

РОССИЙСКИЙ УНИВЕРСИТЕТ ДРУЖБЫ НАРОДОВ
Факультет физико-математических и естественных наук
Кафедра прикладной информатики и теории вероятностей

ОТЧЕТ
по лабораторной работе № 5
Дисциплина: Операционные системы

Студент: Зевде Эйоб Аманте
1032205620
Группа:НПИ-01

МОСКВА

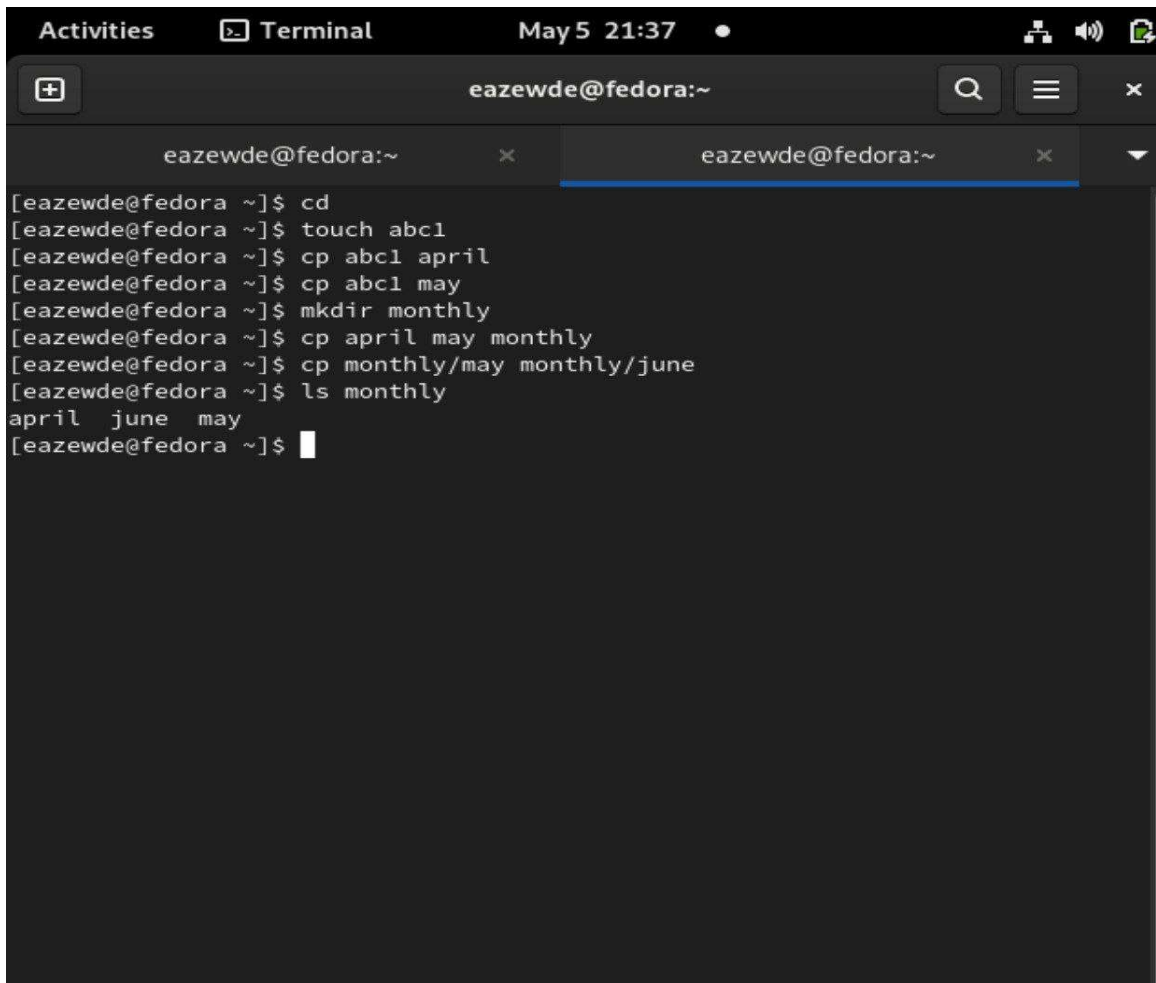
2018 г.

Цель работы:

Ознакомиться с файловой системой Linux, её структурой, именами и содержанием каталогов. Приобрести практические навыки по применению команд для работы с файлами и каталогами, по управлению процессами (и работами), по проверке использования диска и обслуживанию файловой системы.

Ход работы:

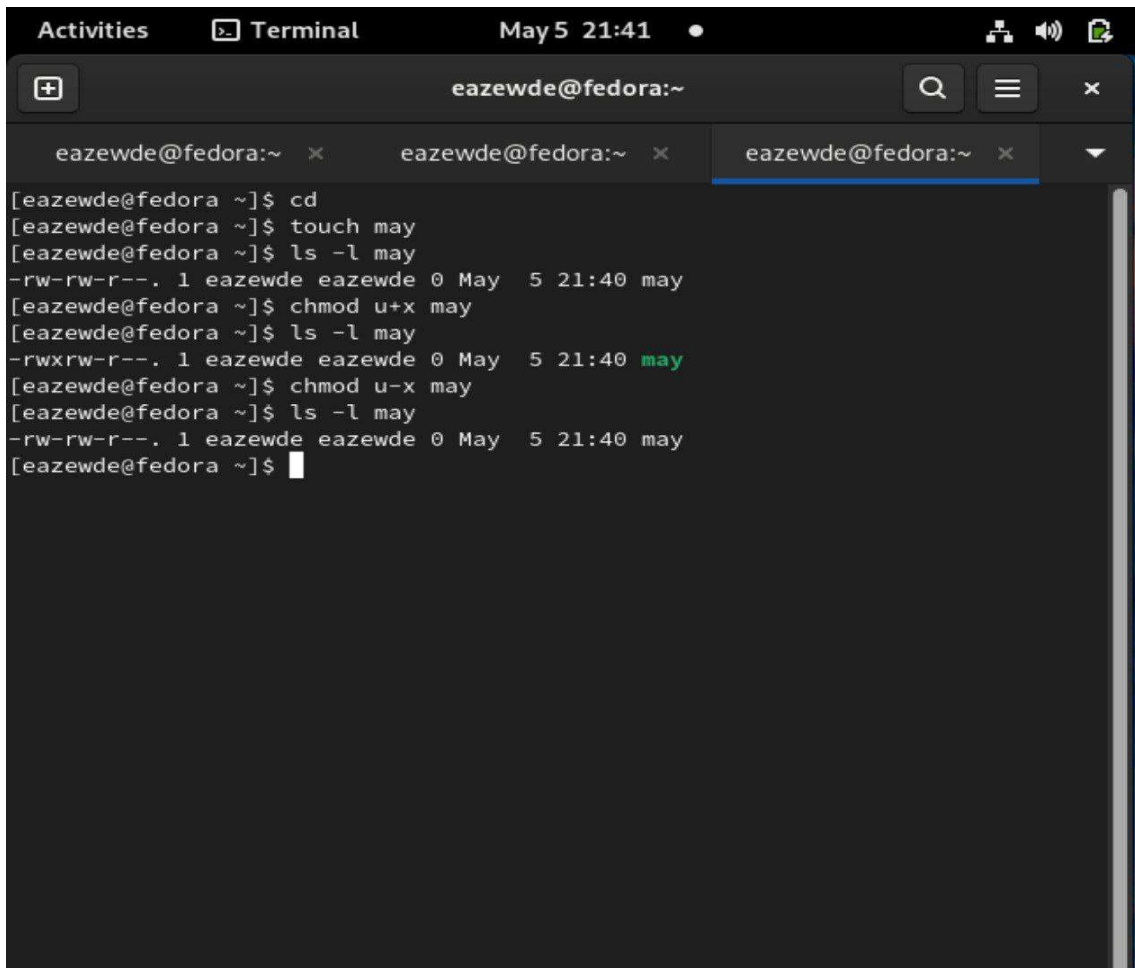
- **Выполнили все примеры, приведённые в первой части описания лабораторной работы**



