

Операционные системы

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

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Цели и задачи работы

Ознакомление с файловой системой Linux, её структурой, именами и содержанием каталогов. Приобретение практических навыков по применению команд для работы с файлами и каталогами, по управлению процессами, по проверке использования диска и обслуживанию файловой системы.

- 1 Изучить перенаправление ввода-вывода
- 2 Изучить работу фильтров
- 3 Изучить команду поиска
- 4 Ознакомиться с управлением процессами
- 5 Ознакомиться с командами `df` `du`

Процесс выполнения лабораторной работы

Перенаправление ввода-вывода

```
ochmoha@vbox:~$ ls /etc/ > file.txt
ochmoha@vbox:~$ ls >> file.txt
ochmoha@vbox:~$ cat file.txt
abrt
adjtime
aliases
alsa
alternatives
anaconda
anthy-unicode.conf
apt
asound.conf
audit
authselect
avahi
bash_completion.d
bashrc
bindresvport.blacklist
binfmt.d
bluetooth
brlapi.key
brltty
brltty.conf
ceph
chkconfig.d
chromium
chrony.conf
cifs-utils
colord
containers
credstore
credstore.encrypted
```

Рис. 1: Запись в файл

```
antny-unicode.conf  
asound.conf  
brltty.conf  
chkconfig.d  
chrony.conf  
dconf  
dleyna-server-service.conf  
dnsmasq.conf  
dracut.conf  
dracut.conf.d  
fprintd.conf  
fuse.conf  
host.conf  
idmapd.conf
```

Рис. 2: Поиск расширения .conf

```
/home/ochmoha/site/OCHMOHA.github.io/.git/objects/cd/c035adb0c737fe477305818789d075b892d213
/home/ochmoha/site/OCHMOHA.github.io/.git/objects/89/cc968ac1e344689cac31812539fbbead74addf
/home/ochmoha/site/OCHMOHA.github.io/.git/objects/b9/cfe155100c0f062ace86f31d46656a9b430477
/home/ochmoha/site/OCHMOHA.github.io/.git/objects/80/c7079a8a53d9cbb8dc2353096540dafd8fbc7b
/home/ochmoha/site/OCHMOHA.github.io/.git/config
/home/ochmoha/site/OCHMOHA.github.io/publication/conference-paper/conference-paper.pdf
/home/ochmoha/site/OCHMOHA.github.io/publication/conference-paper/cite.bib
/home/ochmoha/site/OCHMOHA.github.io/publication/journal-article/cite.bib
/home/ochmoha/site/blog/.git/hooks/commit-msg.sample
/home/ochmoha/site/blog/.git/objects/57/c93865ce66d8763ee7c9b037128e3639dde6b8
/home/ochmoha/site/blog/.git/objects/ad/cbb62453b92d5d494d970b7553bba29b089b88
/home/ochmoha/site/blog/.git/objects/30/c8ea29489d4aefea92b01a545d3af42138c693
/home/ochmoha/site/blog/.git/objects/e2/c782f54b173acf77662941fa952adf09bd1fec
/home/ochmoha/site/blog/.git/objects/81/c49932b96268090ff1882fef80dd4222474003
/home/ochmoha/site/blog/.git/objects/31/c35e16f067a92221dc23b5b56337113eef3faa
/home/ochmoha/site/blog/.git/objects/e9/c53b4c090d3420a79e9ba1d8b1c97acac4cc43
/home/ochmoha/site/blog/.git/modules/public/hooks/commit-msg.sample
/home/ochmoha/site/blog/.git/modules/public/config
/home/ochmoha/site/blog/.git/modules/OCHMOHA.github.io/hooks/commit-msg.sample
/home/ochmoha/site/blog/.git/modules/OCHMOHA.github.io/config
/home/ochmoha/site/blog/.git/config
/home/ochmoha/site/blog/content/publication/conference-paper/cite.bib
/home/ochmoha/site/blog/content/publication/conference-paper/conference-paper.pdf
/home/ochmoha/site/blog/content/publication/journal-article/cite.bib
/home/ochmoha/site/blog/public/publication/conference-paper/conference-paper.pdf
/home/ochmoha/site/blog/public/publication/conference-paper/cite.bib
/home/ochmoha/site/blog/public/publication/journal-article/cite.bib
/home/ochmoha/site/blog/OCHMOHA.github.io/publication/conference-paper/conference-paper.pdf
/home/ochmoha/site/blog/OCHMOHA.github.io/publication/conference-paper/cite.bib
/home/ochmoha/site/blog/OCHMOHA.github.io/publication/journal-article/cite.bib
/home/ochmoha/conf.txt
ochmoha@vbox:~$
```

