Student KhAI   pts/0           Aug 14 19:13 (192.168.1.104)
student   Student KhAI   pts/1           Aug 14 19:25 (192.168.1.103)
```

5) Become familiar with the Linux help system and the man and info commands. Get help on the previously discussed commands, define and describe any two keys for these commands. Give examples.

```
File: *manpages*,  Node: finger,  Up: (dir)

FINGER(1)                  BSD General Commands Manual                  FINGER(1)

NAME
     finger – user information lookup program

SYNOPSIS
     finger [-lmsp] [user ...] [user@host ...]

DESCRIPTION
     The finger displays information about the system users.

     Options are:

     -s     Finger displays the user's login name, real name, terminal name and
            write status (as a ``*'' after the terminal name if write permis-
            sion is denied), idle time, login time, office location and office
            phone number.

            Login time is displayed as month, day, hours and minutes, unless
            more than six months ago, in which case the year is displayed
            rather than the hours and minutes.

            Unknown devices as well as nonexistent idle and login times are
            displayed as single asterisks.

     -l     Produces a multi-line format displaying all of the information
            described for the -s option as well as the user's home directory,
            home phone number, login shell, mail status, and the contents of
            the files ".plan", ".project", ".pgpkey" and ".forward" from the
            user's home directory.

            Phone numbers specified as eleven digits are printed as ``+N-NNN-
            NNN-NNNN''.  Numbers specified as ten or seven digits are printed
            as the appropriate subset of that string.  Numbers specified as
            five digits are printed as ``xN-NNNN''.  Numbers specified as four
            digits are printed as ``xNNNN''.

            If write permission is denied to the device, the phrase ``(messages
```

```
root@CsnKhai:/home/student# info finger
root@CsnKhai:/home/student# finger -l
Login: student                          Name: Student KhAI
Directory: /home/student                Shell: /bin/bash
On since Tue Aug 15 15:02 (UTC) on tty1    2 hours 31 minutes idle
    (messages off)
On since Tue Aug 15 15:09 (UTC) on pts/0 from 192.168.1.104
   7 seconds idle
No mail.
No Plan.
root@CsnKhai:/home/student# man finger
root@CsnKhai:/home/student# info finger
root@CsnKhai:/home/student# finger -m
Login       Name         Tty        Idle  Login Time  Office      Office Phone
student     Student KhAI *tty1      2:34  Aug 15 15:02
student     Student KhAI pts/0            Aug 15 15:09 (192.168.1.104)
root@CsnKhai:/home/student# info finger
```

```
WHO(1)                                              User Commands

NAME
       who - show who is logged on

SYNOPSIS
       who [OPTION]... [ FILE | ARG1 ARG2 ]

DESCRIPTION
       Print information about users who are currently logged in.

       -a, --all
              same as -b -d --login -p -r -t -T -u

       -b, --boot
              time of last system boot

       -d, --dead
              print dead processes

       -H, --heading
              print line of column headings

       --ips  print ips instead of hostnames. with --lookup, canonicalizes based on stored IP, if available, rather than stored hostname

       -l, --login
              print system login processes

       --lookup
              attempt to canonicalize hostnames via DNS

       -m     only hostname and user associated with stdin

       -p, --process
              print active processes spawned by init

       -q, --count
              all login names and number of users logged on

       -r, --runlevel
              print current runlevel
```

```
root@CsnKhai:/home/student# man who
root@CsnKhai:/home/student# who -a
           system boot  2023-08-15 15:02
           run-level 2  2023-08-15 15:02
LOGIN      tty4         2023-08-15 15:02                710 id=4
LOGIN      tty5         2023-08-15 15:02                712 id=5
LOGIN      tty2         2023-08-15 15:02                715 id=2
LOGIN      tty3         2023-08-15 15:02                716 id=3
LOGIN      tty6         2023-08-15 15:02                718 id=6
student    - tty1       2023-08-15 15:02 02:43          841
student    + pts/0      2023-08-15 15:09    .           856 (192.168.1.104)
root@CsnKhai:/home/student# who -b
           system boot  2023-08-15 15:02
```

6) Explore the more and less commands using the help system. View the contents of files .bash* using commands.

