

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

```
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
```

II

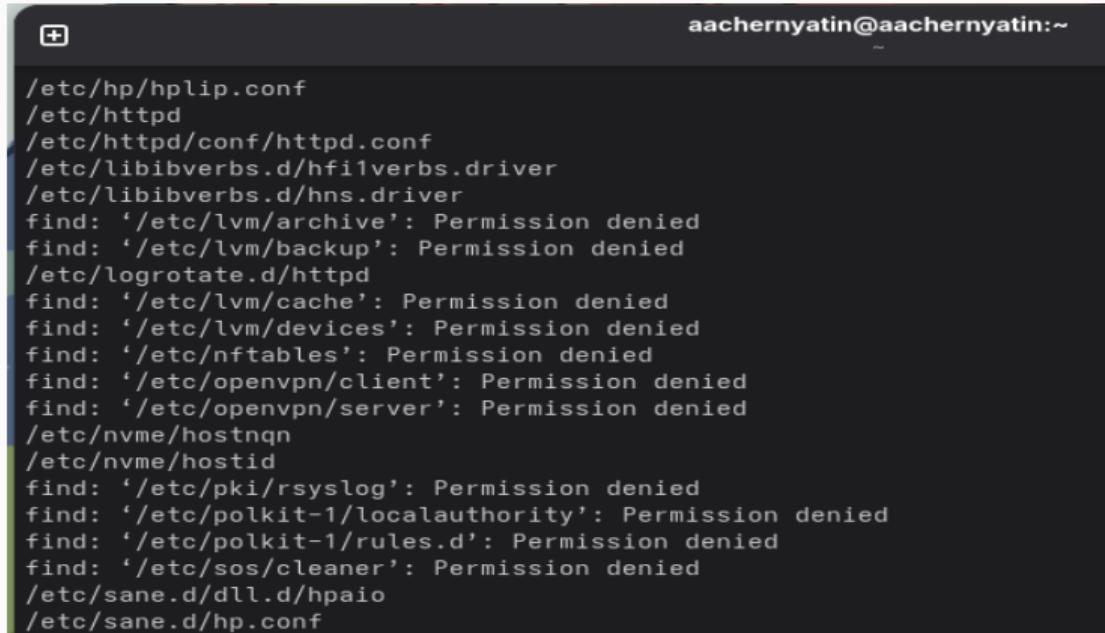
Рисунок 2: Поиск расширения .conf

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/ch41d0f5114f7ff4f43b17df38cd4bfff634d24c0-n1.emphisia.icon
```

Рисунок 3: Поиск файлов

2.4 Команда поиска



The screenshot shows a terminal window with a dark background and light-colored text. At the top right, it displays the user's name and session information: `aachernyatin@aachernyatin:~`. The main area of the terminal contains the output of a file search command, likely `find`, which lists various paths and files. Many of these entries include the message `Permission denied`, indicating that the user lacks sufficient permissions to access those specific files or directories.