A terminal window titled "Terminal" with a timestamp of "May 5 21:37". The window shows a user named "eazewde" at a "fedora" machine. The user enters a series of commands to create a directory structure and copy files. The commands and their outputs are as follows:

```
[eazewde@fedora ~]$ cd
[eazewde@fedora ~]$ touch abc1
[eazewde@fedora ~]$ cp abc1 april
[eazewde@fedora ~]$ cp abc1 may
[eazewde@fedora ~]$ mkdir monthly
[eazewde@fedora ~]$ cp april may monthly
[eazewde@fedora ~]$ cp monthly/may monthly/june
[eazewde@fedora ~]$ ls monthly
april  june  may
[eazewde@fedora ~]$
```

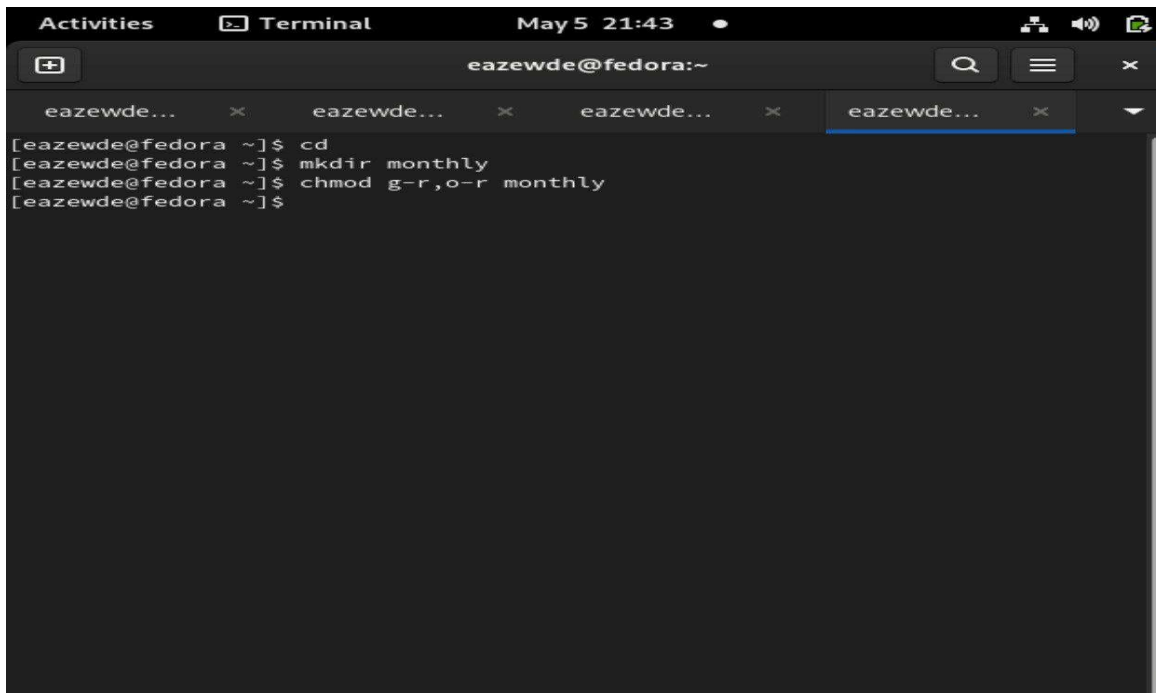
```
[eazewde@fedora ~]$ cd  
[eazewde@fedora ~]$ mkdir monthly.00  
[eazewde@fedora ~]$ cp -r monthly monthly.00  
[eazewde@fedora ~]$ cp -r monthly.00 /tmp  
[eazewde@fedora ~]$
```



The image shows a terminal window titled "Terminal" with the date and time "May 5 21:41". The window has three tabs, all showing the prompt "eazewde@fedora:~". The active tab shows the following commands and output:

