

## Task1.Part2

<p>1) Examine the <b>tree</b> command. Master the technique of applying a template, for example, display all files that contain a character <b>c</b>, or files that contain a specific sequence of characters. List subdirectories of the root directory up to and including the second nesting level.</p>	<pre>vadym@CsnKhai:~\$ tree -a . ├── a ├── b ├── .bash_history ├── .bash_logout ├── .bashrc ├── c ├── .cache │   └── motd.legal-displayed ├── dira │   └── d │       └── info ├── info ├── .profile ├── sdrv12345678 ├── test └── .Xauthority  3 directories, 13 files vadym@CsnKhai:~\$ tree -P c --prune . └── c  0 directories, 1 file vadym@CsnKhai:~\$ tree -P '*sd*' --prune . └── sdrv12345678  0 directories, 1 file vadym@CsnKhai:~\$</pre>	
<p>2) What command can be used to determine the type of file (for example, text or binary)? Give an example.</p>	<pre>vadym@CsnKhai:~\$ file c c: ASCII text</pre>	
<p>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?</p>	<pre>vadym@CsnKhai:~\$ cd /home vadym@CsnKhai:/home\$ ls vadym vadym@CsnKhai:/home\$ cd vadym vadym@CsnKhai:~\$ cd .. vadym@CsnKhai:/home\$ cd /home/vadym vadym@CsnKhai:~\$ cd /home vadym@CsnKhai:/home\$ cd ~ vadym@CsnKhai:~\$</pre>	<p>This requires a command <code>cd ~</code></p>
<p>4) Become familiar with the various options for the <b>ls</b> command. Give examples of listing directories using different keys. Explain the information displayed on the terminal using the <b>-l</b> and <b>-a</b> switches.</p>	<pre>vadym@CsnKhai:~\$ ls a b c dira info sdrv12345678 test vadym@CsnKhai:~\$ ls -l total 24 -rw-r--r-- 1 vadym student  2 Dec 21 15:43 a -rw-r--r-- 1 vadym student  2 Dec 21 15:43 b -rw-r--r-- 1 vadym student  2 Dec 21 15:43 c drwxr-xr-x 2 vadym student 4096 Dec 22 16:05 dira -rw-r--r-- 1 vadym student 1183 Dec 21 16:25 info -rw-r--r-- 1 vadym student   0 Dec 21 16:33 sdrv12345678 drwxr-xr-x 2 vadym student 4096 Dec 21 16:29 test vadym@CsnKhai:~\$ ls -a . . . a b .bash_history .bash_logout .bashrc c .cache dira info .plan .profile sdrv12345678 test vadym@CsnKhai:~\$ ls -la total 60 drwxr-xr-x 5 vadym student 4096 Dec 23 08:47 . drwxr-xr-x 3 root root    4096 Dec 22 15:17 .. -rw-r--r-- 1 vadym student  2 Dec 21 15:43 a -rw-r--r-- 1 vadym student  2 Dec 21 15:43 b -rw-r--r-- 1 vadym student 1027 Dec 21 17:03 .bash_history -rw-r--r-- 1 vadym student 220 Sep 15 2015 .bash_logout -rw-r--r-- 1 vadym student 3637 Sep 15 2015 .bashrc -rw-r--r-- 1 vadym student  2 Dec 21 15:43 c drwxr-xr-x 2 vadym student 4096 Sep 15 2015 .cache drwxr-xr-x 2 vadym student 4096 Dec 22 16:05 dira -rw-r--r-- 1 vadym student 1183 Dec 21 16:25 info -rw-r--r-- 1 vadym student  34 Dec 23 08:47 .plan -rw-r--r-- 1 vadym student  675 Sep 15 2015 .profile -rw-r--r-- 1 vadym student   0 Dec 21 16:33 sdrv12345678 drwxr-xr-x 2 vadym student 4096 Dec 21 16:29 test -rw-r--r-- 1 vadym student 159 Dec 23 08:46 .Xauthority</pre>	<p><b>-l</b> - use a long listing format  <b>-a</b> - providing visibility to hidden files</p>

