

Операционные системы

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

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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

```
frhalolova@frhalilova:~$ grep .conf file.txt > conf.txt
frhalolova@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
fprintd.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

```
/bin/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/c9475b6562ef6c351229b43bc2fac8f6fd315
/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/hplib.conf
/etc/httpd
/etc/httpd/conf/httpd.conf
/etc/libibverbs.d/hfilverbs.driver
/etc/libibverbs.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/sssd': 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:~$
```

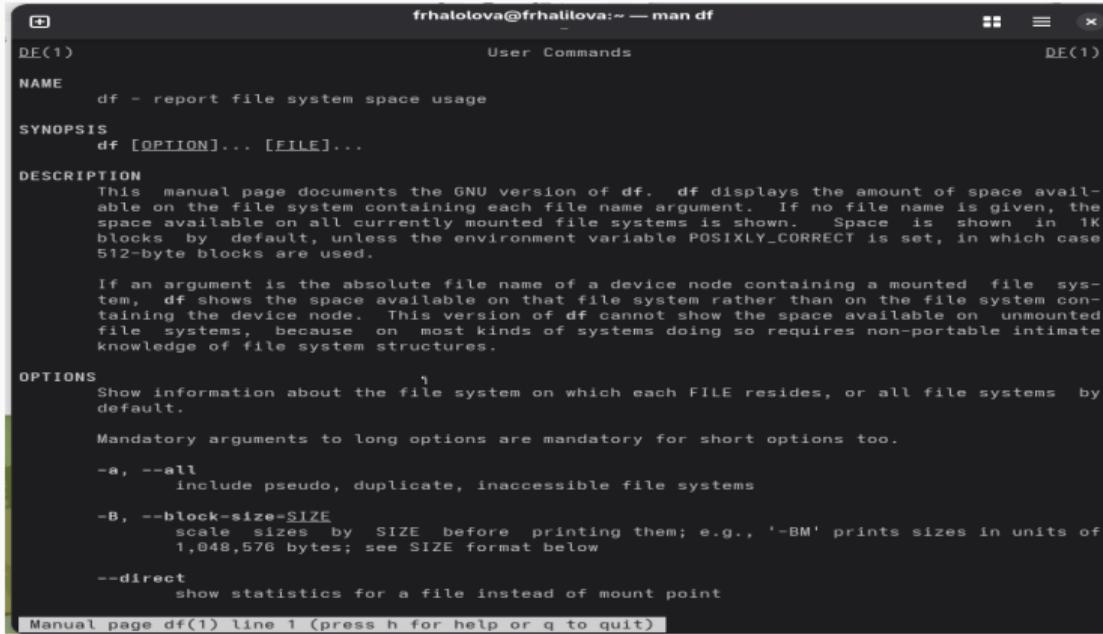
Рисунок 5: Фоновый запуск процесса

2.6 Управление процессами

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

Рисунок 6: Фоновый запуск и завершение процесса

2.7 Команды df и du



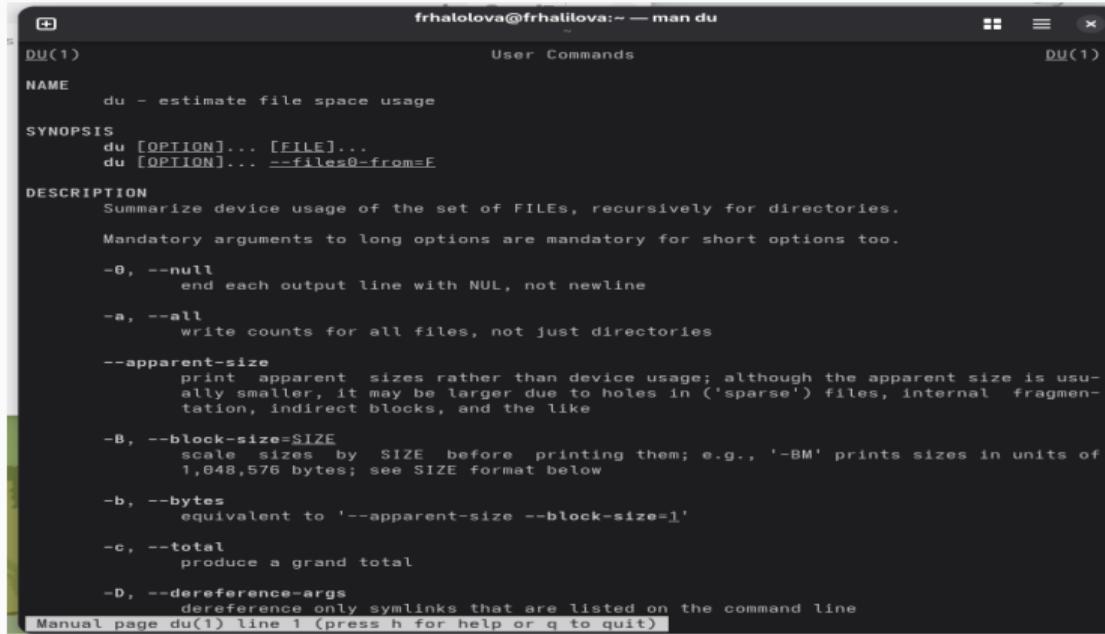
The screenshot shows a terminal window with the command `frhalilova@frhalilova:~ — man df` entered at the prompt. The window title is "User Commands". The man page for `df(1)` is displayed, containing the following sections:

- 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**:
 - `-l`: 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

At the bottom of the terminal window, a status bar displays: "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



The screenshot shows a terminal window with the title "frhalolova@frhalitova: ~ man du". The window displays the man page for the du(1) command. The page includes sections for NAME, SYNOPSIS, DESCRIPTION, and various options like -h, --null, -a, --all, --apparent-size, -B, --block-size=SIZE, -b, --bytes, -c, --total, and -D, --dereference-args. The bottom of the window shows the footer "Manual page du(1) line 1 (press h for help or q to quit)".

```
frhalolova@frhalitova: ~ man du
DU(1)                                         User Commands                                         DU(1)

NAME
    du - estimate file space usage

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

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 usu-
        ally smaller, it may be larger due to holes in ('sparse') files, internal fragmen-
        tation, 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:~$ 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          887064    188   886876  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 .
frhalilova@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@frhalolova:~$
```

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.