

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 Выполнить примеры
- 2 Выполнить действия по работе с каталогами и файлами
- 3 Выполнить действия с правами доступа
- 4 Получить дополнительные сведения при помощи справки по командам.

Процесс выполнения лабораторной работы

Выполнение примеров

```
[keisaev@fedora ~]$ touch abcl
[keisaev@fedora ~]$ cp abcl april
[keisaev@fedora ~]$ cp abcl may
[keisaev@fedora ~]$ mkdir monhtly
[keisaev@fedora ~]$ cp april may monhtly
[keisaev@fedora ~]$ cp monhtly/may monhtly/june
[keisaev@fedora ~]$ ls monhtly
april  june  may
[keisaev@fedora ~]$ mkdir monhtly.00
[keisaev@fedora ~]$ cp -r monhtly monhtly.00
[keisaev@fedora ~]$ cp -r monhtly.00 /tmp
[keisaev@fedora ~]$
```

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Выполнение примеров

```
[keisaev@fedora ~]$ mv april july
[keisaev@fedora ~]$ mv july monthly.00
[keisaev@fedora ~]$ ls monthly.00
july  monthly
[keisaev@fedora ~]$ mv monthly.00 monthly.01
[keisaev@fedora ~]$ mkdir reports
mkdir: cannot create directory 'reports': Файл существует
[keisaev@fedora ~]$ mv monthly.01 reports
[keisaev@fedora ~]$ mv reports/monthly.01 reports/monthly
[keisaev@fedora ~]$
```

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Выполнение примеров

```
[keisaev@fedora ~]$ touch may
[keisaev@fedora ~]$ ls -l may
-rw-r--r--. 1 keisaev keisaev 0 сен 28 03:58 may
[keisaev@fedora ~]$ chmod u+x may
[keisaev@fedora ~]$ ls -l may
-rwxr--r--. 1 keisaev keisaev 0 сен 28 03:58 may
[keisaev@fedora ~]$ chmod u-x may
[keisaev@fedora ~]$ ls -l may
-rw-r--r--. 1 keisaev keisaev 0 сен 28 03:58 may
[keisaev@fedora ~]$ chmod g-r,o-r monthly
[keisaev@fedora ~]$ chmod g+w abcl
[keisaev@fedora ~]$
```

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Создание директорий и копирование файлов

```

[keisaev@fedora ~]$ cp /usr/include/linux/sysinfo.h .
[keisaev@fedora ~]$ mv sysinfo.h equipment
[keisaev@fedora ~]$ mkdir ski.plases
[keisaev@fedora ~]$ mv equipment ski.plases/
mv: не удалось выполнить stat для 'equipment': Нет такого файла или каталог
[keisaev@fedora ~]$ mv equipment ski.plases/
[keisaev@fedora ~]$ mv ski.plases/equipment ski.plases/equipment
mv: 'ski.plases/equipment' и 'ski.plases/equipment' - один и тот же файл
[keisaev@fedora ~]$ mv ski.plases/equipment ski.plases/equiplist
[keisaev@fedora ~]$ touch abcl
[keisaev@fedora ~]$ cp abcl ski.plases/equiplist2
[keisaev@fedora ~]$ cd ski/plases/
bash: cd: ski/plases/: Нет такого файла или каталога
[keisaev@fedora ~]$ cd ski.plases/
[keisaev@fedora ski.plases]$ mkdir equipment
[keisaev@fedora ski.plases]$ mv equiplist equipment/
[keisaev@fedora ski.plases]$ mv equiplist2 equipment/
[keisaev@fedora ski.plases]$ cd
[keisaev@fedora ~]$ mkdir newdir
[keisaev@fedora ~]$ mv newdir ski.plases/
[keisaev@fedora ~]$ mv ski.plases/newdir/ ski.plases/plans
[keisaev@fedora ~]$ █

```

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Работа с командой chmod

```

[keisaev@fedora ~]$ mkdir australia play
[keisaev@fedora ~]$ touch my_os feathers
[keisaev@fedora ~]$ chmod 744 australia/
[keisaev@fedora ~]$ chmod 711 play/
[keisaev@fedora ~]$ chmod 544 my_os
[keisaev@fedora ~]$ chmod 664 feathers
[keisaev@fedora ~]$ ls -l
итого 24
-rw-r--r--. 1 keisaev keisaev 1049 сен 28 04:14 -
-rw-r--r--. 1 keisaev keisaev 0 сен 28 04:20 abcl
drwxr--r--. 1 keisaev keisaev 0 сен 28 04:24 australia
drwxr-xr-x. 1 keisaev keisaev 14 сен 28 03:13 bin
drwxr-xr-x. 1 keisaev keisaev 0 сен 28 04:13 Documents
drwxr-xr-x. 1 keisaev keisaev 34 сен 28 03:26 Downloads
-rw-rw-r--. 1 keisaev keisaev 0 сен 28 04:24 feathers
drwxr-xr-x. 1 keisaev keisaev 96 сен 28 02:39 git-extended
-rw-r--r--. 1 keisaev keisaev 18657 сен 28 03:15 LICENSE
-rw-r--r--. 1 keisaev keisaev 0 сен 28 03:58 may
drwx--x--x. 1 keisaev keisaev 24 сен 28 03:54 monthly
-r-xr--r--. 1 keisaev keisaev 0 сен 28 04:24 my_os
drwx--x--x. 1 keisaev keisaev 0 сен 28 04:24 play
drwxr-xr-x. 1 keisaev keisaev 14 сен 28 03:57 reports
drwxr-xr-x. 1 keisaev keisaev 28 сен 28 04:23 ski.places
drwxr-xr-x. 1 keisaev keisaev 10 сен 28 01:31 work
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Видео
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Документы
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Загрузки
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Изображения
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Музыка
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Общедоступные
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 'Рабочий стол'
drwxr-xr-x. 1 keisaev keisaev 0 сен 26 22:15 Шаблоны
[keisaev@fedora ~]$