```
root@CsnKhai:/home/student# ls -a
.   ..   .bash_history   .bash_logout   .bashrc   .cache   .profile   .ssh   .Xauthority
root@CsnKhai:/home/student# more .bash_history
sudo su
top
sudo update.rc ssh defaults
sudo update-rc.d ssh defaults
sudo reboot
sudo shutdown -h now
ID a
Ip a
ip a
ip -a
hosname -l
hostname -l
hosname -I
hostname -I
ip -a
ip a
exit
ssh-keygen
sudo ssh student@192.168.1.103
ssh-copy-id student@192.168.1.103
~
cd .ssh
ls
ssh -i id_rsa.pub student@192.168.1.103
chmod 400 id_rsa.pub
ssh -i id_rsa.pub student@192.168.1.103
sudo su
root@CsnKhai:/home/student#
```

```
root@CsnKhai:/home/student# less .bash_logout
```

```
# ~/.bash_logout: executed by bash(1) when login shell exits.

# when leaving the console clear the screen to increase privacy

if [ "$SHLVL" = 1 ]; then
    [ -x /usr/bin/clear_console ] && /usr/bin/clear_console -q
fi
.bash_logout (END)
```

```
root@CsnKhai:/home/student# more .bashrc
```

```
# ~/.bashrc: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $- in
    *i*) ;;
      *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern "**" used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
#shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
[ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh lesspipe)"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -z "${debian_chroot:-}" ] && [ -r /etc/debian_chroot ]; then
    debian_chroot=$(cat /etc/debian_chroot)
fi

# set a fancy prompt (non-color, unless we know we "want" color)
case "$TERM" in
    xterm-color) color_prompt=yes;;
esac
--More--(34%)
```

7) * Describe in plans that you are working on laboratory work 1. Tip: You should read the documentation for the finger command.

```
NAME
     finger — user information lookup program

SYNOPSIS
     finger [-lmsp] [user ...] [user@host ...]

DESCRIPTION
     The finger displays information about the system users.

     Options are:

     -s     Finger displays the user's login name, real name, terminal name and write status (as a ``*'' after the terminal name if write permission is
            denied), idle time, login time, office location and office phone number.

            Login time is displayed as month, day, hours and minutes, unless more than six months ago, in which case the year is displayed rather than the
            hours and minutes.

            Unknown devices as well as nonexistent idle and login times are displayed as single asterisks.

     -l     Produces a multi-line format displaying all of the information described for the -s option as well as the user's home directory, home phone
            number, login shell, mail status, and the contents of the files ".plan", ".project", ".pgpkey" and ".forward" from the user's home directory.

            Phone numbers specified as eleven digits are printed as ``+N-NNN-NNN-NNNN''.  Numbers specified as ten or seven digits are printed as the
            appropriate subset of that string.  Numbers specified as five digits are printed as ``xN-NNNN''.  Numbers specified as four digits are printed
            as ``xNNNN''.

            If write permission is denied to the device, the phrase ``(messages off)'' is appended to the line containing the device name.  One entry per
            user is displayed with the -l option; if a user is logged on multiple times, terminal information is repeated once per login.

            Mail status is shown as ``No Mail.'' if there is no mail at all, ``Mail last read DDD MMM ## HH:MM YYYY (TZ)'' if the person has looked at
            their mailbox since new mail arriving, or ``New mail received ...'', ``   Unread since ...'' if they have new mail.

     -p     Prevents the -l option of finger from displaying the contents of the ".plan", ".project" and ".pgpkey" files.

     -m     Prevent matching of user names.  User is usually a login name; however, matching will also be done on the users' real names, unless the -m
            option is supplied.  All name matching performed by finger is case insensitive.

     If no options are specified, finger defaults to the -l style output if operands are provided, otherwise to the -s style.  Note that some fields may
     be missing, in either format, if information is not available for them.
```

```
root@CsnKhai:/home/student# man finger
root@CsnKhai:/home/student# finger root
Login: root                             Name: Yulia
Directory: /root                        Shell: /bin/bash
Office: 53, 123                         Home Phone: x1234
Last login Tue Sep 15 07:53 2015 (UTC) on tty1
No mail.
No Plan.
```

```
root@CsnKhai:/home/student# finger -l
Login: student                          Name: Student KhAI
Directory: /home/student                Shell: /bin/bash
On since Tue Aug 15 15:02 (UTC) on tty1    3 hours 19 minutes idle
     (messages off)
On since Tue Aug 15 15:09 (UTC) on pts/0 from 192.168.1.104
    4 seconds idle
No mail.
No Plan.
```

```
root@CsnKhai:/home/student# finger -s
Login       Name            Tty        Idle  Login Time   Office      Office Phone
student     Student KhAI    *tty1      3:19  Aug 15 15:02
student     Student KhAI    pts/0            Aug 15 15:09 (192.168.1.104)
```

```
root@CsnKhai:/home/student# finger -s root
Login       Name           Tty       Idle  Login Time   Office     Office Phone
root        Yulia          tty1       *    Sep 15  2015 53         123
root@CsnKhai:/home/student# finger -l root
Login: root                             Name: Yulia
Directory: /root                        Shell: /bin/bash
Office: 53, 123                         Home Phone: x1234
Last login Tue Sep 15 07:53 2015 (UTC) on tty1
No mail.
No Plan.
```

8) * List the contents of the home directory using the ls command, define its files and directories. Hint: Use the help system to familiarize yourself with the ls command.

