

Операционные системы

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

Фатима Халилова

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1. Цели и задачи работы
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1. Цели и задачи работы

1.1 Цель лабораторной 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.

1.2 Задачи лабораторной работы

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

2. Процесс выполнения лабораторной работы

2.1 Перенаправление ввода-вывода

```
frhalolova@frhalilova:~$ ls /etc >> file.txt
frhalolova@frhalilova:~$ ls >> file
frhalolova@frhalilova:~$ cat file.txt
abrt
adjtime
aliases
alsa
alternatives
anaconda
anacrontab
anthy-unicode.conf
asound.conf
at.deny
audit
authselect
avahi
bash_completion.d
bashrc
bindresvport.blacklist
binfmt.d
bluetooth
brlapi.key
brltty
brltty.conf
ceph
chkconfig.d
```

Рисунок 1: Запись в файл

2.2 Работа фильтра

```
frhalilova@frhalilova:~$  
frhalilova@frhalilova:~$ grep .conf file.txt > conf.txt  
frhalilova@frhalilova:~$ cat conf.txt  
anthy-unicode.conf  
asound.conf  
brltty.conf  
chkconfig.d  
chrony.conf  
dconf  
dleyna-server-service.conf  
dnsmasq.conf  
dracut.conf  
dracut.conf.d  
fprind.conf  
fuse.conf  
host.conf  
idmapd.conf  
kdump.conf  
krb5.conf  
krb5.conf.d  
ld.so.conf  
ld.so.conf.d  
libaudit.conf  
locale.conf  
logrotate.conf  
makedumpfile.conf.sample
```

Рисунок 2: Поиск расширения .conf

2.3 Команда поиска

```
/bib/cite.bib
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/project-personal/stage5/report
/_resources/csl
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/project-personal/stage5/report
/bib/cite.bib
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/project-personal/stage6/report
/_resources/csl
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/project-personal/stage6/report
/bib/cite.bib
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/presentation/report/_resources
/csl
/home/frhalolova/work/study/2025-2026/Операционные системы/os-intro/presentation/report/bib/cite.b
ib
/home/frhalolova/git-extended/.git/hooks/commit-msg.sample
/home/frhalolova/git-extended/.git/objects/e6/c9475b6562ef6c351229b43bc2fac8f6fda315
/home/frhalolova/git-extended/.git/objects/84/cb114b86ddf4f52c9364ce540bb536bcc471c6
/home/frhalolova/git-extended/.git/objects/cf
/home/frhalolova/git-extended/.git/objects/7c/cd6d3546c8f4cd4240648d101053bd275b0b84
/home/frhalolova/git-extended/.git/objects/bb/cd92dda9301fc287cbee8cf95dbc8b9ed4d078
/home/frhalolova/git-extended/.git/config
/home/frhalolova/git-extended/gitflow/.git/hooks/commit-msg.sample
/home/frhalolova/git-extended/gitflow/.git/config
/home/frhalolova/git-extended/gitflow/contrib
/home/frhalolova/conf.txt
frhalolova@frhalilova:~$
```

Рисунок 3: Поиск файлов

2.4 Команда поиска

```
/etc/hp
/etc/hp/hplip.conf
/etc/httpd
/etc/httpd/conf/httpd.conf
/etc/liblverbs.d/hfi1verbs.driver
/etc/liblverbs.d/hns.driver
find: '/etc/lvm/archive': Permission denied
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
find: '/etc/openvpn/client': Permission denied
/etc/nvme/hostnqn
/etc/nvme/hostid
find: '/etc/openvpn/server': Permission denied
find: '/etc/pki/rsyslog': Permission denied
find: '/etc/polkit-1/localauthority': Permission denied
find: '/etc/polkit-1/rules.d': Permission denied
find: '/etc/sos/cleaner': Permission denied
/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
find: '/etc/ssh/sshd_config.d': Permission denied
find: '/etc/sss': Permission denied
find: '/etc/sudoers.d': Permission denied
/etc/sysconfig/htcacheclean
/etc/systemd/system/httpd.service.d
/etc/udev/hwdb.d
/etc/udev/hwdb.bin
/etc/host.conf
/etc/hosts
/etc/hostname
(END)
```

Рисунок 4: Поиск файлов

2.5 Управление процессами

```
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ find ~ -name "log*" > logfile &  
[1] 4588  
frhalolova@frhalilova:~$  
[1]+  Done                  find ~ -name "log*" > logfile  
frhalolova@frhalilova:~$ rm logfile  
frhalolova@frhalilova:~$
```

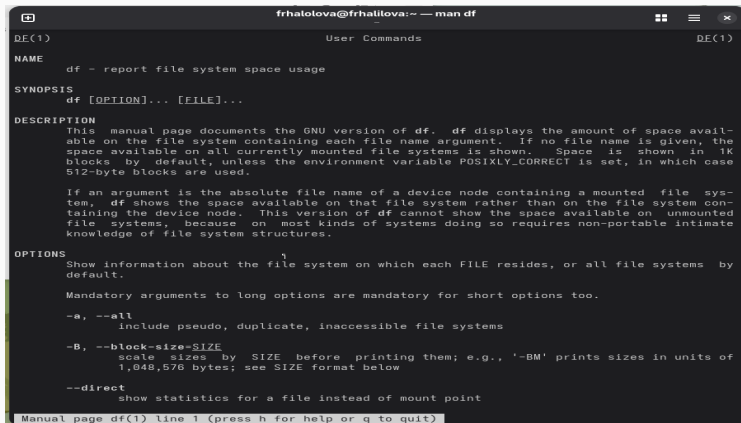
Рисунок 5: Фоновый запуск процесса

2.6 Управление процессами

```
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ find /etc -name "h*" -print | less  
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ find ~ -name "log*" > logfile &  
[1] 4588  
frhalolova@frhalilova:~$  
[1]+  Done                  find ~ -name "log*" > logfile  
frhalolova@frhalilova:~$ rm logfile  
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ gedit &  
[1] 4616  
frhalolova@frhalilova:~$ ps | grep gedit  
    4616 pts/0      00:00:00 gedit  
frhalolova@frhalilova:~$ kill 4616  
frhalolova@frhalilova:~$  
[1]+  Terminated          I      gedit  
frhalolova@frhalilova:~$ █
```