<p>5) Perform the following sequence of operations:</p> <ul style="list-style-type: none"> <li>- create a subdirectory in the home directory;</li> <li>- in this subdirectory create a file containing information about directories located in the root directory (using I/O redirection operations);</li> <li>- view the created file;</li> <li>- copy the created file to your home directory using relative and absolute addressing.</li> <li>- delete the previously created subdirectory with the file requesting removal;</li> <li>- delete the file copied to the home directory.</li> </ul>	<pre>vadym@CsnKhai:~\$ mkdir test vadym@CsnKhai:~\$ ls -d /*/ /*/ &gt; test/listd vadym@CsnKhai:~\$ cp test/listd . vadym@CsnKhai:~\$ cp /home/vadym/test/listd /home/vadym vadym@CsnKhai:~\$ rm -rf test vadym@CsnKhai:~\$ mkdir test vadym@CsnKhai:~\$ ls -d /*/ /*/ &gt; test/listd vadym@CsnKhai:~\$ cat test/listd ./ ../ /bin/ /boot/ /dev/ /etc/ /home/ /lib/ /lost+found/ /media/ /mnt/ /opt/ /proc/ /root/ /run/ /sbin/ /srv/ /sys/ /tmp/ /usr/ /var/ vadym@CsnKhai:~\$ cp test/listd . vadym@CsnKhai:~\$ cp /home/vadym/test/listd /home/vadym vadym@CsnKhai:~\$ rm -rf test vadym@CsnKhai:~\$ rm listd</pre>
<p>6) Perform the following sequence of operations:</p> <ul style="list-style-type: none"> <li>- create a subdirectory test in the home directory;</li> <li>- copy the .bash_history file to this directory while changing its name to labwork2;</li> <li>- create a hard and soft link to the labwork2 file in the test subdirectory;</li> <li>- how to define soft and hard link, what do these concepts;</li> <li>- change the data by opening a symbolic link. What changes will happen and why</li> <li>- rename the hard link file to hard_lnk_labwork2;</li> <li>- rename the soft link file to symb_lnk_labwork2 file;</li> <li>- then delete the labwork2. What changes have occurred and why?</li> </ul>	<pre>vadym@CsnKhai:~\$ mkdir test vadym@CsnKhai:~\$ cp .bash_history test/labwork2 vadym@CsnKhai:~\$ cd test/ vadym@CsnKhai:~/test\$ ln labwork2 hard vadym@CsnKhai:~/test\$ ln -s labwork2 soft vadym@CsnKhai:~/test\$ ls -li total 8 60840 -rw----- 2 vadym student 1027 Dec 23 10:00 hard 60840 -rw----- 2 vadym student 1027 Dec 23 10:00 labwork2 60841 lrwxrwxrwx 1 vadym student 8 Dec 23 10:08 soft -&gt; labwork2 vadym@CsnKhai:~/test\$ mv hard hard_lnk_labwork2 vadym@CsnKhai:~/test\$ mv soft symb_lnk_labwork2 vadym@CsnKhai:~/test\$ rm labwork2 vadym@CsnKhai:~/test\$ ls hard_lnk_labwork2  symb_lnk_labwork2 vadym@CsnKhai:~/test\$ cat symb_lnk_labwork2 cat: symb_lnk_labwork2: No such file or directory</pre> <p>I can use ls to define soft and hard link. ls shows that hard and labwork2 files have the same inode, so it is the hard link. ls also shows that soft file is the soft link of labwork2.</p> <p>When I deleted file I couldn't see its contents from soft link.</p>
<p>7) Using the locate utility, find all files that contain the squid and traceroute sequence.</p>	<pre>updatedb locate -b squid traceroute</pre>