```
root@CsnKhai:/home/student# 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      scale sizes by SIZE before printing them.  E.g.,
                               '--block-size=M' prints sizes in units of
                               1,048,576 bytes.  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 defaults to 'always'
                               or can be 'never' or 'auto'.  More info below
  -d, --directory            list directory entries instead of contents,
                               and do not dereference symbolic links
  -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.
                               augment 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, print sizes in human readable format
                               (e.g., 1K 234M 2G)
      --si                   likewise, but use powers of 1000 not 1024
  -H, --dereference-command-line
                             follow symbolic links listed on the command line
```

```
                                    characters spectatty)
    -o                              like -l, but do not list group information
    -p, --indicator-style=slash
                                    append / indicator to directories
    -q, --hide-control-chars        print ? instead of non graphic characters
        --show-control-chars        show non graphic characters as-is (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, c, escape
    -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
        --sort=WORD                 sort by WORD instead of name: none -U,
                                    extension -X, size -S, time -t, version -v
        --time=WORD                 with -l, show time as WORD instead of modification
                                    time: atime -u, access -u, use -u, ctime -c,
                                    or status -c; use specified time as sort key
                                    if --sort=time
        --time-style=STYLE          with -l, show times using style STYLE:
                                    full-iso, long-iso, iso, locale, +FORMAT.
                                    FORMAT is interpreted like 'date'; if FORMAT is
                                    FORMAT1<newline>FORMAT2, FORMAT1 applies to
                                    non-recent files and FORMAT2 to recent files;
                                    if STYLE is prefixed with 'posix-', STYLE
                                    takes effect only outside the POSIX locale
    -t                              sort by modification time, newest first
    -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
    -U                              do not sort; list entries in directory order
    -v                              natural sort of (version) numbers within text
    -w, --width=COLS                assume screen width instead of current value
    -x                              list entries by lines instead of by columns
    -X                              sort alphabetically by entry extension
    -Z, --context                   print any SELinux security context of each file
    -1                              list one file per line
        --help      display this help and exit
        --version   output version information and exit
```

```
root@CsnKhai:/home/student# ls -oa
total 36
drwxr-xr-x 4 student 4096 Aug 15 15:09 .
drwxr-xr-x 3 root    4096 Sep 15  2015 ..
-rw------- 1 student  384 Aug 14 20:11 .bash_history
-rw-r--r-- 1 student  220 Sep 15  2015 .bash_logout
-rw-r--r-- 1 student 3637 Sep 15  2015 .bashrc
drwx------ 2 student 4096 Sep 15  2015 .cache
-rw-r--r-- 1 student  675 Sep 15  2015 .profile
drwx------ 2 student 4096 Aug 14 19:20 .ssh
-rw------- 1 student   53 Aug 15 15:09 .Xauthority
root@CsnKhai:/home/student# ls -q
root@CsnKhai:/home/student# ls -qa
.   ..   .bash_history  .bash_logout  .bashrc  .cache  .profile  .ssh  .Xauthority
root@CsnKhai:/home/student# ls -r
root@CsnKhai:/home/student# ls -ra
.Xauthority  .ssh  .profile  .cache  .bashrc  .bash_logout  .bash_history  ..  .
root@CsnKhai:/home/student# ls -Ra
.:
.   ..   .bash_history  .bash_logout  .bashrc  .cache  .profile  .ssh  .Xauthority

./.cache:
.   ..   motd.legal-displayed

./.ssh:
.   ..   authorized_keys  id_rsa  id_rsa.pub  known_hosts
root@CsnKhai:/home/student#
```