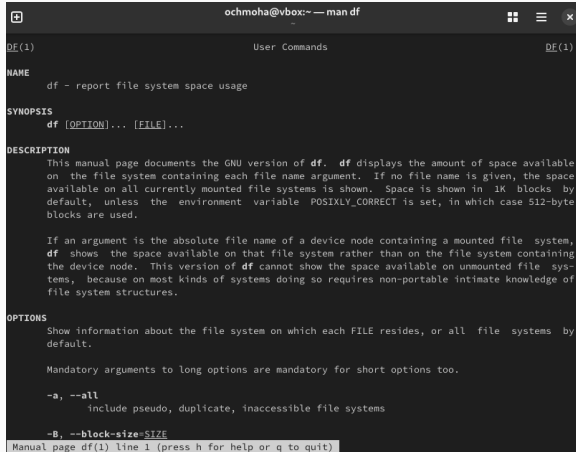
Рис. 3: Поиск файлов


```
/etc/avahi/hosts
/etc/brltty/Contraction/ha.ctb
/etc/brltty/Input/bm/horizontal.kti
/etc/brltty/Input/hd
/etc/brltty/Input/hm
/etc/brltty/Input/ht
find: '/etc/lvm/backup': Permission denied
find: '/etc/lvm/cache': Permission denied
find: '/etc/lvm/devices': Permission denied
/etc/logrotate.d/httpd
find: '/etc/nftables': Permission denied
/etc/nvme/hostnqn
/etc/nvme/hostid
find: '/etc/openvpn/client': Permission denied
find: '/etc/openvpn/server': Permission denied
find: '/etc/polkit-1/localauthority': Permission denied
find: '/etc/polkit-1/rules.d': Permission denied
find: /etc/sane.d/dll.d/hpaio
/etc/sane.d/hp.conf
/etc/sane.d/hp3900.conf
/etc/sane.d/hp4200.conf
/etc/sane.d/hp5400.conf
/etc/sane.d/hpsj5s.conf
/etc/sane.d/hs2p.conf
'/etc/sos/cleaner': Permission denied
find: '/etc/ssh/sshd_config.d': Permission denied
find: '/etc/sssd': Permission denied
find: '/etc/sudoers.d': Permission denied
find: '/etc/liboath': Permission denied
/etc/sysconfig/htcacheclean
/etc/systemd/system/httpd.service.d
```

Рис. 4: Поиск файлов

```
ochmoha@vbox:~$ find / etc-name"h*" -print | less
ochmoha@vbox:~$ find ~ -name "log*" > logfile &
[1] 3892
ochmoha@vbox:~$ rm logfile
[1]+  Done                  find ~ -name "log*" > logfile
ochmoha@vbox:~$
```

Рис. 5: Фоновый запуск процесса



```
ochmoha@vbox:~ — man df
DF(1)                                User Commands                                DF(1)

NAME
    df - report file system space usage

SYNOPSIS
    df [OPTION]... [FILE]...

DESCRIPTION
    This manual page documents the GNU version of df. df displays the amount of space available on the file system containing each file name argument. If no file name is given, the space available on all currently mounted file systems is shown. Space is shown in 1K blocks by default, unless the environment variable POSIXLY_CORRECT is set, in which case 512-byte blocks are used.

    If an argument is the absolute file name of a device node containing a mounted file system, df shows the space available on that file system rather than on the file system containing the device node. This version of df cannot show the space available on unmounted file systems, because on most kinds of systems doing so requires non-portable intimate knowledge of file system structures.

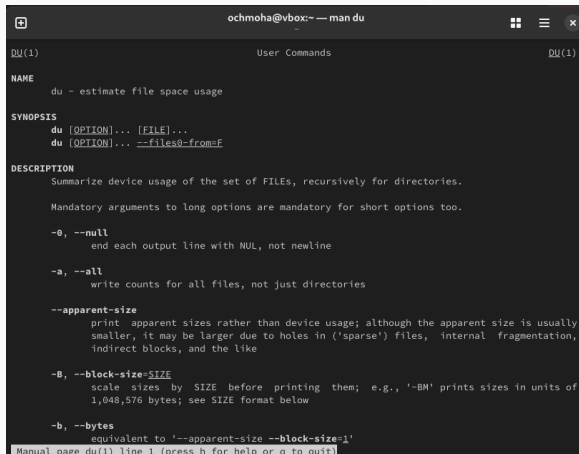
OPTIONS
    Show information about the file system on which each FILE resides, or all file systems by default.

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

    -a, --all
        include pseudo, duplicate, inaccessible file systems

    -B, --block-size=SIZE
        Manual page df(1) line 1 (press h for help or q to quit)
```

