

# Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

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# Цели и задачи работы

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## 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.

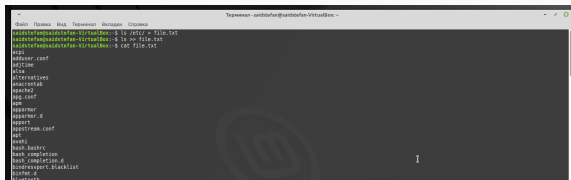
# Задачи лабораторной работы

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

# **Процесс выполнения лабораторной работы**

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# Перенаправление ввода-вывода



```
~/Файл Папки Вид Терминал История Справка
Терминал - sandstorm@sandstorm-virtualbox: ~
sandstorm@sandstorm-virtualbox:~$ ls /etc/ > file.txt
sandstorm@sandstorm-virtualbox:~$ ls > file.txt
sandstorm@sandstorm-virtualbox:~$ cat file.txt
cpu
cpuuser.conf
pagesize
allow
alternatives
unacreslab
patches
pgp.conf
rpm
rpmarmor
rpmarmor-d
rpmreport
rpmstream.conf
rpm
rpmdb
rpmdb-backup
rpmdb-completion
rpmdb-completion.d
rpmreport-blacklist
rpmreport.d
rpmreport
```

Figure 1: Запись в файл

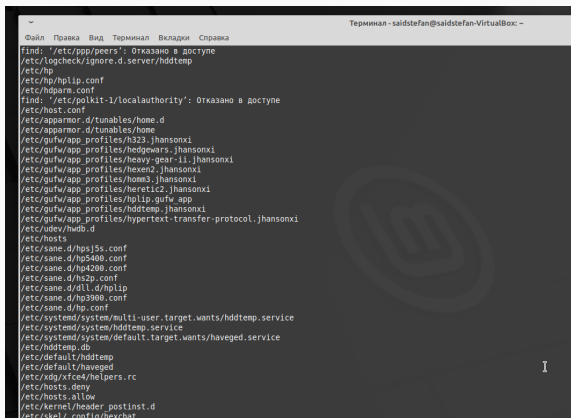
```
saidstefan@saidstefan-VirtualBox:~$  
saidstefan@saidstefan-VirtualBox:~$ grep .conf file.txt > conf.txt  
saidstefan@saidstefan-VirtualBox:~$ cat conf.txt  
adduser.conf  
apg.conf  
appstream.conf  
brltty.conf  
ca-certificates.conf  
ca-certificates.conf.dpkg-old  
casper.conf  
compizconfig  
dconf  
debconf.conf  
deluser.conf  
e2scrub.conf  
fprintd.conf  
fuse.conf  
gai.conf  
hdparm.conf  
host.conf  
inxi.conf  
kernel-img.conf
```

**Figure 2:** Поиск расширения .conf

```
sairstefan@sairstefan-VirtualBox:~$  
sairstefan@sairstefan-VirtualBox:~$  
sairstefan@sairstefan-VirtualBox:~$ ls -R | grep c*  
conf.txt  
sairstefan@sairstefan-VirtualBox:~$ find ~ -name "c*" -print  
/home/sairstefan/.local/share/evolution/calendar  
/home/sairstefan/.local/share/evolution/calendar/system/calendar.ics  
/home/sairstefan/.local/share/evolution/addressbook/system/contacts.db  
/home/sairstefan/.local/share/flatpak/repo/config  
/home/sairstefan/.local/share/flatpak/repo/tmp/cache  
/home/sairstefan/.config/caja  
/home/sairstefan/.config/kdeconnect/certificate.pem  
/home/sairstefan/.config/pulse/c4f2d44acf3c4564bf5a66409c42613f-card-database.tdb  
/home/sairstefan/.config/pulse/c4f2d44acf3c4564bf5a66409c42613f-device-volumes.tdb  
/home/sairstefan/.config/pulse/c4f2d44acf3c4564bf5a66409c42613f-default-source  
/home/sairstefan/.config/pulse/c4f2d44acf3c4564bf5a66409c42613f-stream-volumes.tdb  
/home/sairstefan/.config/pulse/cookie  
/home/sairstefan/.config/pulse/c4f2d44acf3c4564bf5a66409c42613f-default-sink  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/compatibility.ini  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/cert9.db  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/storage/permanent/chrome  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/containers.json  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/crashes  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/cookies.sqlite  
/home/sairstefan/.mozilla/firefox/scalpnyl.default-release/content-prefs.sqlite  
/home/sairstefan/work/study/2021-2022/Операционные системы/os-intro/template/report/report/pandoc/csl  
/home/sairstefan/work/study/2021-2022/Операционные системы/os-intro/template/report/report/bib/cite.bib  
/home/sairstefan/work/study/2021-2022/Операционные системы/os-intro/config  
/home/sairstefan/work/study/2021-2022/Операционные системы/os-intro/config/course
```