```
+-----+-----+
|      | aachernyatin@aachernyatin:~
|      |
| /etc/hp/hplip.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
| /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

```
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

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

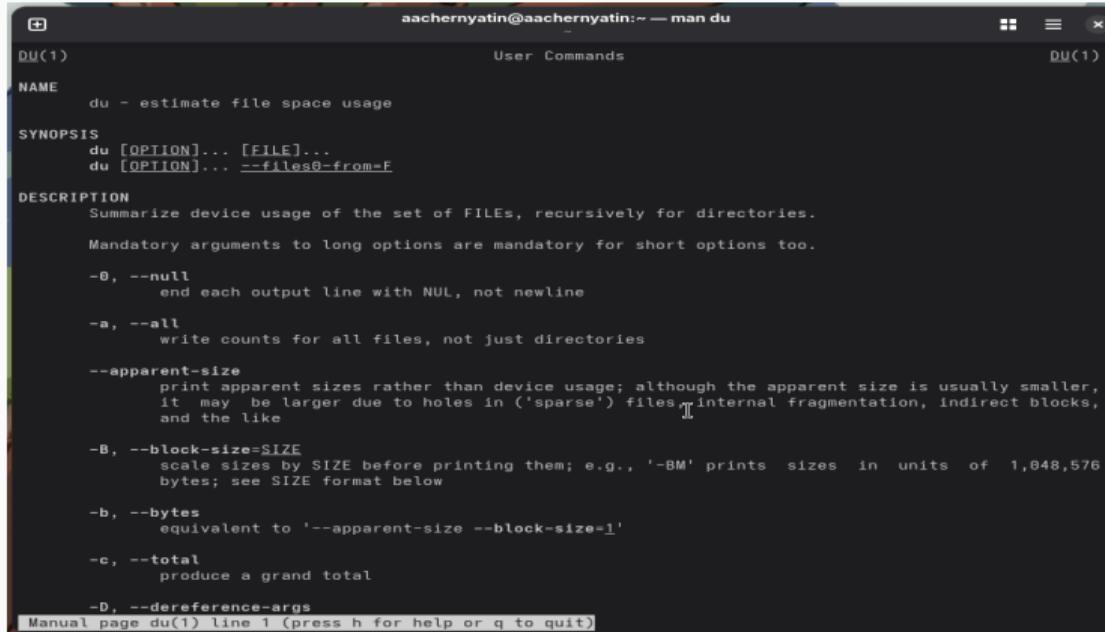
--direct
show statistics for a file instead of mount point

-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



The screenshot shows a terminal window with the title bar "aichernyatin@aichernyatin:~ — man du". The window displays the man page for the du command. The text is as follows:

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

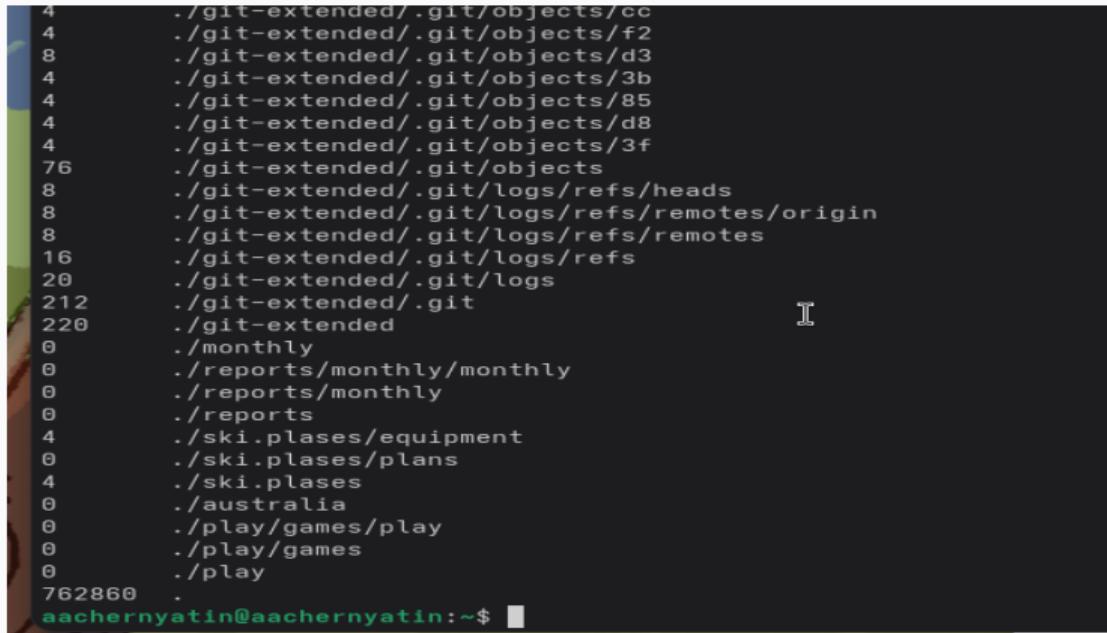
Рисунок 8: Запуск команды df

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          807864     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

```
/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.plases
/home/aachernyatin/ski.plases/equipment
/home/aachernyatin/ski.plases/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

3.1 Вывод

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