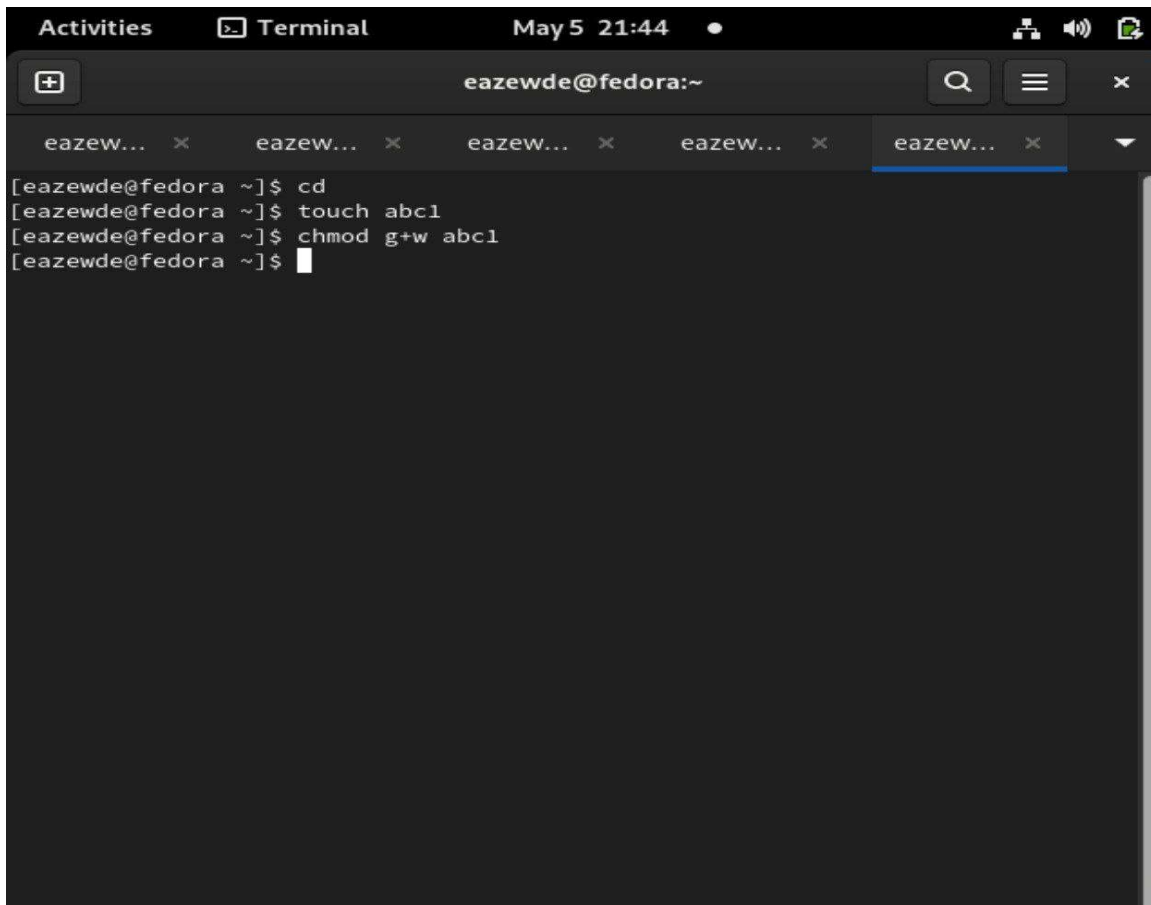
```
[eazewde@fedora ~]$ cd
[eazewde@fedora ~]$ touch may
[eazewde@fedora ~]$ ls -l may
-rw-rw-r--. 1 eazewde eazewde 0 May  5 21:40 may
[eazewde@fedora ~]$ chmod u+x may
[eazewde@fedora ~]$ ls -l may
-rwxrw-r--. 1 eazewde eazewde 0 May  5 21:40 may
[eazewde@fedora ~]$ chmod u-x may
[eazewde@fedora ~]$ ls -l may
-rw-rw-r--. 1 eazewde eazewde 0 May  5 21:40 may
[eazewde@fedora ~]$
```

The output of the second `ls -l may` command shows the file `may` with permissions `-rwxrw-r--`, owner `eazewde`, group `eazewde`, size `0`, and timestamp `May 5 21:40`. The file name `may` is highlighted in green.



The image shows a terminal window titled "Terminal" with the date and time "May 5 21:43". The window has a dark theme and a tab bar at the top with the title "eazewde@fedora:~". The terminal content shows the following commands and their outputs:

```
[eazewde@fedora ~]$ cd
[eazewde@fedora ~]$ mkdir monthly
[eazewde@fedora ~]$ chmod g-r,o-r monthly
[eazewde@fedora ~]$
```

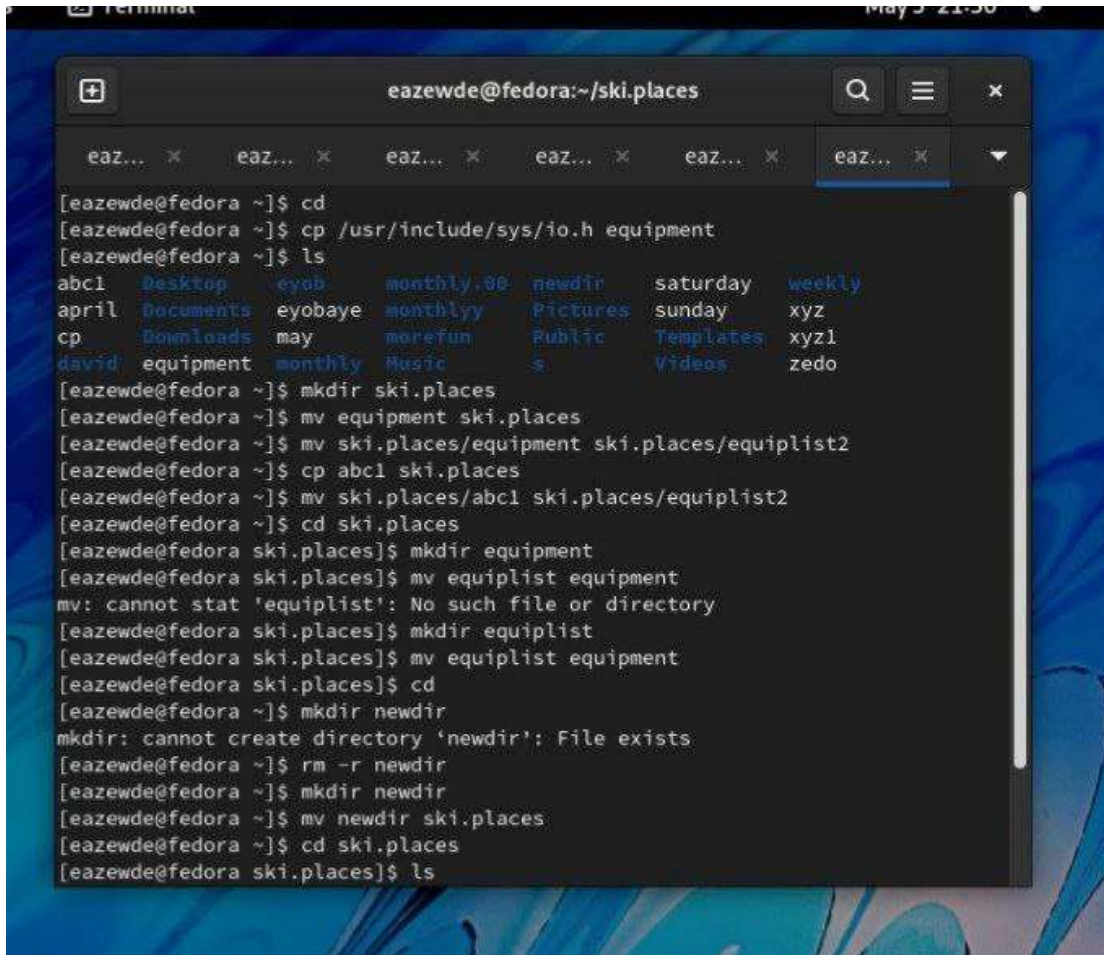


```
eazewde@fedora:~$ cd
eazewde@fedora:~$ touch abc1
eazewde@fedora:~$ chmod g+w abc1
eazewde@fedora:~$
```