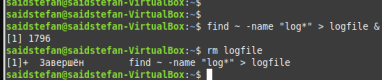
Figure 3: Поиск файлов





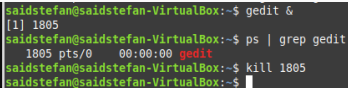
```
Терминал - saidstefan@saidstefan-VirtualBox: -
Файл  Правка  Вид  Терминал  Вкладки  Справка
find: '/etc/ppp/peers': Отказано в доступе
/etc/logcheck/ignore.d.server/hddtemp
/etc/hp
/etc/hp/hplip.conf
/etc/hdparm.conf
find: '/etc/polkit-1/localauthority': Отказано в доступе
/etc/host.conf
/etc/apparmor.d/tunables/home.d
/etc/apparmor.d/tunables/home
/etc/gufw/app_profiles/h323.jhansonxi
/etc/gufw/app_profiles/hedgewars.jhansonxi
/etc/gufw/app_profiles/heavy-gear-ii.jhansonxi
/etc/gufw/app_profiles/hexen2.jhansonxi
/etc/gufw/app_profiles/hom3.jhansonxi
/etc/gufw/app_profiles/heretic2.jhansonxi
/etc/gufw/app_profiles/hplip.gufw_app
/etc/gufw/app_profiles/hddtemp.jhansonxi
/etc/gufw/app_profiles/hypertext-transfer-protocol.jhansonxi
/etc/udev/hwdb.d
/etc/hosts
/etc/sane.d/hpsj5s.conf
/etc/sane.d/hp5400.conf
/etc/sane.d/hp4200.conf
/etc/sane.d/h52p.conf
/etc/sane.d/dll.d/hplip
/etc/sane.d/hp3900.conf
/etc/sane.d/hp.conf
/etc/systemd/system/multi-user.target.wants/hddtemp.service
/etc/systemd/system/hddtemp.service
/etc/systemd/system/default.target.wants/haveged.service
/etc/hddtemp.db
/etc/default/hddtemp
/etc/haveged
/etc/xdg/xfce4/helpers.rc
/etc/hosts.deny
/etc/hosts.allow
/etc/kernel/header_postinst.d
/etc/skel/.config/hexchat
```

Figure 4: Поиск файлов

A terminal window with a dark background and light green text. The prompt is 'saidstefan@saidstefan-VirtualBox:~\$'. The user enters 'find ~ -name "log\*" > logfile &'. The prompt changes to '[1] 1796'. The user enters 'rm logfile'. The prompt changes to '[1]+ Завершён find ~ -name "log\*" > logfile'. The user enters another prompt 'saidstefan@saidstefan-VirtualBox:~\$' with a cursor.

```
saidstefan@saidstefan-VirtualBox:~$  
saidstefan@saidstefan-VirtualBox:~$  
saidstefan@saidstefan-VirtualBox:~$ find ~ -name "log*" > logfile &  
[1] 1796  
saidstefan@saidstefan-VirtualBox:~$ rm logfile  
[1]+  Завершён      find ~ -name "log*" > logfile  
saidstefan@saidstefan-VirtualBox:~$
```

Figure 5: Фоновый запуск процесса

A terminal window with a dark background and light green text. It shows a sequence of commands and their outputs in a Linux environment. The prompt is 'saidstefan@saidstefan-VirtualBox:~\$'. The first command is 'gedit &', which returns '[1] 1805'. The second command is 'ps | grep gedit', which returns '1805 pts/0 00:00:00 gedit'. The third command is 'kill 1805'. The fourth line shows the prompt again, indicating the command was executed.

```
saidstefan@saidstefan-VirtualBox:~$ gedit &  
[1] 1805  
saidstefan@saidstefan-VirtualBox:~$ ps | grep gedit  
1805 pts/0 00:00:00 gedit  
saidstefan@saidstefan-VirtualBox:~$ kill 1805  
saidstefan@saidstefan-VirtualBox:~$
```

**Figure 6:** Фооновый запуск и завершение процесса

# Команды df и du



```
Terminal - sandstorm@ubuntu:~/VirtualBox -
df(1)                                user Commands                                df(1)

NAME
  df - report file system disk space usage

SYNOPSIS
  df [-HPTlm]... [FILE]...

DESCRIPTION
  This manual page documents the GNU version of df. df displays the amount of disk 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. Disk 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 disk 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 very
  respectable 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.

  -h, --all
      include pseudo, duplicate, inaccessible file system

  -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

  -k, --human-readable
      print sizes in powers of 1024 (e.g., 1023M)

  -B, --si
      print sizes in powers of 1000 (e.g., 1.1G)

  -l, --inodes
      list inode information instead of block usage

  -k, --block-size=K
      like --block-size=K
```

