

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

Саргсян Сурен Бабкенович¹

29 августа, 2023, Москва, Россия

¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

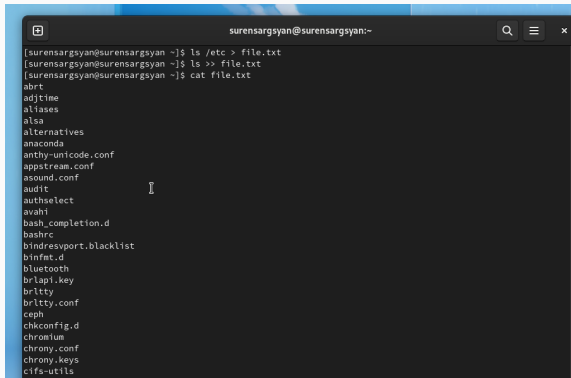
Ознакомление с файловой системой Linux, её структурой, именами и содержанием каталогов. Приобретение практических навыков по применению команд для работы с файлами и каталогами, по управлению процессами, по проверке использования диска и обслуживанию файловой системы.

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

Перенаправление ввода-вывода

A terminal window titled 'surensargssyan@surensargssyan:~' with search, menu, and close icons. It shows a sequence of commands: 'ls /etc > file.txt', 'ls >> file.txt', and 'cat file.txt'. The output of 'cat' is a list of files in /etc, including 'abrt', 'adjtime', 'aliases', 'alsa', 'alternatives', 'anaconda', 'anthy-unicode.conf', 'appstream.conf', 'asound.conf', 'audit', 'authselect', 'avahi', 'bash_completion.d', 'bashrc', 'bindresvport.blacklist', 'binfmt.d', 'bluetooth', 'brlapi.key', 'brltty', 'brltty.conf', 'ceph', 'chkconfig.d', 'chromium', 'chrony.conf', 'chrony.keys', and 'cifs-utils'.

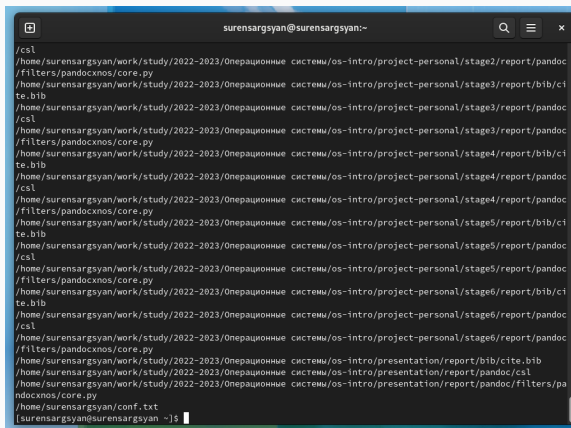
```
surensargssyan@surensargssyan:~  
[surensargssyan@surensargssyan ~]$ ls /etc > file.txt  
[surensargssyan@surensargssyan ~]$ ls >> file.txt  
[surensargssyan@surensargssyan ~]$ cat file.txt  
abrt  
adjtime  
aliases  
alsa  
alternatives  
anaconda  
anthy-unicode.conf  
appstream.conf  
asound.conf  
audit  
authselect  
avahi  
bash_completion.d  
bashrc  
bindresvport.blacklist  
binfmt.d  
bluetooth  
brlapi.key  
brltty  
brltty.conf  
ceph  
chkconfig.d  
chromium  
chrony.conf  
chrony.keys  
cifs-utils
```