- **Выполнили следующие действия:**Скопировали файл `/usr/include/sys/io.h` в домашний каталог и назвали его `equipment`.
- В домашнем каталоге создали директорию `~/ski.plases`.
- Переместили файл `equipment` в каталог `~/ski.plases`.
- Переименовали файл `~/ski.plases/equipment` в `~/ski.plases/equiplist`.
- Создали в домашнем каталоге файл `abc1` и скопировали его в каталог `~/ski.plases`, назвали его `equiplist2`.
- Создали каталог с именем `equipment` в каталоге `~/ski.plases`.
- Переместили файлы `~/ski.plases/equiplist` и `equiplist2` в каталог

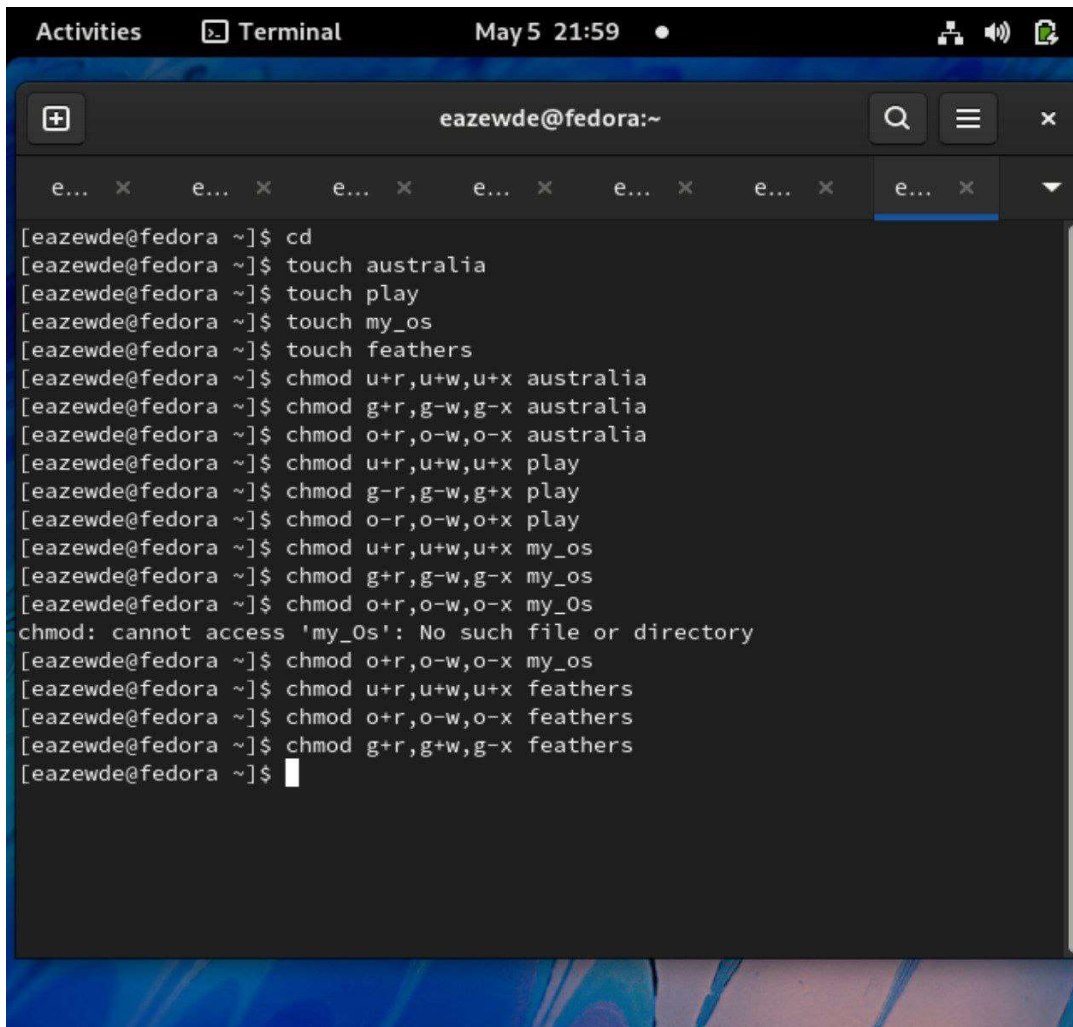
~/ski.places/equipment.

- Создали и переместили каталог ~/newdir в каталог ~/ski.places и назвали его plans.



```
[eazewde@fedora ~]$ cd
[eazewde@fedora ~]$ cp /usr/include/sys/io.h equipment
[eazewde@fedora ~]$ ls
abc1  Desktop  eyab  monthly.80  newdir  saturday  weekly
april  Documents  eyobaye  monthly  Pictures  sunday  xyz
cp  Downloads  may  morefun  Public  Templates  xyz1
david  equipment  monthly  Music  s  Videos  zedo
[eazewde@fedora ~]$ mkdir ski.places
[eazewde@fedora ~]$ mv equipment ski.places
[eazewde@fedora ~]$ mv ski.places/equipment ski.places/equiplist2
[eazewde@fedora ~]$ cp abc1 ski.places
[eazewde@fedora ~]$ mv ski.places/abc1 ski.places/equiplist2
[eazewde@fedora ~]$ cd ski.places
[eazewde@fedora ski.places]$ mkdir equipment
[eazewde@fedora ski.places]$ mv equiplist2 equipment
mv: cannot stat 'equiplist2': No such file or directory
[eazewde@fedora ski.places]$ mkdir equiplist
[eazewde@fedora ski.places]$ mv equiplist2 equipment
[eazewde@fedora ski.places]$ cd
[eazewde@fedora ~]$ mkdir newdir
mkdir: cannot create directory 'newdir': File exists
[eazewde@fedora ~]$ rm -r newdir
[eazewde@fedora ~]$ mkdir newdir
[eazewde@fedora ~]$ mv newdir ski.places
[eazewde@fedora ~]$ cd ski.places
[eazewde@fedora ski.places]$ ls
```