Figure 7: Справка по команде df

# Команды df и du



```
df(1)
NAME
    df - estimate file space usage

SYNOPSIS
    df [OPTION]... [FILE]...
    df [OPTION]... --files-fsystem

DESCRIPTION
    Summarize disk usage of the set of FILES, recursively for directories.
    Mandatory arguments to long options are mandatory for short options too.

    -h, --mail
        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 disk usage; although the apparent size is usually smaller, it may be larger due to holes in ('sparse') files, internal fragments, 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'

    -t, --total
        produce a grand total

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

    -d, --max-depth=N
        print the total for a directory (or file, with --all) only if it is N or fewer levels below the command line argument; --max-depth=0 is the same as --summarize

    --files-fsystem
        summarize disk usage of the NUL-terminated file names specified in file F; if F is -, then read names from standard input

    -H
        equivalent to --dereference-args (-d)

    -h, --human-readable
        default page df(1) line 1 (press h for help or q to quit)
```

Figure 8: Запуск команды df

# Команды df и du

```
saidstefan@saidstefan-VirtualBox:~$ df
saidstefan@saidstefan-VirtualBox:~$ df
Файл. система  1K-блоков  Использовано  Доступно  Использовано%  Смонтировано в
udev           4015232      0  4015232      0% /dev
tmpfs           812432      1608  810824      1% /run
/dev/sda5      122810976  18979740  97549764    17% /
tmpfs          4062156      0  4062156      0% /dev/shm
tmpfs           5120         4    5116        1% /run/lock
tmpfs          4062156      0  4062156      0% /sys/fs/cgroup
/dev/sda1       523248         4    523244      1% /boot/efi
tmpfs           812428      16    812412      1% /run/user/1030
saidstefan@saidstefan-VirtualBox:~$
```

Figure 9: Справка по команде du

# Команды df и du

```
uidstefan@uidstefan-VirtualBox:~$ du
4      ./Омегаcrymme
8      ./local/state/gh
12     ./local/state
4      ./local/share/keyrings
0      ./local/share/evolution/calendar/system
4      ./local/share/evolution/calendar/trash
16     ./local/share/evolution/calendar
0      ./local/share/evolution/tasks/system
4      ./local/share/evolution/tasks/trash
16     ./local/share/evolution/tasks
4      ./local/share/evolution/mail/trash
8      ./local/share/evolution/mail
4      ./local/share/evolution/memos/trash
0      ./local/share/evolution/memos
4      ./local/share/evolution/addressbook/system/photos
92     ./local/share/evolution/addressbook/system
4      ./local/share/evolution/addressbook/trash
100    ./local/share/evolution/addressbook
152    ./local/share/evolution
48     ./local/share/gvfs-metadata
1880   ./local/share/baloo
4      ./local/share/gnote
12     ./local/share/ksqlited
4      ./local/share/flatpak/repo/refs/heads
4      ./local/share/flatpak/repo/refs/mirrors
4      ./local/share/flatpak/repo/refs/remotes
16     ./local/share/flatpak/repo/refs
4      ./local/share/flatpak/repo/state
4      ./local/share/flatpak/repo/tmp/cache
8      ./local/share/flatpak/repo/tmp
```

Figure 10: Запуск команды du

```
saidstefan@saidstefan-VirtualBox:~$ find -type d
/home/saidstefan
/home/saidstefan/Общедоступные
/home/saidstefan/.local
/home/saidstefan/.local/state
/home/saidstefan/.local/state/gh
/home/saidstefan/.local/share
/home/saidstefan/.local/share/keyrings
/home/saidstefan/.local/share/evolution
/home/saidstefan/.local/share/evolution/calendar
/home/saidstefan/.local/share/evolution/calendar/system
/home/saidstefan/.local/share/evolution/calendar/trash
/home/saidstefan/.local/share/evolution/tasks
/home/saidstefan/.local/share/evolution/tasks/system
/home/saidstefan/.local/share/evolution/tasks/trash
/home/saidstefan/.local/share/evolution/mail
/home/saidstefan/.local/share/evolution/mail/trash
/home/saidstefan/.local/share/evolution/memos
/home/saidstefan/.local/share/evolution/memos/trash
/home/saidstefan/.local/share/evolution/addressbook
/home/saidstefan/.local/share/evolution/addressbook/system
/home/saidstefan/.local/share/evolution/addressbook/system/photos
/home/saidstefan/.local/share/evolution/addressbook/trash
/home/saidstefan/.local/share/gvfs-metadata
/home/saidstefan/.local/share/baloo
/home/saidstefan/.local/share/gnome
/home/saidstefan/.local/share/kwalletd
/home/saidstefan/.local/share/flatpak
/home/saidstefan/.local/share/flatpak/repo
/home/saidstefan/.local/share/flatpak/repo/refs
/home/saidstefan/.local/share/flatpak/repo/refs/heads
/home/saidstefan/.local/share/flatpak/repo/refs/mirrors
/home/saidstefan/.local/share/flatpak/repo/refs/remotes
```

Figure 11: Поиск директорий



## **Выводы по проделанной работе**

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