```
root@CsnKhai:/home/student# ls -a
.   ..   .bash_history  .bash_logout   .bashrc   .cache   .profile   .ssh   .Xauthority
root@CsnKhai:/home/student# ls -A
.bash_history   .bash_logout   .bashrc   .cache   .profile   .ssh   .Xauthority
root@CsnKhai:/home/student# ls -b
root@CsnKhai:/home/student# ls -ab
.   ..   .bash_history  .bash_logout   .bashrc   .cache   .profile   .ssh   .Xauthority
root@CsnKhai:/home/student# ls -c
root@CsnKhai:/home/student# ls -ca
.   .Xauthority  .bash_history  .ssh   .cache   .bash_logout   .bashrc   .profile   ..
root@CsnKhai:/home/student# ls -d
.
root@CsnKhai:/home/student# -h
-h: command not found
root@CsnKhai:/home/student# ls -h
root@CsnKhai:/home/student# ls -ha
.   ..   .bash_history  .bash_logout   .bashrc   .cache   .profile   .ssh   .Xauthority
root@CsnKhai:/home/student# ls -hal
total 36K
drwxr-xr-x 4 student student 4.0K Aug 15 15:09 .
drwxr-xr-x 3 root    root    4.0K Sep 15  2015 ..
-rw------- 1 student student  384 Aug 14 20:11 .bash_history
-rw-r--r-- 1 student student  220 Sep 15  2015 .bash_logout
-rw-r--r-- 1 student student 3.6K Sep 15  2015 .bashrc
drwx------ 2 student student 4.0K Sep 15  2015 .cache
-rw-r--r-- 1 student student  675 Sep 15  2015 .profile
drwx------ 2 student student 4.0K Aug 14 19:20 .ssh
-rw------- 1 student student   53 Aug 15 15:09 .Xauthority
root@CsnKhai:/home/student# ls -al
total 36
drwxr-xr-x 4 student student 4096 Aug 15 15:09 .
drwxr-xr-x 3 root    root    4096 Sep 15  2015 ..
-rw------- 1 student student  384 Aug 14 20:11 .bash_history
-rw-r--r-- 1 student student  220 Sep 15  2015 .bash_logout
-rw-r--r-- 1 student student 3637 Sep 15  2015 .bashrc
drwx------ 2 student student 4096 Sep 15  2015 .cache
-rw-r--r-- 1 student student  675 Sep 15  2015 .profile
drwx------ 2 student student 4096 Aug 14 19:20 .ssh
-rw------- 1 student student   53 Aug 15 15:09 .Xauthority
root@CsnKhai:/home/student#
```

Task1.Part2

1) Examine the tree command. Master the technique of applying a template, for example, display all files that contain a character c, or files that contain a specific sequence of characters. List subdirectories of the root directory up to and including the second nesting level.

```
root@CsnKhai:/var# tree -P *c*
cache
├── apparmor
├── apt
│   └── archives
│       └── partial
├── debconf
├── dictionaries-common
├── ldconfig
├── man
│   ├── cat1
│   ├── cat2
│   ├── cat3
│   ├── cat4
│   ├── cat5
│   ├── cat6
│   ├── cat7
│   ├── cat8
│   ├── cs
│   │   ├── cat1
│   │   ├── cat5
│   │   └── cat8
│   ├── da
│   │   ├── cat1
│   │   ├── cat5
│   │   └── cat8
│   ├── de
│   │   ├── cat1
│   │   ├── cat3
│   │   ├── cat5
│   │   └── cat8
│   ├── es
│   │   ├── cat1
│   │   ├── cat5
│   │   └── cat8
│   ├── fi
│   │   ├── cat1
```

```
root@CsnKhai:/var/lib# tree -P *loc*
locales
└── supported.d
mlocate

1 directory, 0 files
root@CsnKhai:/var/lib#
```

```
root@CsnKhai:/# tree -L 2
.
├── bin
│   ├── bash
│   ├── bunzip2
│   ├── busybox
│   ├── bzcat
│   ├── bzcmp -> bzdiff
│   ├── bzdiff
│   ├── bzegrep -> bzgrep
│   ├── bzexe
│   ├── bzfgrep -> bzgrep
│   ├── bzgrep
│   ├── bzip2
│   ├── bzip2recover
│   ├── bzless -> bzmore
│   ├── bzmore
│   ├── cat
│   ├── chgrp
│   ├── chmod
│   ├── chown
│   ├── chvt
│   ├── cp
│   ├── cpio
│   ├── dash
│   ├── date
│   ├── dbus-cleanup-sockets
│   ├── dbus-daemon
│   ├── dbus-uuidgen
│   ├── dd
│   ├── df
│   ├── dir
│   ├── dmesg
│   ├── dnsdomainname -> hostname
│   ├── domainname -> hostname
│   ├── dumpkeys
│   ├── echo
│   ├── ed
│   ├── egrep
│   └── false
```

2) What command can be used to determine the type of file (for example, text or binary)? Give an example.