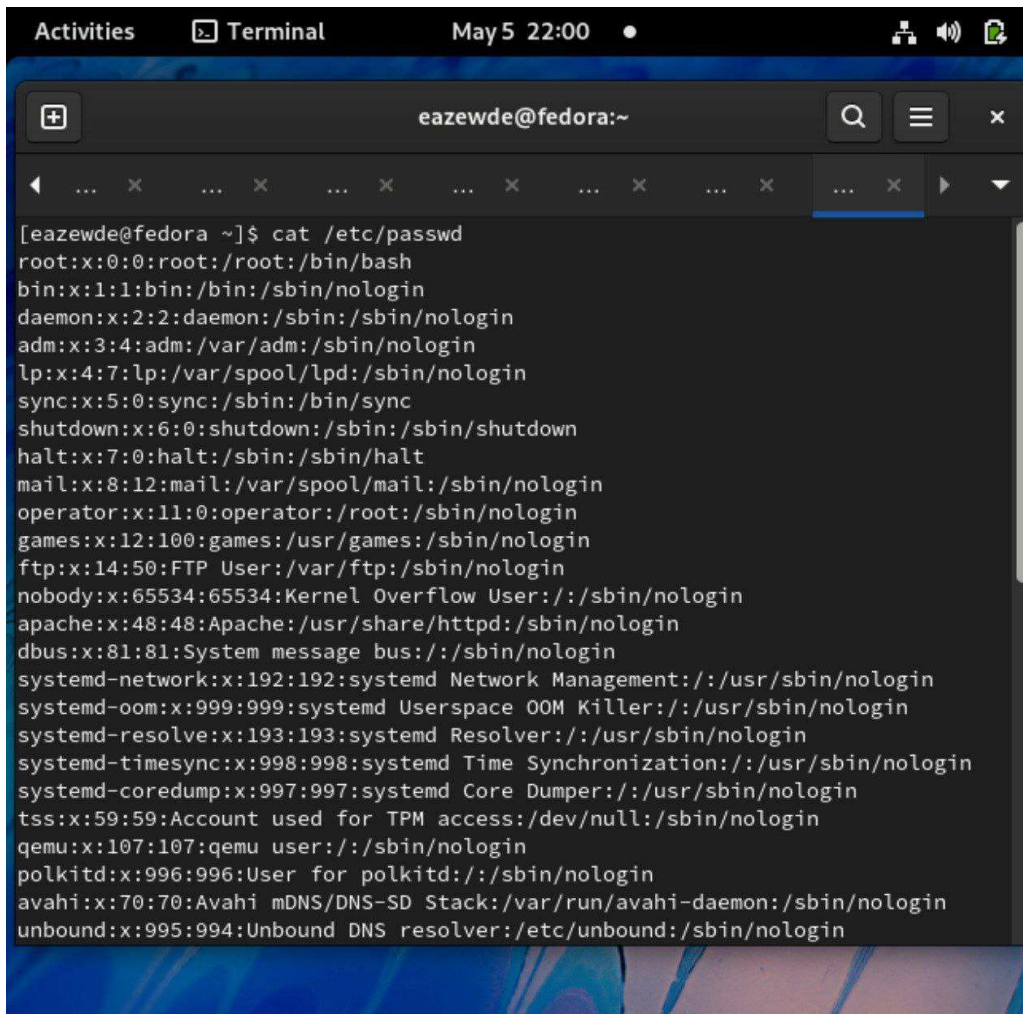
- Определили опции команды chmod, необходимые для того, чтобы присвоить файлам australia, play, my_os и feathers следующие права доступа соответственно, считая, что в начале таких прав нет: drwxr--r--, drwx--x—x, -r-xr--r--, -rw-rw-r--.



The image shows a terminal window titled "Terminal" with the date and time "May 5 21:59". The user is logged in as "eazewde" on a "fedora" machine. The terminal shows the following commands and their outputs:

```
[eazewde@fedora ~]$ cd
[eazewde@fedora ~]$ touch australia
[eazewde@fedora ~]$ touch play
[eazewde@fedora ~]$ touch my_os
[eazewde@fedora ~]$ touch feathers
[eazewde@fedora ~]$ chmod u+r,u+w,u+x australia
[eazewde@fedora ~]$ chmod g+r,g-w,g-x australia
[eazewde@fedora ~]$ chmod o+r,o-w,o-x australia
[eazewde@fedora ~]$ chmod u+r,u+w,u+x play
[eazewde@fedora ~]$ chmod g-r,g-w,g+x play
[eazewde@fedora ~]$ chmod o-r,o-w,o+x play
[eazewde@fedora ~]$ chmod u+r,u+w,u+x my_os
[eazewde@fedora ~]$ chmod g+r,g-w,g-x my_os
[eazewde@fedora ~]$ chmod o+r,o-w,o-x my_0s
chmod: cannot access 'my_0s': No such file or directory
[eazewde@fedora ~]$ chmod o+r,o-w,o-x my_os
[eazewde@fedora ~]$ chmod u+r,u+w,u+x feathers
[eazewde@fedora ~]$ chmod o+r,o-w,o-x feathers
[eazewde@fedora ~]$ chmod g+r,g+w,g-x feathers
[eazewde@fedora ~]$
```

- Проделали следующие упражнения:
- Просмотрели содержимое файла `/etc/passwd`

A screenshot of a Linux terminal window. The title bar shows 'Activities', 'Terminal', and the date/time 'May 5 22:00'. The terminal window has a dark background and a light-colored text. The prompt is '[eazewde@fedora ~]\$'. The command 'cat /etc/passwd' has been executed, and the output is a list of system users in the format 'username:x:uid:gid:full_name:home_directory:shell'. The users listed are root, bin, daemon, adm, lp, sync, shutdown, halt, mail, operator, games, ftp, nobody, apache, dbus, systemd-network, systemd-oom, systemd-resolve, systemd-timesync, systemd-coredump, tss, qemu, polkitd, avahi, and unbound. The terminal window also shows a browser-like interface with tabs and a search bar.