	<pre> /usr/share/man/man1/traceroute.db.1.gz /usr/share/man/man1/traceroute6.db.1.gz /usr/share/man/man8/squid3.8.gz /usr/share/man/man8/tcptraceroute.8.gz /usr/share/man/man8/tcptraceroute.db.8.gz /usr/share/man/man8/traceroute6.8.gz /usr/share/man/man8/traceroute6.iputils.8.gz /var/cache/apt/archives/squid-langpack_20121005-1_all.deb /var/cache/apt/archives/squid3-common_3.3.8-1ubuntu6.11_all.deb /var/cache/apt/archives/squid3_3.3.8-1ubuntu6.11_i386.deb /var/cache/apt/archives/squid_3.3.8-1ubuntu6.11_i386.deb /var/cache/apt/archives/traceroute_1%3a2.0.20-0ubuntu0.1_i386.deb /var/lib/dpkg/alternatives/tcptraceroute /var/lib/dpkg/alternatives/traceroute6 /var/lib/dpkg/info/squid-langpack.list /var/lib/dpkg/info/squid-langpack.md5sums /var/lib/dpkg/info/squid.list /var/lib/dpkg/info/squid.md5sums /var/lib/dpkg/info/squid3-common.list /var/lib/dpkg/info/squid3-common.md5sums /var/lib/dpkg/info/squid3-common.postinst /var/lib/dpkg/info/squid3.conffiles /var/lib/dpkg/info/squid3.list /var/lib/dpkg/info/squid3.md5sums /var/lib/dpkg/info/squid3.postinst /var/lib/dpkg/info/squid3.postrm /var/lib/dpkg/info/squid3.preinst /var/lib/dpkg/info/squid3.prerm /var/lib/dpkg/info/traceroute.list /var/lib/dpkg/info/traceroute.md5sums /var/lib/dpkg/info/traceroute.postinst /var/lib/dpkg/info/traceroute.prerm /var/log/squid3 /var/log/upstart/squid3.log </pre>		
8) Determine which partitions are mounted in the system, as well as the types of these partitions.	<pre> root@CsnKhali:~# parted -l Model: ATA VBOX HARDDISK (scsi) Disk /dev/sda: 1611MB Sector size (logical/physical): 512B/512B Partition Table: msdos  Number   Start   End     Size    Type     File system  Flags   1       1049kB  1610MB  1609MB  primary  ext4         boot </pre>		
9) Count the number of lines containing a given sequence of characters in a given file.	<pre> vadya@CsnKhali:~\$ grep finger .bash_history -c 6 </pre>		
10) Using the find command, find all files in the /etc directory containing the host character sequence	<pre> root@CsnKhali:~# find /etc -name *host* /etc/hosts /etc/hosts.allow /etc/ssh/ssh_host_ed25519_key.pub /etc/ssh/ssh_host_ecdsa_key.pub /etc/ssh/ssh_host_rsa_key /etc/ssh/ssh_host_rsa_key.pub /etc/ssh/ssh_host_ecdsa_key /etc/ssh/ssh_host_dsa_key.pub /etc/ssh/ssh_host_dsa_key /etc/ssh/ssh_host_ed25519_key /etc/init/hostname.conf /etc/hostname /etc/hosts.deny /etc/host.conf /etc/dbus-1/system.d/org.freedesktop.hostname1.conf </pre>		
11) List all objects in /etc that contain the ss character sequence. How can I duplicate a similar command using a bunch of grep?	<pre> root@CsnKhali:~# ls -a /etc   grep "ss" insserv insserv.conf insserv.conf.d issue issue.net nsswitch.conf passwd passwd- ssh ssl upstart-xsessions </pre>		

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

Ls -al /etc | less

```
total 744
drwxr-xr-x 84 root root 4096 Dec 23 12:47 .
drwxr-xr-x 21 root root 4096 Sep 15 2015 ..
-rw-r--r-- 1 root root 2981 Sep 15 2015 adduser.conf
drwxr-xr-x 2 root root 4096 Sep 15 2015 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 Dec 23 12:47 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 Sep 15 2015 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
:|
```

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

Linux supports three types of device: character, block and network.