```
root@CsnKhai:~# ls -a
.   ..   .aptitude   .bash_history   .bashrc   .cache   .profile   .ssh
root@CsnKhai:~# file .ssh
.ssh: directory
root@CsnKhai:~# file .cache
.cache: directory
root@CsnKhai:~# file .profile
.profile: ASCII text
```

3) Master the skills of navigating the file system using relative and absolute paths. How can you go back to your home directory from anywhere in the filesystem?

```
root@CsnKhai:/var/log# cd ~
root@CsnKhai:~# cd /etc/
Display all 165 possibilities? (y or n)
root@CsnKhai:~# cd /etc/n
nanorc          network/        networks        newt/           nsswitch.conf
root@CsnKhai:~# cd /etc/n
nanorc          network/        networks        newt/           nsswitch.conf
root@CsnKhai:~# cd /etc/ne
network/  networks  newt/
root@CsnKhai:~# cd /etc/network
root@CsnKhai:/etc/network# ls
if-down.d  if-post-down.d  if-pre-up.d  if-up.d  interfaces  interfaces.d  run
root@CsnKhai:/etc/network# cd if-up.d
root@CsnKhai:/etc/network/if-up.d#
```

4) Become familiar with the various options for the ls command. Give examples of listing directories using different keys. Explain the information displayed on the terminal using the -l and -a switches.

```
root@CsnKhai:/# ls -l
total 72
drwxr-xr-x  2 root root  4096 Sep 15  2015 bin
drwxr-xr-x  3 root root  4096 Sep 15  2015 boot
drwxr-xr-x 14 root root  4000 Aug 15 15:02 dev
drwxr-xr-x 83 root root  4096 Aug 15 15:02 etc
drwxr-xr-x  3 root root  4096 Sep 15  2015 home
lrwxrwxrwx  1 root root    33 Sep 15  2015 initrd.img -> boot/initrd.img-3.13.0-63-generic
drwxr-xr-x 22 root root  4096 Sep 15  2015 lib
drwx------  2 root root 16384 Sep 15  2015 lost+found
drwxr-xr-x  2 root root  4096 Sep 15  2015 media
drwxr-xr-x  2 root root  4096 Apr 10  2014 mnt
drwxr-xr-x  2 root root  4096 Sep 15  2015 opt
dr-xr-xr-x 82 root root     0 Aug 15 15:02 proc
drwx------  5 root root  4096 Sep 15  2015 root
drwxr-xr-x 16 root root   540 Aug 15 15:09 run
drwxr-xr-x  2 root root  4096 Sep 15  2015 sbin
drwxr-xr-x  2 root root  4096 Sep 15  2015 srv
dr-xr-xr-x 13 root root     0 Aug 15 15:02 sys
drwxrwxrwt  2 root root  4096 Aug 15 19:17 tmp
drwxr-xr-x 10 root root  4096 Sep 15  2015 usr
drwxr-xr-x 11 root root  4096 Sep 15  2015 var
lrwxrwxrwx  1 root root    30 Sep 15  2015 vmlinuz -> boot/vmlinuz-3.13.0-63-generic
root@CsnKhai:/#
```

```
root@CsnKhai:/# ls -a
.  ..  bin  boot  dev  etc  home  initrd.img  lib  lost+found  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var  vmlinuz
```

5) Perform the following sequence of operations:

- create a subdirectory in the home directory;

- in this subdirectory create a file containing information about directories

located in the root directory (using I/O redirection operations);

- view the created file;

- copy the created file to your home directory using relative and absolute

addressing.

- delete the previously created subdirectory with the file requesting removal;

- delete the file copied to the home directory.

