

Операционные системы

Поиск файлов. Перенаправление ввода-вывода. Просмотр запущенных процессов

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Цели и задачи 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 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

```
[akbeljchug@vbox ~]$ ls /etc/ > file.txt
[akbeljchug@vbox ~]$ ls >> file.txt
[akbeljchug@vbox ~]$ cat file.txt
abrt
adjtime
aliases
alsa
alternatives
anaconda
anacrontab
anacrontab.conf
at.deny
audit
authselect
avahi
bash_completion.d
bashrc
bindresvport.blacklist
binfmt.d
bluetooth
chrony.conf
cifs-utils
credstore
credstore.encrypted
cron.d
cron.daily
cron.deny
cron.hourly
cron.monthly
crontab
cron.weekly
crypto-policies
crypttab
csh.cshrc
csh.login
cups
cupshelpers
dbus-1
dconf
debuginfod
default
depmod.d
dhcp
DIR_COLORS
```

Рис. 1: Запись в файл

```
[akbel]chug@vbox:~$ grep .conf file.txt > conf.txt
[akbel]chug@vbox:~$ cat conf.txt
asound.conf
chrony.conf
dconf
dnsmasq.conf
dracut.conf
dracut.conf.d
tprintd.conf
fuse.conf
host.conf
idmapd.conf
iav_config
ipsec.conf
kdump.conf
krb5.conf
krb5.conf.d
ld.so.conf
ld.so.conf.d
libaudit.conf
locale.conf
logrotate.conf
makedumpfile.conf.sample
man_db.conf
mke2fs.conf
mttools.conf
ndctl.conf.d
netconfig
nfs.conf
nfsmount.conf
nllfs_cleaner.conf
nswitch.conf
opensc.conf
opensc-x86_64.conf
passim.conf
passwdqc.conf
pkgconfig
reader.conf.d
request-key.conf
resolv.conf
rsyncd.conf
rsyslog.conf
sdda.conf
sdda.conf.d
```

Рис. 2: Поиск расширения .conf

```
[akbeljchug@vbox ~]$ ls ~/c*  
/home/akbeljchug/conf.txt  
[akbeljchug@vbox ~]$
```

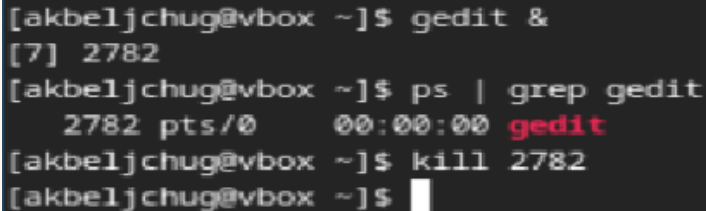
Рис. 3: Поиск файлов


```
find: '/etc/audit': Отказано в доступе
find: '/etc/credstore.encrypted': Отказано в доступе
find: /etc/avahi/hosts
'/etc/credstore': Отказано в доступе
find: '/etc/cups/ssl': Отказано в доступе
find: '/etc/dhcp': Отказано в доступе
find: '/etc/firewalld': Отказано в доступе
find: '/etc/grub.d': Отказано в доступе
find: '/etc/ipsec.d': Отказано в доступе
find: '/etc/lvm/archive': Отказано в доступе
/etc/libibverbs.d/hfi1verbs.driver
/etc/libibverbs.d/hns.driver
find: '/etc/lvm/backup': Отказано в доступе
find: '/etc/lvm/cache': Отказано в доступе
find: '/etc/lvm/devices': Отказано в доступе
find: '/etc/nftables': Отказано в доступе
find: '/etc/openvpn/client': Отказано в доступе
find: '/etc/openvpn/server': Отказано в доступе
/etc/nvme/hostnqn
/etc/nvme/hostid
find: '/etc/pki/rsyslog': 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
find: '/etc/ssh/sshd_config.d': Отказано в доступе
find: '/etc/sssd': Отказано в доступе
find: '/etc/sudoers.d': Отказано в доступе
/etc/udev/hwdb.d
/etc/udev/hwdb.bin
/etc/host.conf
/etc/hosts
/etc/hostname
```

Рис. 4: Поиск файлов

```
[akbeljchug@vbox ~]$ find ~ -name "log*" > logfile &  
[7] 1755  
[akbeljchug@vbox ~]$ rm logfile  
[7]   Завершён      find ~ -name "log*" > logfile  
[akbeljchug@vbox ~]$
```

Рис. 5: Фоновый запуск процесса



```
[akbeljchug@vbox ~]$ gedit &  
[7] 2782  
[akbeljchug@vbox ~]$ ps | grep gedit  
    2782 pts/0      00:00:00 gedit  
[akbeljchug@vbox ~]$ kill 2782  
[akbeljchug@vbox ~]$
```

Рис. 6: Фоновый запуск и завершение процесса

Команды df и du

```
DE(1)                                     User Commands

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.  If no FILE is given, the space available on all currently mounted file systems is shown.  Space is shown in 1K blocks by default, unless the 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 containing the device node.  This version of df cannot show the space available on unmounted file systems, because it 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)

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

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

    -k
        like --block-size=1K

    -l, --local
```

Рис. 7: Справка по команде df

```
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.
-o, --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
    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 --sum-
    marize
--files0-from=F
    summarize device usage of the NUL-terminated file names specified in file F; if F is -, then read names from standard input
Manual page du(1) line 1 (press h for help or q to quit)
```

