

# Операционные системы

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

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1. Цели и задачи работы
2. Процесс выполнения лабораторной работы
3. Выводы по проделанной работе

# **1. Цели и задачи работы**

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## 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**

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## 2.1 Перенаправление ввода-вывода

```
aachernyatin@aachernyatin:~$  
aachernyatin@aachernyatin:~$ ls /etc > file.txt  
aachernyatin@aachernyatin:~$ ls >> file.txt  
aachernyatin@aachernyatin:~$ 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
```

**Рисунок 1:** Запись в файл

## 2.2 Работа фильтра

```
aachernyatin@aachernyatin:~$  
aachernyatin@aachernyatin:~$ grep .conf file.txt > conf.txt  
aachernyatin@aachernyatin:~$ 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  
3dtk.conf
```

**Рисунок 2:** Поиск расширения .conf

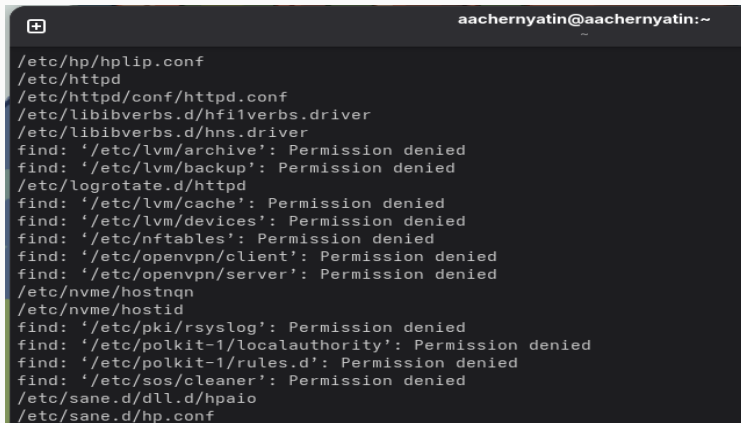


## 2.3 Команда поиска

```
aachernyatin@aachernyatin:~$  
aachernyatin@aachernyatin:~$ ls -R | grep c*  
conf.txt  
aachernyatin@aachernyatin:~$ find ~ -name "c*" -print  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/crashes  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/compatibility.ini  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/cookies.sqlite  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/storage/permanent/chrome  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/cert9.db  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/content-prefs.sqlite  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/containers.json  
/home/aachernyatin/.mozilla/firefox/tivsiic0.default-release/cookies.sqlite-wal  
/home/aachernyatin/.cache/evolution/calendar  
/home/aachernyatin/.cache/gnome-software/appstream/components.xmlb  
/home/aachernyatin/.cache/gnome-software/flatpak-system-default/components.xmlb  
/home/aachernyatin/.cache/gnome-software/flatpak-user-user/components.xmlb  
/home/aachernyatin/.cache/gnome-software/icons/ca3cacb98d474aef28d53daef534f2246b769bd8-org.gnome.World  
s.png  
/home/aachernyatin/.cache/gnome-software/icons/ch41d0f5114f7ff4f43b17df38cd4bff634d24c0-nl.emphasisia.icon
```