```
root@CsnKhai:~# mkdir yulia
root@CsnKhai:~# cd yulia
root@CsnKhai:~/yulia# ls / >> file1
root@CsnKhai:~/yulia# ls
file1
root@CsnKhai:~/yulia# more file1
bin
boot
dev
etc
home
initrd.img
lib
lost+found
media
mnt
opt
proc
root
run
sbin
srv
sys
tmp
usr
var
vmlinuz
```

```
root@CsnKhai:~/yulia# cp file1 ../file2
root@CsnKhai:~/yulia# cp file1 /root/file3
root@CsnKhai:~/yulia# cd ..
root@CsnKhai:~# rm yulia
rm: cannot remove 'yulia': Is a directory
root@CsnKhai:~# rmdir yulia
rmdir: failed to remove 'yulia': Directory not empty
root@CsnKhai:~# rm -r yulia
root@CsnKhai:~# ls
file2  file3
root@CsnKhai:~# rm file2 file3
root@CsnKhai:~# ls
root@CsnKhai:~# █
```

6) Perform the following sequence of operations:

- create a subdirectory test in the home directory;

- copy the .bash_history file to this directory while changing its name to labwork2;

- create a hard and soft link to the labwork2 file in the test subdirectory;

- how to define soft and hard link, what do these concepts;

- change the data by opening a symbolic link. What changes will happen and why

- rename the hard link file to hard_lnk_labwork2;

- rename the soft link file to symb_lnk_labwork2 file;

- then delete the labwork2. What changes have occurred and why?

```
root@CsnKhai:~# mkdir test
root@CsnKhai:~# cp .bash_history test/labwork2
root@CsnKhai:~# ls
test
root@CsnKhai:~# cd test
root@CsnKhai:~/test# ln labwork2 hard_link
root@CsnKhai:~/test# ln -s labwork2 soft_link
root@CsnKhai:~/test# ls
hard_link  labwork2  soft_link
root@CsnKhai:~/test# ls -l
total 8
-rw------- 2 root root 392 Aug 15 19:50 hard_link
-rw------- 2 root root 392 Aug 15 19:50 labwork2
lrwxrwxrwx 1 root root   8 Aug 15 19:53 soft_link -> labwork2
root@CsnKhai:~/test# vim soft_link
```

```
hello my symbolic link
passwd
exit
tracert google.com
tracer google.com
apt-get install pvm-dev
tracer google.com
apt-get remove pvm-dev
apt-get install traceroute
traceroute google.com
ip addr
ssh 192.168.1.2
sudo shutdown -h now
passwd
passwd -help
s
ls
cd /
ls
cd etc
ls
vim shadow
touch shadow
cat shadow
cat passwd
w
who
whoami
id
finger
apt-get install finger
finger
chfn
man
man -help
man fonger
man finger
labwork2 (END)
```

Also labwork2 has been changed once we updated symbolic link file, because symbolic link is a file.

```
root@CsnKhai:~/test# mv hard_link  hard_lnk_labwork2
root@CsnKhai:~/test# mv soft_link symb_lnk_labwork2
root@CsnKhai:~/test# ls
hard_lnk_labwork2  labwork2  symb_lnk_labwork2
root@CsnKhai:~/test# rm labwork2
root@CsnKhai:~/test# ls
hard_lnk_labwork2  symb_lnk_labwork2
root@CsnKhai:~/test#
```

Once labwork2 was deleted symbolic link isn`t active anymore. Because is was a reference to file that doesn`t existed.

7) Using the locate utility, find all files that contain the squid and traceroute sequence.

```
root@CsnKhai:/# locate squid
root@CsnKhai:/# locate traceroute
/etc/alternatives/traceroute6
/etc/alternatives/traceroute6.8.gz
/lib/modules/3.13.0-63-generic/kernel/drivers/tty/n_tracerouter.ko
/usr/bin/traceroute6
/usr/bin/traceroute6.iputils
/usr/share/man/man8/traceroute6.8.gz
/usr/share/man/man8/traceroute6.iputils.8.gz
/var/lib/dpkg/alternatives/traceroute6
root@CsnKhai:/#
```

8) Determine which partitions are mounted in the system, as well as the types of

these partitions.

```
root@CsnKhai:/# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda1       1.5G  996M  390M  72% /
none            4.0K     0  4.0K   0% /sys/fs/cgroup
udev            112M  4.0K  112M   1% /dev
tmpfs            25M  392K   24M   2% /run
none            5.0M     0  5.0M   0% /run/lock
none            121M     0  121M   0% /run/shm
none            100M     0  100M   0% /run/user
root@CsnKhai:/#
```

9) Count the number of lines containing a given sequence of characters in a given file.

```
root@CsnKhai:/# wc -l etc/network/run/ifstate
2 etc/network/run/ifstate
root@CsnKhai:/# cat etc/network/run/ifstate
eth0=eth0
lo=lo
root@CsnKhai:/#
```

10) Using the find command, find all files in the /etc directory containing the host character sequence.