Рисунок 6: Фоновый запуск и завершение процесса

2.7 Команды df и du



```
frhalolova@frhalilova:~ — man df
DE(1)                                User Commands                                DE(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

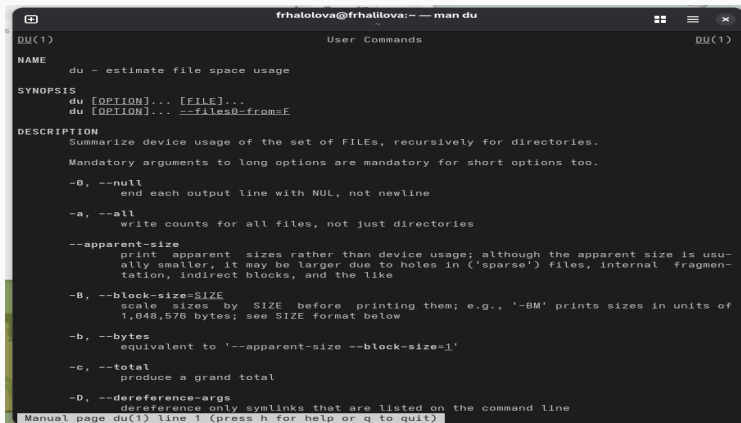
    -B, --block-size=SIZE
        scale sizes by SIZE before printing them; e.g., '-BM' prints sizes in units of 1,048,576 bytes; see SIZE format below

    --direct
        show statistics for a file instead of mount point

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

Рисунок 7: Справка по команде df

2.8 Команды df и du



```
frhatolova@frhatilova:~ — 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'

    -c, --total
        produce a grand total

    -D, --dereference-args
        dereference only symlinks that are listed on the command line

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

Рисунок 8: Запуск команды df

2.9 Команды df и du

```
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ df  
Filesystem      1K-blocks    Used Available Use% Mounted on  
/dev/nvme0n1p3 103805952 17832720  85179536 18% /  
devtmpfs         4096         0      4096    0% /dev  
tmpfs            4035324      96    4035228 1% /dev/shm  
tmpfs            1614132    1928    1612204 1% /run  
tmpfs            1024         0      1024    0% /run/credentials/systemd-journald.service  
tmpfs            4035328    3724    4031604 1% /tmp  
/dev/nvme0n1p3 103805952 17832720  85179536 18% /home  
/dev/nvme0n1p2  996780     274460    653508 30% /boot  
tmpfs            1024         0      1024    0% /run/credentials/systemd-resolved.service  
tmpfs            807064      188    806876 1% /run/user/1007  
frhalolova@frhalilova:~$
```

Рисунок 9: Справка по команде du

2.10 Команды df и du

```
8      ./git-extended/gitflow/.git/logs/refs/heads
12     ./git-extended/gitflow/.git/logs/refs
16     ./git-extended/gitflow/.git/logs
2056   ./git-extended/gitflow/.git
8      ./git-extended/gitflow/contrib
172    ./git-extended/gitflow/hooks
2552   ./git-extended/gitflow
2776   ./git-extended
0      ./monthly
0      ./reports/monthly/monthly
0      ./reports/monthly
0      ./reports
4      ./ski.plases/equipment
0      ./ski.plases/plans
4      ./ski.plases
0      ./australia
0      ./play/games/play
0      ./play/games
0      ./play
719348 .
frhalolova@frhalilova:~$
```

Рисунок 10: Запуск команды du

2.11 Команда поиска

```
/home/frhalolova/git-extended/gitflow/.git/refs/remotes
/home/frhalolova/git-extended/gitflow/.git/refs/remotes/origin
/home/frhalolova/git-extended/gitflow/.git/logs
/home/frhalolova/git-extended/gitflow/.git/logs/refs
/home/frhalolova/git-extended/gitflow/.git/logs/refs/remotes
/home/frhalolova/git-extended/gitflow/.git/logs/refs/remotes/origin
/home/frhalolova/git-extended/gitflow/.git/logs/refs/heads
/home/frhalolova/git-extended/gitflow/contrib
/home/frhalolova/git-extended/gitflow/hooks
/home/frhalolova/monthly
/home/frhalolova/reports
/home/frhalolova/reports/monthly
/home/frhalolova/reports/monthly/monthly
/home/frhalolova/ski.plases
/home/frhalolova/ski.plases/equipment
/home/frhalolova/ski.plases/plans
/home/frhalolova/australia
/home/frhalolova/play
/home/frhalolova/play/games
/home/frhalolova/play/games/play
frhalolova@frhalilova:~$
```

Рисунок 11: Поиск директорий

3. Выводы по проделанной работе

3.1 Вывод

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