Рисунок 3: Поиск файлов

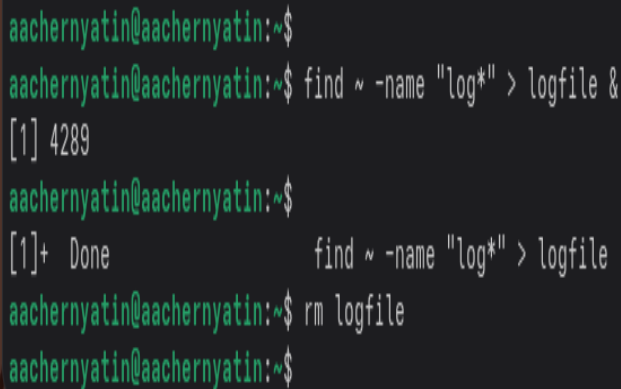
## 2.4 Команда поиска

A terminal window with a dark background and light text. The title bar at the top shows a plus icon on the left and the text 'aachernyatin@aachernyatin:~' on the right. The terminal displays a list of file paths and several 'Permission denied' error messages. The paths include configuration files in /etc, LVM archive and backup directories, logrotate configuration, nvme host information, and polkit rules. The errors are interspersed with the paths, indicating that the user attempted to access these files but was denied permission.

```
+ aachernyatin@aachernyatin:~  
/etc/hp/hplip.conf  
/etc/httpd  
/etc/httpd/conf/httpd.conf  
/etc/libibverbs.d/hfi1verbs.driver  
/etc/libibverbs.d/hns.driver  
find: '/etc/lvm/archive': Permission denied  
find: '/etc/lvm/backup': Permission denied  
/etc/logrotate.d/httpd  
find: '/etc/lvm/cache': Permission denied  
find: '/etc/lvm/devices': Permission denied  
find: '/etc/nftables': Permission denied  
find: '/etc/openvpn/client': Permission denied  
find: '/etc/openvpn/server': Permission denied  
/etc/nvme/hostnqn  
/etc/nvme/hostid  
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
```

**Рисунок 4:** Поиск файлов

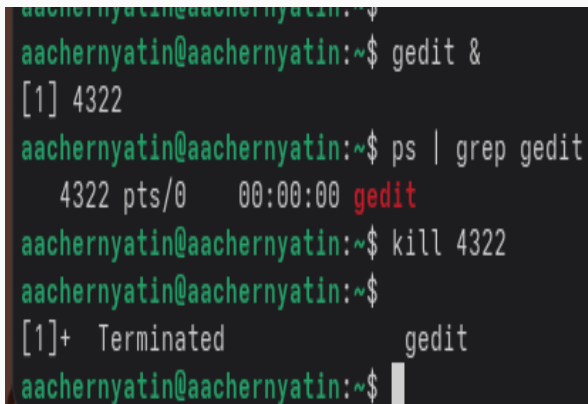
## 2.5 Управление процессами

A terminal window with a dark background and green text. The prompt is 'aachernyatin@aachernyatin:~\$'. The user enters 'find ~ -name "log\*" > logfile &'. The prompt returns, and the user enters '[1] 4289'. The prompt returns again, and the user enters 'rm logfile'. The prompt returns a third time.

```
aachernyatin@aachernyatin:~$  
aachernyatin@aachernyatin:~$ find ~ -name "log*" > logfile &  
[1] 4289  
aachernyatin@aachernyatin:~$  
[1]+  Done                  find ~ -name "log*" > logfile  
aachernyatin@aachernyatin:~$ rm logfile  
aachernyatin@aachernyatin:~$
```

**Рисунок 5:** Фоновый запуск процесса

## 2.6 Управление процессами



```
aachernyatin@aachernyatin:~$ gedit &
[1] 4322
aachernyatin@aachernyatin:~$ ps | grep gedit
  4322 pts/0    00:00:00 gedit
aachernyatin@aachernyatin:~$ kill 4322
aachernyatin@aachernyatin:~$
[1]+  Terminated                  gedit
aachernyatin@aachernyatin:~$
```

**Рисунок 6:** Фоновый запуск и завершение процесса

## 2.7 Команды df и du



```
aachernyatin@aachernyatin:~ — 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 en-
  vironment 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

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

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



```
aachernyatin@aachernyatin:~ — 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
        follow symbolic links that are arguments

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

```
aachernyatin@aachernyatin:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/nvme0n1p3 103805952 23583468 79690452 23% /
devtmpfs         4096         0      4096    0% /dev
tmpfs            4035332      96    4035236 1% /dev/shm
tmpfs            1614136    1940    1612196 1% /run
tmpfs             1024         0      1024    0% /run/credentials/systemd-journald.service
tmpfs            4035332    3720    4031612 1% /tmp
/dev/nvme0n1p3 103805952 23583468 79690452 23% /home
/dev/nvme0n1p2  996780    274460    653508 30% /boot
/dev/loop0       75776    75776         0 100% /var/lib/snapd/snap/core22/2139
/dev/loop2       52224    52224         0 100% /var/lib/snapd/snap/snapd/25577
/dev/loop1      104960   104960         0 100% /var/lib/snapd/snap/hugo/24974
tmpfs             1024         0      1024    0% /run/credentials/systemd-resolved.service
tmpfs            807064      180    806884 1% /run/user/1013
aachernyatin@aachernyatin:~$ █
```