Рис. 8: Запуск команды df

```
[akbeljchug@vbox ~]$ df
Файловая система 1K-блоков  Использовано  Доступно  Использовано%  Смонтировано в
/dev/sda3          82221056      8807892    72278812         11% /
devtmpfs           4096          0         4096          0% /dev
tmpfs              4551992      3400      4548592         1% /dev/shm
efivarfs           256          8         244          3% /sys/firmware/efi/efivars
tmpfs              1820800      1208      1819592         1% /run
tmpfs              1024          0         1024          0% /run/credentials/systemd-journald.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-network-generator.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-udev-load-credentials.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-sysctl.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-tmpfiles-setup-dev-early.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-tmpfiles-setup-dev.service
tmpfs              4551996       32      4551964         1% /tmp
/dev/sda3          82221056      8807892    72278812        11% /home
tmpfs              1024          0         1024          0% /run/credentials/systemd-vconsole-setup.service
/dev/sda2          996780       300204      627764        33% /boot
/dev/sda1          613160      19796      593364         4% /boot/efi
tmpfs              1024          0         1024          0% /run/credentials/systemd-tmpfiles-setup.service
tmpfs              1024          0         1024          0% /run/credentials/systemd-resolved.service
1234              499065852    164878064  334187788       34% /media/sf_1234
tmpfs              910396       92       910304         1% /run/user/1000
```

Рис. 9: Справка по команде du

Команды df и du

```
12      ./git-test/.git/refs/remotes/origin
12      ./git-test/.git/refs/remotes
24      ./git-test/.git/refs
0       ./git-test/.git/objects/pack
0       ./git-test/.git/objects/info
4       ./git-test/.git/objects/8c
4       ./git-test/.git/objects/6f
4       ./git-test/.git/objects/63
4       ./git-test/.git/objects/fa
4       ./git-test/.git/objects/be
4       ./git-test/.git/objects/f6
4       ./git-test/.git/objects/c4
4       ./git-test/.git/objects/24
4       ./git-test/.git/objects/21
4       ./git-test/.git/objects/60
4       ./git-test/.git/objects/3c
4       ./git-test/.git/objects/1e
4       ./git-test/.git/objects/40
4       ./git-test/.git/objects/1d
4       ./git-test/.git/objects/12
60      ./git-test/.git/objects
4       ./git-test/.git/logs/refs/heads/release
12      ./git-test/.git/logs/refs/heads
4       ./git-test/.git/logs/refs/remotes/origin/release
12      ./git-test/.git/logs/refs/remotes/origin
12      ./git-test/.git/logs/refs/remotes
24      ./git-test/.git/logs/refs
28      ./git-test/.git/logs
204     ./git-test/.git
216     ./git-test
0       ./monthly
0       ./reports/monthly/monthly
0       ./reports/monthly
0       ./reports
12      ./ski.places/equipment
0       ./ski.places/ski.places/plans
0       ./ski.places/ski.places
0       ./ski.places/australia
0       ./ski.places/play/games/play
0       ./ski.places/play/games
0       ./ski.places/play
12      ./ski.places
561732
```

Рис. 10: Запуск команды du

```
/home/akbeljchug/git-test/.git/logs/refs/remotes/origin
/home/akbeljchug/git-test/.git/logs/refs/remotes/origin/main
/home/akbeljchug/git-test/.git/logs/refs/remotes/origin/develop
/home/akbeljchug/git-test/.git/logs/refs/remotes/origin/release
/home/akbeljchug/git-test/.git/logs/refs/remotes/origin/release/1.0.0
/home/akbeljchug/git-test/.git/HEAD
/home/akbeljchug/git-test/.git/ORIG_HEAD
/home/akbeljchug/git-test/.git/config
/home/akbeljchug/git-test/.git/index
/home/akbeljchug/git-test/README.md
/home/akbeljchug/git-test/package.json
/home/akbeljchug/git-test/CHANGELOG.md
/home/akbeljchug/abc1
/home/akbeljchug/may
/home/akbeljchug/monthly
/home/akbeljchug/monthly/april
/home/akbeljchug/monthly/may
/home/akbeljchug/monthly/june
/home/akbeljchug/reports
/home/akbeljchug/reports/monthly
/home/akbeljchug/reports/monthly/monthly
/home/akbeljchug/reports/monthly/monthly/april
/home/akbeljchug/reports/monthly/monthly/may
/home/akbeljchug/reports/monthly/monthly/june
/home/akbeljchug/reports/monthly/july
/home/akbeljchug/ski.places
/home/akbeljchug/ski.places/equipment
/home/akbeljchug/ski.places/equipment/equiplist
/home/akbeljchug/ski.places/equipment/equiplist2
/home/akbeljchug/ski.places/ski.places
/home/akbeljchug/ski.places/ski.places/plans
/home/akbeljchug/ski.places/australia
/home/akbeljchug/ski.places/play
/home/akbeljchug/ski.places/play/file.old
/home/akbeljchug/ski.places/play/games
/home/akbeljchug/ski.places/play/games/play
/home/akbeljchug/ski.places/play/games/play/file.old
/home/akbeljchug/ski.places/my_os
/home/akbeljchug/ski.places/feathers
/home/akbeljchug/file.txt
/home/akbeljchug/conf.txt
find: 'type': Нет такого файла или каталога
find: 'd': Нет такого файла или каталога
```

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.