```
root@CsnKhai:/etc# find . -name "*host*"
./hosts
./hosts.allow
./ssh/ssh_host_ed25519_key.pub
./ssh/ssh_host_ecdsa_key.pub
./ssh/ssh_host_rsa_key
./ssh/ssh_host_rsa_key.pub
./ssh/ssh_host_ecdsa_key
./ssh/ssh_host_dsa_key.pub
./ssh/ssh_host_dsa_key
./ssh/ssh_host_ed25519_key
./init/hostname.conf
./hostname
./hosts.deny
./host.conf
./dbus-1/system.d/org.freedesktop.hostname1.conf
root@CsnKhai:/etc#
```

11) List all objects in /etc that contain the ss character sequence. How can I duplicate a similar command using a bunch of grep?

```
root@CsnKhai:/etc# tree -P *ss*
insserv.conf [error opening dir]
insserv.conf.d
issue [error opening dir]
issue.net [error opening dir]
nsswitch.conf [error opening dir]
passwd [error opening dir]
passwd- [error opening dir]
ssh
ssl
├── certs
└── private
upstart-xsessions [error opening dir]

2 directories, 0 files
root@CsnKhai:/etc# tree -L 1 | grep ss
├── insserv
├── insserv.conf
├── insserv.conf.d
├── issue
├── issue.net
├── nsswitch.conf
├── passwd
├── passwd-
├── ssh
├── ssl
├── upstart-xsessions
root@CsnKhai:/etc#
```

12) Organize a screen-by-screen print of the contents of the /etc directory. Hint:
You must use stream redirection operations.

```
root@CsnKhai:/etc# ls -l /etc | less
```

```
total 736
-rw-r--r-- 1 root root      2981 Sep 15  2015 adduser.conf
drwxr-xr-x 2 root root      4096 Aug 15 19:57 alternatives
drwxr-xr-x 3 root root      4096 Sep 15  2015 apm
drwxr-xr-x 3 root root      4096 Sep 15  2015 apparmor
drwxr-xr-x 8 root root      4096 Sep 15  2015 apparmor.d
drwxr-xr-x 6 root root      4096 Sep 15  2015 apt
-rw-r--r-- 1 root root      2177 Apr  9  2014 bash.bashrc
-rw-r--r-- 1 root root        45 Mar 22  2014 bash_completion
drwxr-xr-x 2 root root      4096 Aug 15 20:16 bash_completion.d
-rw-r--r-- 1 root root       356 Jan  1  2012 bindresvport.blacklist
-rw-r--r-- 1 root root       321 Apr 16  2014 blkid.conf
lrwxrwxrwx 1 root root        15 Aug  5  2015 blkid.tab -> /dev/.blkid.tab
drwxr-xr-x 3 root root      4096 Sep 15  2015 ca-certificates
-rw-r--r-- 1 root root      7773 Sep 15  2015 ca-certificates.conf
drwxr-xr-x 2 root root      4096 Sep 15  2015 calendar
drwxr-s--- 2 root dip       4096 Sep 15  2015 chatscripts
drwxr-xr-x 2 root root      4096 Sep 15  2015 console-setup
drwxr-xr-x 2 root root      4096 Sep 15  2015 cron.d
drwxr-xr-x 2 root root      4096 Sep 15  2015 cron.daily
drwxr-xr-x 2 root root      4096 Sep 15  2015 cron.hourly
drwxr-xr-x 2 root root      4096 Sep 15  2015 cron.monthly
-rw-r--r-- 1 root root       722 Feb  9  2013 crontab
drwxr-xr-x 2 root root      4096 Sep 15  2015 cron.weekly
drwxr-xr-x 4 root root      4096 Sep 15  2015 dbus-1
-rw-r--r-- 1 root root      2969 Feb 23  2014 debconf.conf
-rw-r--r-- 1 root root        11 Feb 20  2014 debian_version
drwxr-xr-x 2 root root      4096 Sep 15  2015 default
-rw-r--r-- 1 root root       604 Nov  7  2013 deluser.conf
drwxr-xr-x 2 root root      4096 Sep 15  2015 depmod.d
drwxr-xr-x 4 root root      4096 Sep 15  2015 dhcp
drwxr-xr-x 2 root root      4096 Sep 15  2015 dictionaries-common
drwxr-xr-x 2 root root      4096 Sep 15  2015 discover.conf.d
-rw-r--r-- 1 root root       346 Dec 29  2013 discover-modprobe.conf
drwxr-xr-x 4 root root      4096 Sep 15  2015 dpkg
drwxr-xr-x 3 root root      4096 Sep 15  2015 emacs
-rw-r--r-- 1 root root        96 Sep 15  2015 environment
drwxr-xr-x 4 root root      4096 Sep 15  2015 fonts
-rw-r--r-- 1 root root       458 Sep 15  2015 fstab
drwxr-xr-x 2 root root      4096 Apr 16  2014 fstab.d
-rw-r----- 1 root fuse       280 May 24  2013 fuse.conf
```

13) What are the types of devices and how to determine the type of device? Give examples.