**Рисунок 9:** Справка по команде du

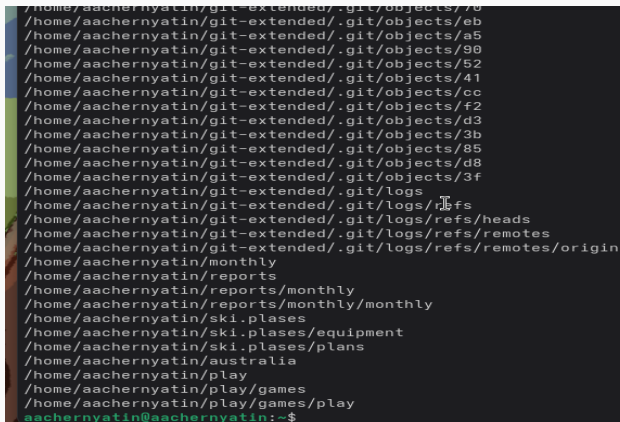
## 2.10 Команды df и du

```
4      ./git-extended/.git/objects/cc
4      ./git-extended/.git/objects/f2
8      ./git-extended/.git/objects/d3
4      ./git-extended/.git/objects/3b
4      ./git-extended/.git/objects/85
4      ./git-extended/.git/objects/d8
4      ./git-extended/.git/objects/3f
76     ./git-extended/.git/objects
8      ./git-extended/.git/logs/refs/heads
8      ./git-extended/.git/logs/refs/remotes/origin
8      ./git-extended/.git/logs/refs/remotes
16     ./git-extended/.git/logs/refs
20     ./git-extended/.git/logs
212    ./git-extended/.git
220    ./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
762860 .
aachernyatin@aachernyatin:~$
```

Рисунок 10: Запуск команды du



## 2.11 Команда поиска

A terminal window with a dark background and light green text. It displays a list of directory paths found by a search command. The paths are listed one per line, starting from the root of the user's home directory. The list includes various subdirectories like 'git-extended', 'logs', 'reports', 'ski.places', 'australia', 'play', and 'games'. The terminal ends with a prompt indicating the user is at the root of their home directory.

```
/home/aachernyatin/git-extended/.git/objects/70  
/home/aachernyatin/git-extended/.git/objects/eb  
/home/aachernyatin/git-extended/.git/objects/a5  
/home/aachernyatin/git-extended/.git/objects/90  
/home/aachernyatin/git-extended/.git/objects/52  
/home/aachernyatin/git-extended/.git/objects/41  
/home/aachernyatin/git-extended/.git/objects/cc  
/home/aachernyatin/git-extended/.git/objects/f2  
/home/aachernyatin/git-extended/.git/objects/d3  
/home/aachernyatin/git-extended/.git/objects/3b  
/home/aachernyatin/git-extended/.git/objects/85  
/home/aachernyatin/git-extended/.git/objects/d8  
/home/aachernyatin/git-extended/.git/objects/3f  
/home/aachernyatin/git-extended/.git/logs  
/home/aachernyatin/git-extended/.git/logs/refs  
/home/aachernyatin/git-extended/.git/logs/refs/heads  
/home/aachernyatin/git-extended/.git/logs/refs/remotes  
/home/aachernyatin/git-extended/.git/logs/refs/remotes/origin  
/home/aachernyatin/monthly  
/home/aachernyatin/reports  
/home/aachernyatin/reports/monthly  
/home/aachernyatin/reports/monthly/monthly  
/home/aachernyatin/ski.places  
/home/aachernyatin/ski.places/equipment  
/home/aachernyatin/ski.places/plans  
/home/aachernyatin/australia  
/home/aachernyatin/play  
/home/aachernyatin/play/games  
/home/aachernyatin/play/games/play  
aachernyatin@aachernyatin:~$
```

Рисунок 11: Поиск директорий

### **3. Выводы по проделанной работе**

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## 3.1 Вывод

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