```

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Файл /etc/passwd

```
root:x:0:0:Super User:/root:/bin/bash
bin:x:1:1:bin:/bin:/usr/sbin/nologin
daemon:x:2:2:daemon:/sbin:/usr/sbin/nologin
adm:x:3:4:adm:/var/adm:/usr/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/usr/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/usr/sbin/nologin
operator:x:11:0:operator:/root:/usr/sbin/nologin
games:x:12:100:games:/usr/games:/usr/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/usr/sbin/nologin
nobody:x:65534:65534:Kernel Overflow User:/usr/sbin/nologin
dbus:x:81:81:System Message Bus:/usr/bin/nologin
tss:x:59:59:Account used for TPM access:/usr/bin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
geoclue:x:999:999>User for geoclue:/var/lib/geoclue:/sbin/nologin
systemd-oom:x:998:998:systemd Userspace OOM Killer:/usr/bin/nologin
polkitd:x:114:114>User for polkitd:/sbin/nologin
sstpc:x:997:996:Secure Socket Tunneling Protocol(SSTP) Client:/var/run/sstpc:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/sbin/nologin
chrony:x:995:995:chrony system user:/var/lib/chrony:/sbin/nologin
systemd-coredump:x:994:994:systemd Core Dumper:/usr/bin/nologin
systemd-timesync:x:993:993:systemd Time Synchronization:/usr/bin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/usr/bin/nologin
systemd-resolve:x:193:193:systemd Resolver:/usr/bin/nologin
pipewire:x:992:992:PipeWire System Daemon:/run/pipewire:/usr/bin/nologin
sssd:x:991:991>User for sssd:/run/sss:/sbin/nologin
unbound:x:990:990:Unbound DNS resolver:/var/lib/unbound:/sbin/nologin
nm-openconnect:x:989:989:NetworkManager user for OpenConnect:/sbin/nologin
wsdd:x:988:988:Web Services Dynamic Discovery host daemon:/sbin/nologin
openvpn:x:987:987:OpenVPN:/etc/openvpn:/sbin/nologin
nm-openvpn:x:986:986:Default user for running openvpn spawned by NetworkManager:/sbin/nologin
colord:x:985:985>User for colord:/var/lib/colord:/sbin/nologin
abrt:x:173:173:abrt:/etc/abrt:/sbin/nologin
setroubleshoot:x:984:984:SELinux troubleshoot server:/var/lib/setroubleshoot:/usr/bin/nologin
sddm:x:983:983:SDDM Greeter Account:/var/lib/sddm:/usr/bin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
/etc/passwd
```

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Работа с файлами и правами доступа

```
[keisaev@fedora ~]$ cp feathers file.old
[keisaev@fedora ~]$ mv file.old play/
[keisaev@fedora ~]$ mkdir fun
[keisaev@fedora ~]$ cp -R play/ fun/
[keisaev@fedora ~]$ mv fun/ play/games
[keisaev@fedora ~]$ chmod u-r feathers
[keisaev@fedora ~]$ cat feathers
cat: feathers: Отказано в доступе
[keisaev@fedora ~]$ cp feathers feathers2
cp: невозможно открыть 'feathers' для чтения: Отказано в доступе
[keisaev@fedora ~]$ chmod u+r feathers
[keisaev@fedora ~]$ chmod u-x play/
[keisaev@fedora ~]$ cd play/
bash: cd: play/: Отказано в доступе
[keisaev@fedora ~]$ chmod +x play/
[keisaev@fedora ~]$ █
```

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Справка по командам

foot

MOUNT(8)

System Administration

MOUNT(8)

NAME

`mount` - mount a filesystem

SYNOPSIS

`mount [-h|-V]`

`mount [-l] [-t fstype]`

`mount -a [-fFnrsvw] [-t fstype] [-O optlist]`

`mount [-fnrsvw] [-o options] device|mountpoint`

`mount [-fnrsvw] [-t fstype] [-o options] device mountpoint`

`mount --bind|--rbind|--move olddir newdir`

`mount --make-[shared|slave|private|unbindable|rshared|rslave|rprivate|runbindable]
mountpoint`

DESCRIPTION

All files accessible in a Unix system are arranged in one big tree, the file hierarchy, rooted at `/`. These files can be spread out over several devices. The `mount` command serves to attach the filesystem found on some device to the big file tree. Conversely, the `umount(8)` command will detach it again. The filesystem is used to control how data is stored on the device or provided in a virtual way by network or other services.