Рис. 6: Фоновый запуск и завершение процесса



```
ochmoha@vbox:~ — man du
DU(1)                                User Commands                                DU(1)

NAME
    du - estimate file space usage

SYNOPSIS
    du [OPTION]... [FILE]...
    du [OPTION]... --files0-from=F

DESCRIPTION
    Summarize device usage of the set of FILES, recursively for directories.

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

    -0, --null
        end each output line with NUL, not newline

    -a, --all
        write counts for all files, not just directories

    --apparent-size
        print apparent sizes rather than device usage; although the apparent size is usually
        smaller, it may be larger due to holes in ('sparse') files, internal fragmentation,
        indirect blocks, and the like

    -B, --block-size=SIZE
        scale sizes by SIZE before printing them; e.g., '-BM' prints sizes in units of
        1,048,576 bytes; see SIZE format below

    -b, --bytes
        equivalent to '--apparent-size --block-size=1'

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

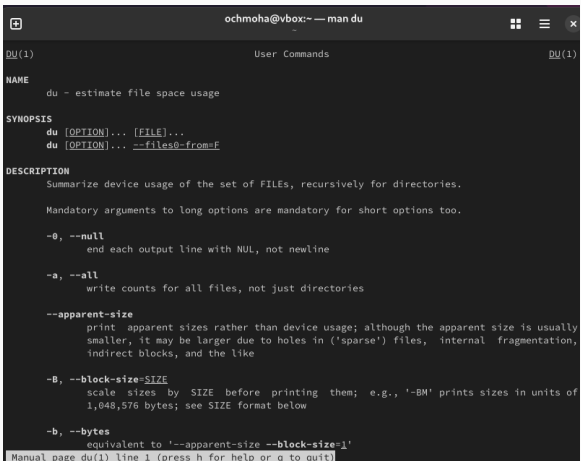
Рис. 7: Справка по команде df

```
ochmoha@vbox:~$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
/dev/sda3        93315072 14403680  78291584 16% /
devtmpfs         4096         0        4096   0% /dev
tmpfs            1763436       96    1763340   1% /dev/shm
efivarfs         256          56        196  23% /sys/firmware/efi/efivars
tmpfs            705376      1444     703932   1% /run
tmpfs            1024         0        1024   0% /run/credentials/systemd-network-generator.service
tmpfs            1024         0        1024   0% /run/credentials/systemd-journald.service
tmpfs            1024         0        1024   0% /run/credentials/systemd-udev-load-credentials.serv
ice
tmpfs            1024         0        1024   0% /run/credentials/systemd-sysctl.service
tmpfs            1024         0        1024   0% /run/credentials/systemd-tmpfiles-setup-dev-early.s
ervice
tmpfs            1024         0        1024   0% /run/credentials/systemd-tmpfiles-setup-dev.service
tmpfs            1763436       16    1763420   1% /tmp
/dev/sda3        93315072 14403680  78291584 16% /home
/dev/sda2        996780      352896     575072  39% /boot
tmpfs            1024         0        1024   0% /run/credentials/systemd-vconsole-setup.service
/dev/sda1        613160      19836     593324   4% /boot/efi
tmpfs            1024         0        1024   0% /run/credentials/systemd-tmpfiles-setup.service
tmpfs            1024         0        1024   0% /run/credentials/systemd-resolved.service
tmpfs            352684       184     352500   1% /run/user/1000
/dev/sr0         58814       58814         0 100% /run/media/ochmoha/VBox_GAs_7.1.6
ochmoha@vbox:~$
```

Рис. 8: Запуск команды df