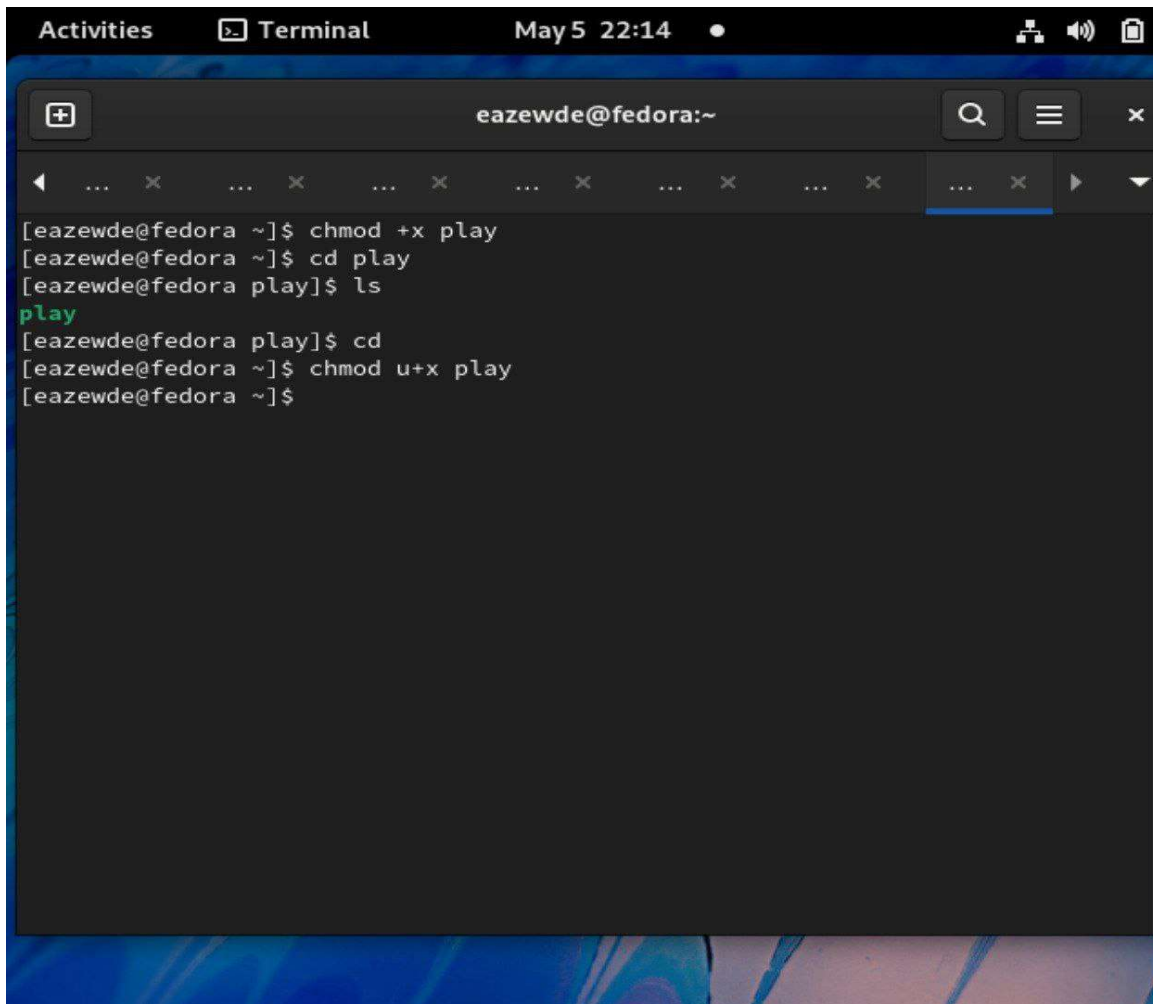
```
[eazewde@fedora ~]$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:65534:65534:Kernel Overflow User:/:/sbin/nologin
apache:x:48:48:Apache:/usr/share/httpd:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:/:usr/sbin/nologin
systemd-oom:x:999:999:systemd Userspace OOM Killer:/:usr/sbin/nologin
systemd-resolve:x:193:193:systemd Resolver:/:usr/sbin/nologin
systemd-timesync:x:998:998:systemd Time Synchronization:/:usr/sbin/nologin
systemd-coredump:x:997:997:systemd Core Dumper:/:usr/sbin/nologin
tss:x:59:59:Account used for TPM access:/dev/null:/sbin/nologin
qemu:x:107:107:qemu user:/:/sbin/nologin
polkitd:x:996:996>User for polkitd:/:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
unbound:x:995:994:Unbound DNS resolver:/etc/unbound:/sbin/nologin
```

- **Лишили владельца файла ~/feathers права на чтение.**
- **Попытались просмотреть файл ~/feathers командой cat. Из-за лишения права на чтение, сделать этого не получилось.**
- **Попытались скопировать файл ~/feathers. Из-за лишения права на чтение, сделать этого не получилось.**
- **Дали владельцу файла ~/feathers право на чтение**