```
root@CsnKhai:/etc# ls -l /dev
total 0
crw-------  1 root     root      10, 235 Aug 15 15:02 autofs
drwxr-xr-x  2 root     root          580 Aug 15 15:02 block
drwxr-xr-x  2 root     root           80 Aug 15 15:02 bsg
crw-------  1 root     root      10, 234 Aug 15 15:02 btrfs-control
drwxr-xr-x  3 root     root           60 Aug 15 15:02 bus
lrwxrwxrwx  1 root     root            3 Aug 15 15:02 cdrom -> sr0
drwxr-xr-x  2 root     root         3340 Aug 15 15:02 char
crw-------  1 root     root       5,   1 Aug 15 15:02 console
lrwxrwxrwx  1 root     root           11 Aug 15 15:02 core -> /proc/kcore
drwxr-xr-x  2 root     root           60 Aug 15 15:02 cpu
crw-------  1 root     root      10,  60 Aug 15 15:02 cpu_dma_latency
crw-------  1 root     root      10, 203 Aug 15 15:02 cuse
drwxr-xr-x  4 root     root           80 Aug 15 15:02 disk
crw-------  1 root     root      10,  61 Aug 15 15:02 ecryptfs
crw-rw----  1 root     video     29,   0 Aug 15 15:02 fb0
lrwxrwxrwx  1 root     root           13 Aug 15 15:02 fd -> /proc/self/fd
crw-rw-rw-  1 root     root       1,   7 Aug 15 15:02 full
crw-rw-rw-  1 root     root      10, 229 Aug 15 15:02 fuse
crw-------  1 root     root     251,   0 Aug 15 15:02 hidraw0
crw-------  1 root     root      10, 228 Aug 15 15:02 hpet
drwxr-xr-x  4 root     root          280 Aug 15 15:02 input
crw-r--r--  1 root     root       1,  11 Aug 15 15:02 kmsg
srw-rw-rw-  1 root     root            0 Aug 15 15:02 log
brw-rw----  1 root     disk       7,   0 Aug 15 15:02 loop0
brw-rw----  1 root     disk       7,   1 Aug 15 15:02 loop1
brw-rw----  1 root     disk       7,   2 Aug 15 15:02 loop2
brw-rw----  1 root     disk       7,   3 Aug 15 15:02 loop3
brw-rw----  1 root     disk       7,   4 Aug 15 15:02 loop4
brw-rw----  1 root     disk       7,   5 Aug 15 15:02 loop5
brw-rw----  1 root     disk       7,   6 Aug 15 15:02 loop6
brw-rw----  1 root     disk       7,   7 Aug 15 15:02 loop7
crw-------  1 root     root      10, 237 Aug 15 15:02 loop-control
drwxr-xr-x  2 root     root           60 Aug 15 15:02 mapper
crw-------  1 root     root      10, 227 Aug 15 15:02 mcelog
crw-r-----  1 root     kmem       1,   1 Aug 15 15:02 mem
drwxr-xr-x  2 root     root           60 Aug 15 15:02 net
crw-------  1 root     root      10,  59 Aug 15 15:02 network_latency
crw-------  1 root     root      10,  58 Aug 15 15:02 network_throughput
```

14) How to determine the type of file in the system, what types of files are there?

```
root@CsnKhai:/etc# file newt/palette
newt/palette: symbolic link to `/etc/alternatives/newt-palette'
root@CsnKhai:/etc#
```

15) * List the first 5 directory files that were recently accessed in the /etc directory.

```
root@CsnKhai:/etc# ls -ltd /etc/*/ | head -n 5
drwxr-xr-x 2 root root 4096 Aug 15 20:16 /etc/bash_completion.d/
drwxr-xr-x 2 root root 4096 Aug 15 20:16 /etc/subversion/
drwxr-xr-x 2 root root 4096 Aug 15 19:57 /etc/alternatives/
drwxr-xr-x 2 root root 4096 Aug 15 19:56 /etc/vim/
drwxr-xr-x 2 root root 4096 Aug 15 19:56 /etc/python2.7/
```