Рис. 1: Запись в файл

Работа фильтра

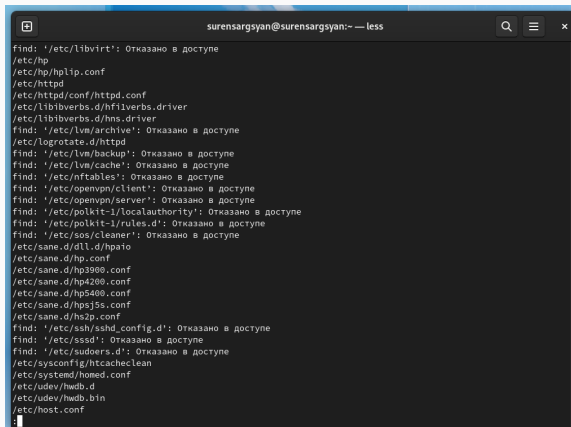
```
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$ grep .conf file.txt > conf.txt  
[surensargsyan@surensargsyan ~]$ cat conf.txt  
anthy-unicode.conf  
appstream.conf  
asound.conf  
brltty.conf  
chkconfig.d  
chrony.conf  
dconf  
dleyna-renderer-service.conf  
dleyna-server-service.conf  
dnsmasq.conf  
dracut.conf  
dracut.conf.d  
extlinux.conf  
fprintd.conf  
fuse.conf  
host.conf  
idmapd.conf  
jwhois.conf  
kdump.conf  
krb5.conf  
krb5.conf.d  
ld.so.conf  
ld.so.conf.d  
libaudit.conf  
libuser.conf  
locale.conf  
logrotate.conf  
makedumpfile.conf.sample
```

Рис. 2: Поиск расширения .conf

A terminal window titled 'surensargsyan@surensargsyan:~' with search and menu icons in the title bar. The terminal displays the output of a recursive file search command. The results list various files and directories, including CSL files, Pandoc filters, BibTeX files, and presentation reports, organized by stage and directory structure. The search ends with a prompt '[surensargsyan@surensargsyan ~]\$'.

```
surensargsyan@surensargsyan:~  
/cs1  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage2/report/pandoc  
/filters/pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage3/report/bib/ci  
te.bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage3/report/pandoc  
/cs1  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage3/report/pandoc  
/filters/pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage4/report/bib/ci  
te.bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage4/report/pandoc  
/cs1  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage4/report/pandoc  
/filters/pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage5/report/bib/ci  
te.bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage5/report/pandoc  
/cs1  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage5/report/pandoc  
/filters/pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/report/bib/ci  
te.bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/report/pandoc  
/cs1  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/report/pandoc  
/filters/pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/bib/cite.bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/csl  
pandocxnos/core.py  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters/pa  
ndocxnos/core.py  
/home/surensargsyan/conf.txt  
[surensargsyan@surensargsyan ~]$
```

Рис. 3: Поиск файлов



```
surensargssyan@surensargssyan:~ — less
find: '/etc/libvirt': Отказано в доступе
/etc/hp
/etc/hp/hplip.conf
/etc/httpd
/etc/httpd/conf/httpd.conf
/etc/liblvm2/lvm2/lvm2.conf
/etc/liblvm2/lvm2/lvm2.conf
/etc/liblvm2/lvm2/lvm2.conf
find: '/etc/lvm/archive': Отказано в доступе
/etc/logrotate.d/httpd
find: '/etc/lvm/backup': Отказано в доступе
find: '/etc/lvm/cache': Отказано в доступе
find: '/etc/nftables': Отказано в доступе
find: '/etc/openvpn/client': Отказано в доступе
find: '/etc/openvpn/server': Отказано в доступе
find: '/etc/polkit-1/localauthority': Отказано в доступе
find: '/etc/polkit-1/rules.d': Отказано в доступе
find: '/etc/sos/cleaner': Отказано в доступе
/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/ssh_config.d': Отказано в доступе
find: '/etc/ssh': Отказано в доступе
find: '/etc/sudoers.d': Отказано в доступе
/etc/sysconfig/htcacheclean
/etc/systemd/homed.conf
/etc/udev/hwdb.d
/etc/udev/hwdb.bin
/etc/host.conf
```

Рис. 4: Поиск файлов

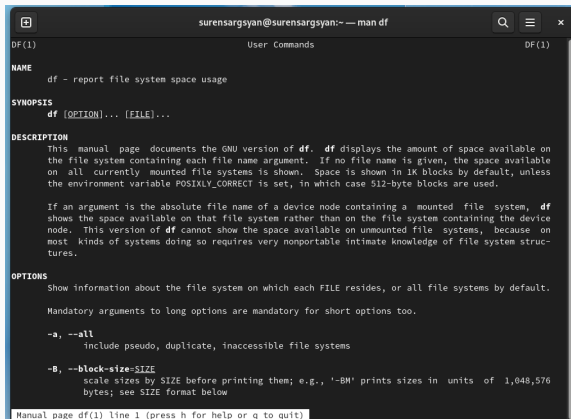
```
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$ find ~ -name "log*" > logfile &  
[1] 2677  
[surensargsyan@surensargsyan ~]$  
[1]+  Завершён      find ~ -name "log*" > logfile  
[surensargsyan@surensargsyan ~]$ rm logfile  
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$
```