Activities Terminal May 5 22:04

eazewde@fedora:~

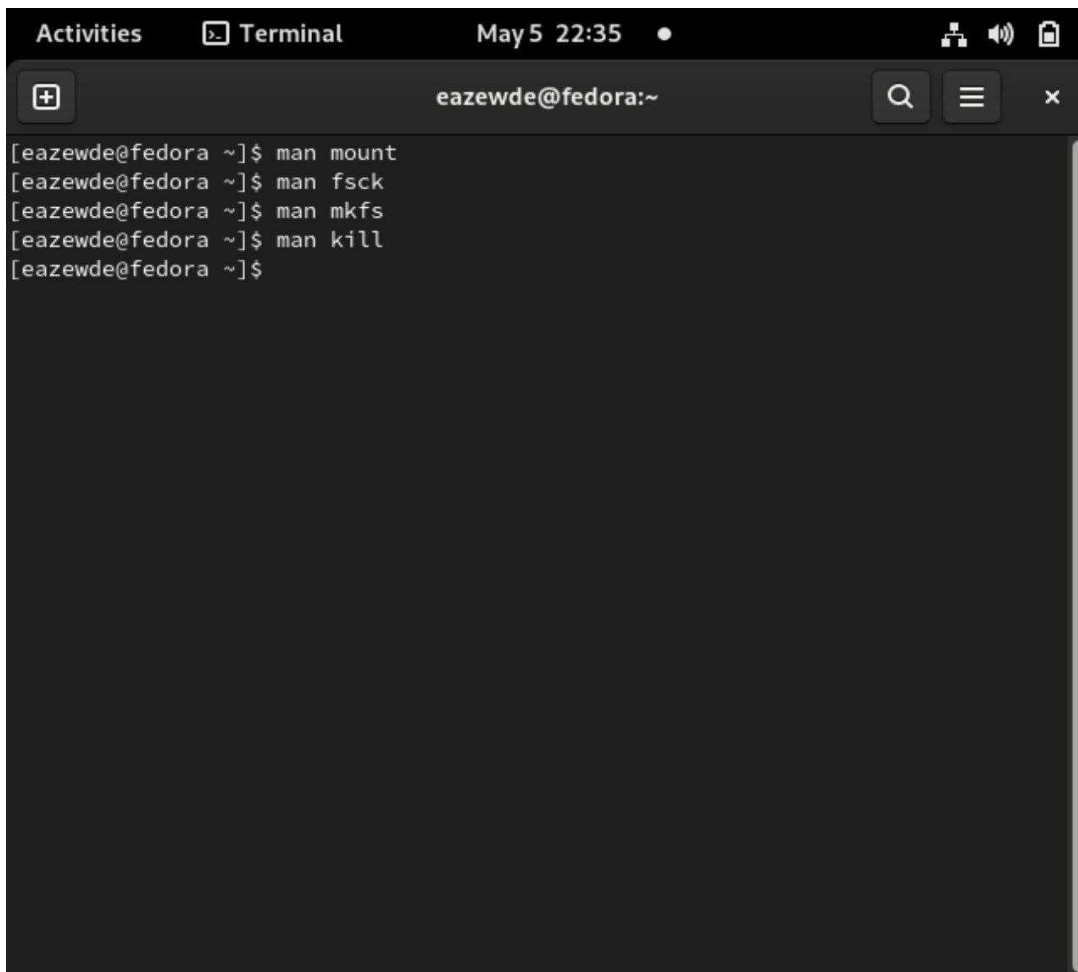
```
[eazewde@fedora ~]$ cp feathers file.old
[eazewde@fedora ~]$ mv file.old play
[eazewde@fedora ~]$ cp -r play fun
[eazewde@fedora ~]$ ls fun
fun
[eazewde@fedora ~]$ mv fun play
[eazewde@fedora ~]$ mv play games
[eazewde@fedora ~]$ mv games play
[eazewde@fedora ~]$ mv play/fun play/games
mv: failed to access 'play/games': Not a directory
[eazewde@fedora ~]$ mkdir play/games
mkdir: cannot create directory 'play/games': Not a directory
[eazewde@fedora ~]$ mv fun play
mv: cannot stat 'fun': No such file or directory
[eazewde@fedora ~]$ mv
```



The image shows a terminal window titled "Terminal" with the date and time "May 5 22:14". The user is "eazewde" and the host is "fedora". The terminal shows the following commands and outputs:

```
[eazewde@fedora ~]$ chmod +x play
[eazewde@fedora ~]$ cd play
[eazewde@fedora play]$ ls
play
[eazewde@fedora play]$ cd
[eazewde@fedora ~]$ chmod u+x play
[eazewde@fedora ~]$
```

- Прочитали man по командам mount, fsck, mkfs, kill.

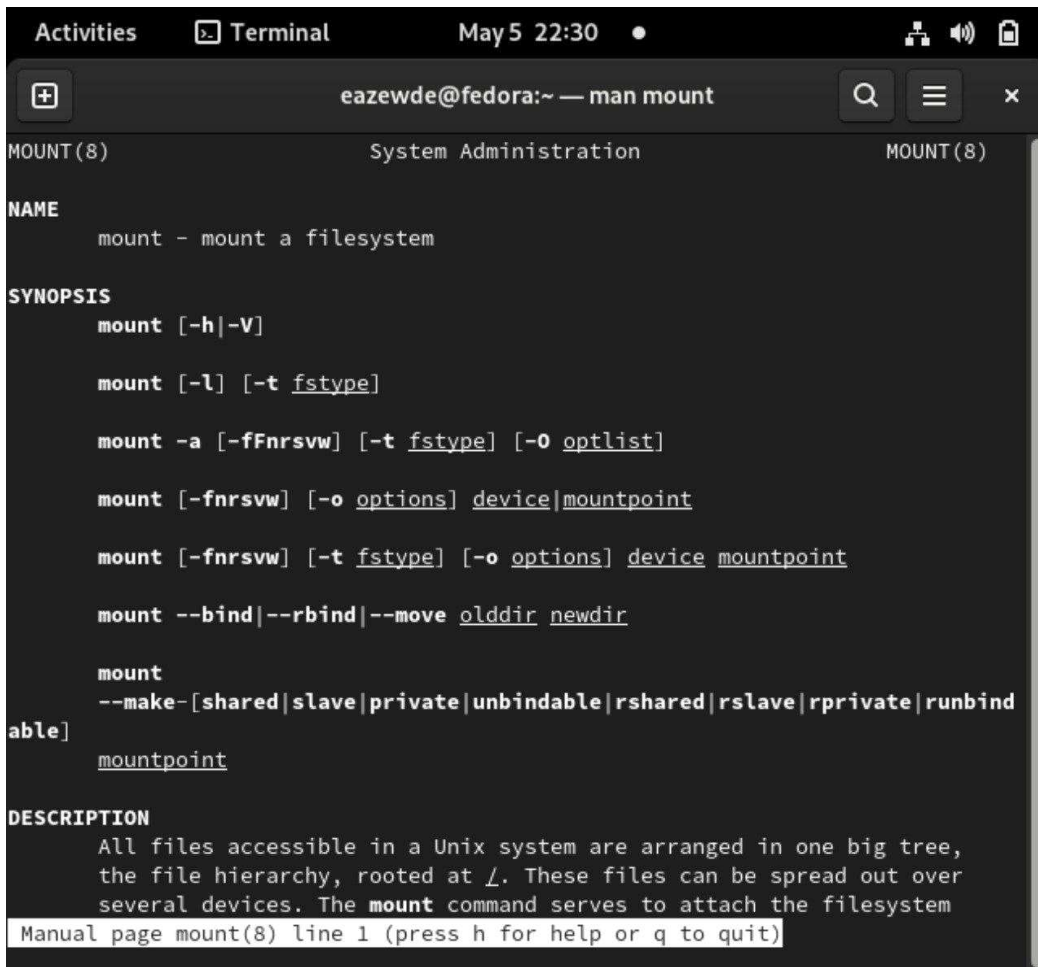


The image shows a terminal window titled "Terminal" with the date and time "May 5 22:35". The user is "eazewde" and the host is "fedora". The terminal shows the following commands and their outputs:

```
[eazewde@fedora ~]$ man mount
[eazewde@fedora ~]$ man fsck
[eazewde@fedora ~]$ man mkfs
[eazewde@fedora ~]$ man kill
[eazewde@fedora ~]$
```