/dev contains device files.

```
root@CsnKhai:~# ls /dev
autofs          mcelog          sg0             tty3            tty6            ttyS30
block           mem             sg1            tty30          tty60          ttyS31
bsg             net             shm            tty31          tty61          ttyS4
btrfs-control  network_latency snapshot        tty32          tty62          ttyS5
bus            network_throughput snd             tty33          tty63          ttyS6
cdrom           null           sr0            tty34          tty7           ttyS7
char           port           stderr         tty35          tty8           ttyS8
console        ppp            stdin          tty36          tty9           ttyS9
core           psaux          stdout         tty37          ttyprintk      uhid
cpu            ptmx           tty            tty38          ttyS0          uinput
cpu_dma_latency pts            tty0           tty39          ttyS1          urandom
cuse           ram0           tty1           tty4           ttyS10         vcs
disk           ram1           tty10          tty40          ttyS11         vcs1
ecryptfs       ram10          tty11          tty41          ttyS12         vcs2
fb0            ram11          tty12          tty42          ttyS13         vcs3
fd             ram12          tty13          tty43          ttyS14         vcs4
full           ram13          tty14          tty44          ttyS15         vcs5
fuse           ram14          tty15          tty45          ttyS16         vcs6
hidraw0        ram15          tty16          tty46          ttyS17         vcs7
hpet           ram2           tty17          tty47          ttyS18         vcsa
input          ram3           tty18          tty48          ttyS19         vcsa1
kmsg           ram4           tty19          tty49          ttyS2          vcsa2
log            ram5           tty2           tty5           ttyS20         vcsa3
loop0          ram6           tty20          tty50          ttyS21         vcsa4
loop1          ram7           tty21          tty51          ttyS22         vcsa5
loop2          ram8           tty22          tty52          ttyS23         vcsa6
loop3          ram9           tty23          tty53          ttyS24         vcsa7
loop4          random         tty24          tty54          ttyS25         vga_arbiter
loop5          rfkill         tty25          tty55          ttyS26         vhci
loop6          rtc            tty26          tty56          ttyS27         vhost-net
loop7          rtc0           tty27          tty57          ttyS28         zero
loop-control   sda            tty28          tty58          ttyS29
mapper         sda1           tty29          tty59          ttyS3
```

For example dev/console is the system console,  
dev/sd is SCSI hard drives

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

File types: - ordinary files and directories;  
- files of physical devices;  
- named pipes;  
- sockets;  
-symbolic links

	<p>Ls and file utilities can detect file type.</p> <pre>root@CsnKhai:~# file /dev/* /dev/autofs:      character special /dev/block:       directory /dev/bsg:         directory /dev/btrfs-control: character special /dev/bus:         directory /dev/cdrom:       symbolic link to `sr0' /dev/char:        directory /dev/console:     character special /dev/core:        symbolic link to `/proc/kcore' /dev/cpu:         directory /dev/cpu_dma_latency: character special /dev/cuse:        character special /dev/disk:        directory /dev/encryptfs:   character special /dev/fb0:         character special /dev/fd:          symbolic link to `/proc/self/fd' /dev/full:        character special /dev/fuse:        character special /dev/hidraw0:     character special /dev/hpet:        character special /dev/input:       directory /dev/kmsg:        character special /dev/log:         socket /dev/loop0:       block special /dev/loop1:       block special /dev/loop2:       block special /dev/loop3:       block special /dev/loop4:       block special /dev/loop5:       block special</pre>	
	<pre>root@CsnKhai:~# ls -du /etc/*/   head -5 /etc/modprobe.d/ /etc/cron.hourly/ /etc/console-setup/ /etc/opt/ /etc/fstab.d/</pre>	