Рис. 5: Фоновый запуск процесса

```
[surensargsyan@surensargsyan ~]$ gedit &  
[1] 2700  
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$ ps |grep gedit  
  2700 pts/0    00:00:00 gedit  
[surensargsyan@surensargsyan ~]$ kill 2700  
[surensargsyan@surensargsyan ~]$  
[1]+  Завершено      gedit  
[surensargsyan@surensargsyan ~]$  
[surensargsyan@surensargsyan ~]$
```

Рис. 6: Фоновый запуск и завершение процесса

Команды df и du



```
surensargssyan@surensargssyan:~ — man df
DF(1)                                User Commands                                DF(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 very nonportable 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.

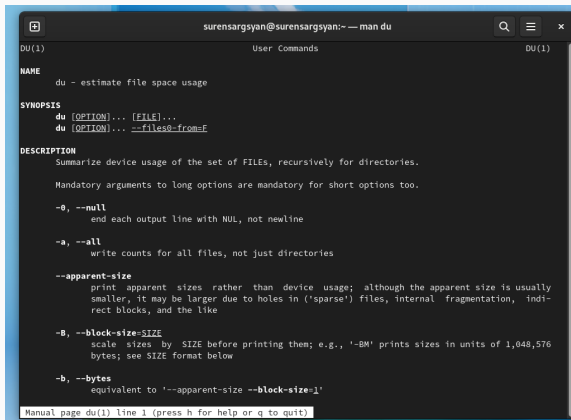
    -a, --all
        include pseudo, duplicate, inaccessible file systems

    -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

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

Рис. 7: Справка по команде df

Команды df и du



The screenshot shows a terminal window with the title bar "surensargsyan@surensargsyan:~ — man du". The window displays the manual page for the 'du' command. The content 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, indi-
        rect 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'

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

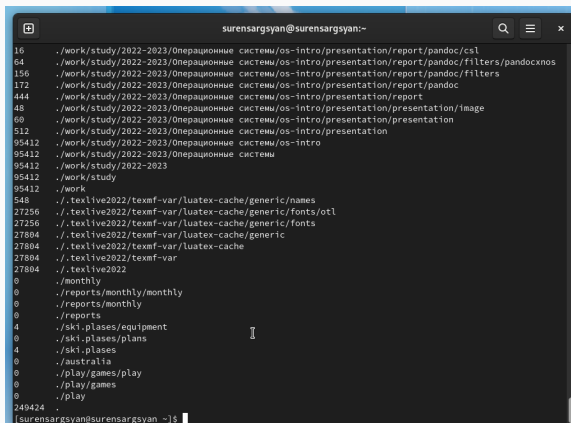
Рис. 8: Запуск команды df

Команды df и du

```
[surensargsyan@surensargsyan ~]$ df
Файловая система 1K-блоков  Использовано  Доступно  Использовано%  Смонтировано в
devtmpfs           4096             0      4096             0% /dev
tmpfs              1988872          0 1988872             0% /dev/shm
tmpfs              795552          1868    793684             1% /run
/dev/sda2          61864960 23579292 37565588            39% /
/dev/sda2          61864960 23579292 37565588            39% /home
/dev/sda1          996780       276852   651116             30% /boot
tmpfs              1988872           8   1988864             1% /tmp
tmpfs              397772        144   397628             1% /run/user/1071
[surensargsyan@surensargsyan ~]$
```

Рис. 9: Справка по команде du

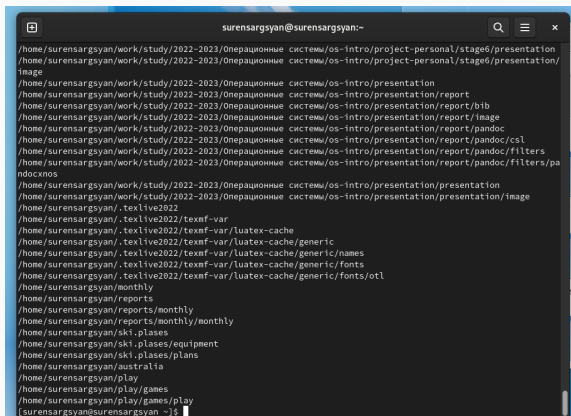
Команды df и du



A terminal window titled 'surenargsyian@surenargsyian:~' showing the output of the 'du' command. The output lists various directories and their sizes in a two-column format. The first column contains line numbers, and the second column contains the directory paths. The paths include directories like '/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/csl', '/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters/pandocxnos', and others. The terminal window has a dark background and a light-colored text.