- **mount** - нужна для просмотра смонтированных файловых систем, а также для монтирования любых локальных или удаленных файловых систем. Например, при вызове команды «**mount /dev/cdrom /mnt/cdrom**» устройство **/dev/cdrom** монтируется в каталог **/mnt/cdrom**, если он существует. Начиная от момента монтирования и пока пользователь не отмонтирует файловую систему (или туда не будет смонтировано что-то иное) в каталоге **/mnt/cdrom** будет содержаться дерево каталогов устройства **/dev/cdrom**; те файлы, и подкаталоги, которые раньше

находились в `/mnt/cdrom`, сохранятся, но будут недоступны до размонтирования устройства `/dev/cdrom`. Для размонтирования достаточно указать точку монтирования или имя устройства, команда «`umount /dev/cdrom`». При запуске команды `mount` без параметров выводится список смонтированных файловых систем.



```
Activities  Terminal  May 5 22:30  •
eazewde@fedora:~ — man mount

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

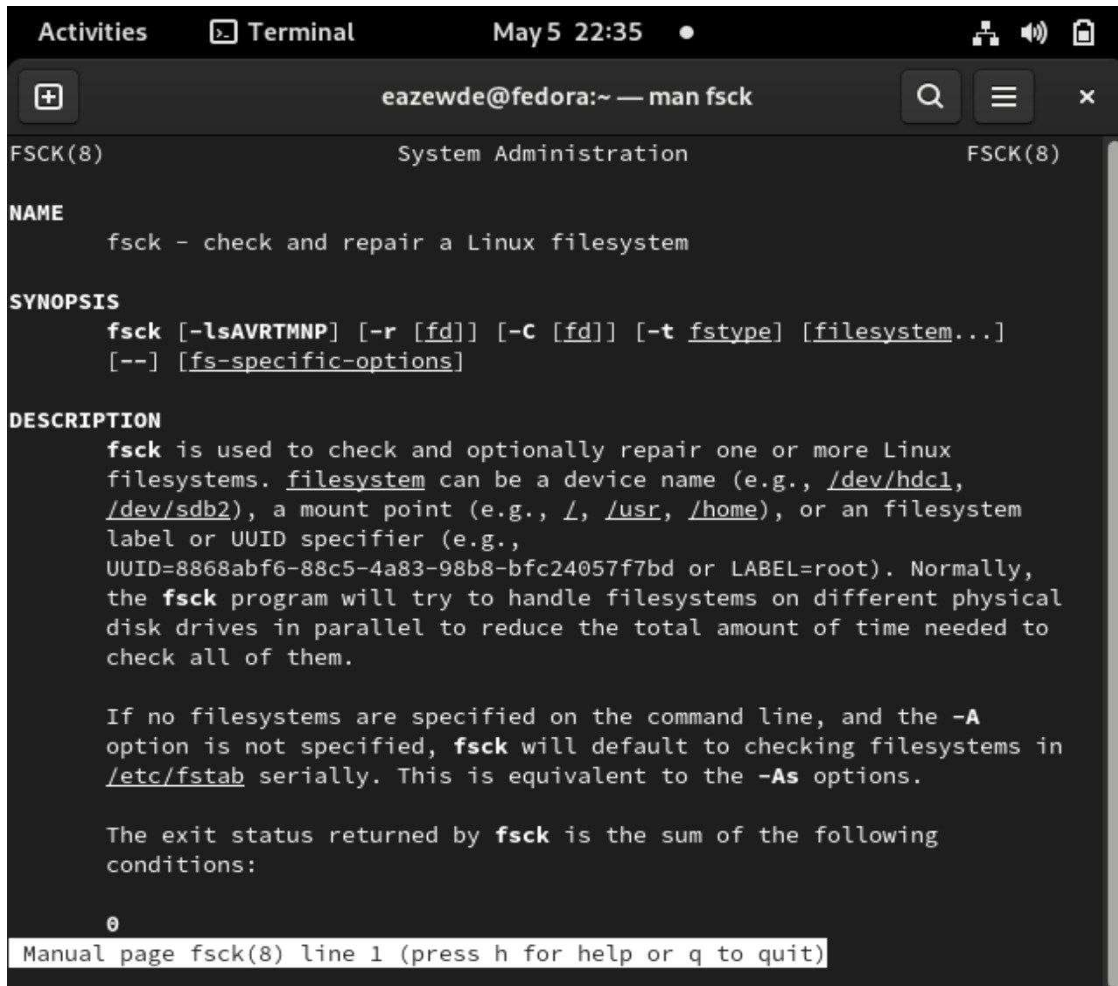
    mount --bind|--rbind|--move olddir newdir

    mount
    --make-[shared|slave|private|unbindable|rshared|rslave|rprivate|runbind
able]
    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
    Manual page mount(8) line 1 (press h for help or q to quit)
```

- `fsck - fsck [-sAVRTNP] [-C [fd]] [-t fstype] [filesystems ...] [--] [fs-specific-options]` - проверяет и устраняет ошибки в файловой системе.

Например, `fsck -fy -t ext4 /dev/sda1`. Опция `-f` (force) используется для принудительного выполнения проверки. Опция `-y` (yes) позволяет программе автоматически отвечать "да" на все вопросы в ходе работы



```
Activities Terminal May 5 22:35
eazewde@fedora:~ — man fsck
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 an 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

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

- **mkfs** - действие заключается в создании указанной файловой системы на выбранном диске или разделе. Например, команда «**mkfs-text2 /dev/hda1**» создает файловую систему ext2 на разделе hda1

The screenshot shows a terminal window titled "Terminal" with the date and time "May 5 22:35". The user is logged in as "eazewde@fedora:~" and is viewing the manual page for "mkfs". The window has a dark theme. The manual page content is as follows:

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

- **kill** - kill [-s **сигнал** | -p] [-a] **pid** - kill -l [**сигнал**] - завершает некорректно работающее приложение. Например, чтобы послать сигнал SIGKILL (он имеет номер 9) процессу 2811, необходимо вызвать команду «kill -9 2811»


```
Activities Terminal May 5 22:35 eazewde@fedora:~ — man kill
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
    Manual page kill(1) line 1 (press h for help or q to quit)
```

Вывод:

В ходе работы мы ознакомились с файловой системой Linux, а также приобрели практические навыки по применению команд для работы с файлами и каталогами, по управлению процессами, по проверке использования диска и обслуживанию файловой системы.