```
4      ./site/blog/OCHMOHA.github.io/tags/python/page
44     ./site/blog/OCHMOHA.github.io/tags/python
4      ./site/blog/OCHMOHA.github.io/tags/wowchemy/page/1
4      ./site/blog/OCHMOHA.github.io/tags/wowchemy/page
28     ./site/blog/OCHMOHA.github.io/tags/wowchemy
4      ./site/blog/OCHMOHA.github.io/tags/source-themes/page/1
4      ./site/blog/OCHMOHA.github.io/tags/source-themes/page
28     ./site/blog/OCHMOHA.github.io/tags/source-themes
4      ./site/blog/OCHMOHA.github.io/tags/second-brain/page/1
4      ./site/blog/OCHMOHA.github.io/tags/second-brain/page
32     ./site/blog/OCHMOHA.github.io/tags/second-brain
492    ./site/blog/OCHMOHA.github.io/tags
592    ./site/blog/OCHMOHA.github.io/teaching/js
592    ./site/blog/OCHMOHA.github.io/teaching/python
1244   ./site/blog/OCHMOHA.github.io/teaching
44     ./site/blog/OCHMOHA.github.io/uploads
16504  ./site/blog/OCHMOHA.github.io
50468  ./site/blog
76836  ./site
0      ./monthly
0      ./reports/monthly/monthly
0      ./reports/monthly
0      ./reports
4      ./ski.places/equipment
0      ./ski.places/plans
4      ./ski.places
0      ./australia
0      ./play
0      ./fun/play
0      ./fun
818784 .
ochmoha@vbox:~$
```

Рис. 9: Справка по команде du



```
ochmoha@vbox:~ — man du
DU(1)                                User Commands                                DU(1)

NAME
    du - estimate file space usage

SYNOPSIS
    du [OPTION]... [FILE]...
    du [OPTION]... --files0-from=F

DESCRIPTION
    Summarize device usage of the set of FILES, recursively for directories.

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

    -0, --null
        end each output line with NUL, not newline

    -a, --all
        write counts for all files, not just directories

    --apparent-size
        print apparent sizes rather than device usage; although the apparent size is usually
        smaller, it may be larger due to holes in ('sparse') files, internal fragmentation,
        indirect blocks, and the like

    -B, --block-size=SIZE
        scale sizes by SIZE before printing them; e.g., '-BM' prints sizes in units of
        1,048,576 bytes; see SIZE format below

    -b, --bytes
        equivalent to '--apparent-size --block-size=1'

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

Рис. 10: Запуск команды du

```
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/large-language-models/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/javascript
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/javascript/page
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/javascript/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/python
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/python/page
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/python/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/wowchemy
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/wowchemy/page
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/wowchemy/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/source-themes
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/source-themes/page
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/source-themes/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/second-brain
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/second-brain/page
/home/ochmoha/site/blog/OCHMOHA.github.io/tags/second-brain/page/1
/home/ochmoha/site/blog/OCHMOHA.github.io/teaching
/home/ochmoha/site/blog/OCHMOHA.github.io/teaching/js
/home/ochmoha/site/blog/OCHMOHA.github.io/teaching/python
/home/ochmoha/site/blog/OCHMOHA.github.io/uploads
/home/ochmoha/monthly
/home/ochmoha/reports
/home/ochmoha/reports/monthly
/home/ochmoha/reports/monthly/monthly
/home/ochmoha/ski.places
/home/ochmoha/ski.places/equipment
/home/ochmoha/ski.places/plans
/home/ochmoha/australia
/home/ochmoha/play
/home/ochmoha/fun
/home/ochmoha/fun/play
ochmoha@vbox:~$
```

Рис. 11: Поиск директорий

Выводы по проделанной работе

В данной работе мы ознакомились с инструментами поиска файлов и фильтрации текстовых данных. А также приобрели практические навыки по управлению процессами.