```
surenargsyian@surenargsyian:~  
16  ./work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/csl  
64  ./work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters/pandocxnos  
156 ./work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters  
172 ./work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc  
444 ./work/study/2022-2023/Операционные системы/os-intro/presentation/report  
48  ./work/study/2022-2023/Операционные системы/os-intro/presentation/presentation/image  
60  ./work/study/2022-2023/Операционные системы/os-intro/presentation/presentation  
512 ./work/study/2022-2023/Операционные системы/os-intro/presentation  
95412 ./work/study/2022-2023/Операционные системы/os-intro  
95412 ./work/study/2022-2023/Операционные системы  
95412 ./work/study/2022-2023  
95412 ./work/study  
95412 ./work  
548  ./texlive2022/texmf-var/luatex-cache/generic/names  
27256 ./texlive2022/texmf-var/luatex-cache/generic/fonts/otl  
27256 ./texlive2022/texmf-var/luatex-cache/generic/fonts  
27804 ./texlive2022/texmf-var/luatex-cache/generic  
27804 ./texlive2022/texmf-var/luatex-cache  
27804 ./texlive2022/texmf-var  
27804 ./texlive2022  
0    ./monthly  
0    ./reports/monthly/monthly  
0    ./reports/monthly  
0    ./reports  
4    ./ski.places/equipment  
0    ./ski.places/plans  
4    ./ski.places  
0    ./australia  
0    ./play/games/play  
0    ./play/games  
0    ./play  
249424 .  
[surenargsyian@surenargsyian ~]$
```

Рис. 10: Запуск команды du

A terminal window titled 'surensargsyan@surensargsyan:~' with search, menu, and close icons in the title bar. The terminal displays the output of a 'find' command, listing various directories and files in a tree-like structure. The paths include directories like 'work/study/2022-2023/Операционные системы', 'home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/presentation', and 'home/surensargsyan/monthly'. The command prompt '[surensargsyan@surensargsyan ~]\$' is visible at the bottom.

```
surensargsyan@surensargsyan:~  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/presentation  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/project-personal/stage6/presentation/  
Image  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/bib  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/image  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/csl  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/report/pandoc/filters/pa  
ndocxnos  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/presentation  
/home/surensargsyan/work/study/2022-2023/Операционные системы/os-intro/presentation/presentation/image  
/home/surensargsyan/.texlive2022  
/home/surensargsyan/.texlive2022/texmf-var  
/home/surensargsyan/.texlive2022/texmf-var/luatex-cache  
/home/surensargsyan/.texlive2022/texmf-var/luatex-cache/generic  
/home/surensargsyan/.texlive2022/texmf-var/luatex-cache/generic/names  
/home/surensargsyan/.texlive2022/texmf-var/luatex-cache/generic/fonts  
/home/surensargsyan/.texlive2022/texmf-var/luatex-cache/generic/fonts/otl  
/home/surensargsyan/monthly  
/home/surensargsyan/reports  
/home/surensargsyan/reports/monthly  
/home/surensargsyan/reports/monthly/monthly  
/home/surensargsyan/ski.places  
/home/surensargsyan/ski.places/equipment  
/home/surensargsyan/ski.places/plans  
/home/surensargsyan/australia  
/home/surensargsyan/play  
/home/surensargsyan/play/games  
/home/surensargsyan/play/games/play  
[surensargsyan@surensargsyan ~]$
```

Рис. 11: Поиск директорий

Выводы по проделанной работе

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