The standard form of the `mount` command is:

`mount -t type device dir`

This tells the kernel to attach the filesystem found on *device* (which is of type *type*) at the directory *dir*. The option `-t type` is optional. The `mount` command is usually able to detect a filesystem. The root permissions are necessary to mount a filesystem by default. See section "Non-superuser mounts" below for more details. The previous contents (if any) and owner and mode of *dir* become invisible, and as long as this filesystem remains mounted, the pathname *dir* refers to the root of the filesystem on *device*.

Manual page mount(8) line 1 (press h for help or q to quit)

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Справка по командам

foot

FSCK(8)

System Administration

FSCK(8)

NAME

fsck - check and repair a Linux filesystem

SYNOPSIS

```
fsck [-lsAVRTMNP] [-r [fd]] [-C [fd]] [-t fstype] [filesystem...] [--]  
[fs-specific-options]
```

DESCRIPTION

fsck is used to check and optionally repair one or more Linux filesystems. **filesystem** can be a device name (e.g., `/dev/hdc1`, `/dev/sdb2`), a mount point (e.g., `/`, `/usr`, `/home`), or a filesystem label or UUID specifier (e.g., `UUID=8868abf6-88c5-4a83-98b8-bfc24057f7bd` or `LABEL=root`). Normally, the **fsck** program will try to handle filesystems on different physical disk drives in parallel to reduce the total amount of time needed to check all of them.

If no filesystems are specified on the command line, and the `-A` option is not specified, **fsck** will default to checking filesystems in `/etc/fstab` serially. This is equivalent to the `-As` options.

The exit status returned by **fsck** is the sum of the following conditions:

- 0
No errors
- 1
Filesystem errors corrected
- 2
System should be rebooted
- 4
Filesystem errors left uncorrected
- 8
Operational error
- 16
Usage or syntax error

Manual page fsck(8) line 1 (press h for help or q to quit)

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Справка по командам

foot

MKFS(8)

System Administration

MKFS(8)

NAME

mkfs - build a Linux filesystem

SYNOPSIS

mkfs [options] [-t type] [fs-options] device [size]

DESCRIPTION

This mkfs frontend is deprecated in favour of filesystem specific mkfs.<type> utils.

mkfs is used to build a Linux filesystem on a device, usually a hard disk partition. The device argument is either the device name (e.g., /dev/hda1, /dev/sdb2), or a regular file that shall contain the filesystem. The size argument is the number of blocks to be used for the filesystem.

The exit status returned by mkfs is 0 on success and 1 on failure.

In actuality, mkfs is simply a front-end for the various filesystem builders (mkfs.fstype) available under Linux. The filesystem-specific builder is searched for via your PATH environment setting only. Please see the filesystem-specific builder manual pages for further details.

OPTIONS

-t, --type type

Specify the type of filesystem to be built. If not specified, the default filesystem type (currently ext2) is used.

fs-options

Filesystem-specific options to be passed to the real filesystem builder.

-V, --verbose

Produce verbose output, including all filesystem-specific commands that are executed. Specifying this option more than once inhibits execution of any filesystem-specific commands. This is really only useful for testing.

-h, --help

Display help text and exit.

Manual page mkfs(8) line 1 (press h for help or q to quit)

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Справка по командам

foot

KILL(1)

User Commands

KILL(1)

NAME

kill - terminate a process

SYNOPSIS

```
kill [-signal|-s signal|-p] [-q value] [-a] [--timeout milliseconds signal] [--]
pid|name...
```

```
kill -l [number] | -L
```

DESCRIPTION

The command **kill** sends the specified signal to the specified processes or process groups.

If no signal is specified, the **TERM** signal is sent. The default action for this signal is to terminate the process. This signal should be used in preference to the **KILL** signal (number 9), since a process may install a handler for the **TERM** signal in order to perform clean-up steps before terminating in an orderly fashion. If a process does not terminate after a **TERM** signal has been sent, then the **KILL** signal may be used; be aware that the latter signal cannot be caught, and so does not give the target process the opportunity to perform any clean-up before terminating.

Most modern shells have a builtin **kill** command, with a usage rather similar to that of the command described here. The **--all**, **--pid**, and **--queue** options, and the possibility to specify processes by command name, are local extensions.

If signal is 0, then no actual signal is sent, but error checking is still performed.

ARGUMENTS

The list of processes to be signaled can be a mixture of names and PIDs.

pid

Each pid can be expressed in one of the following ways:

n

where n is larger than 0. The process with PID n is signaled.

0

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

␣

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Выводы по проделанной работе

Вывод

В ходе данной работы мы ознакомились с файловой системой Linux, её структурой, именами и содержанием каталогов. Научились совершать базовые операции с файлами, управлять правами их доступа для пользователя и групп. Ознакомились с Анализом файловой системы. А также получили базовые навыки по проверке использования диска и обслуживанию файловой системы.