

# Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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# Цели и задачи работы

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## Цель лабораторной работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

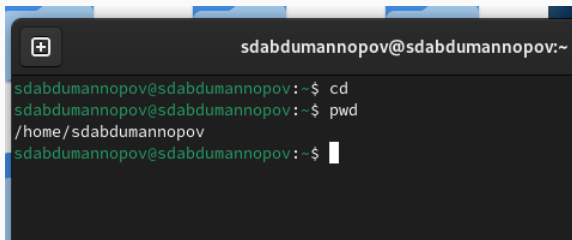
# Задачи лабораторной работы

- 1 Определить имя и путь домашнего каталога
- 2 Изучить команду `ls`.
- 3 Выполнить действия с каталогами.
- 4 Получить дополнительные сведения при помощи справки по командам.
- 5 Изучить команду `history`.

# **Процесс выполнения лабораторной работы**

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# Имя и путь к домашнему каталогу



```
sdabdumannopov@sdabdumannopov:~$ cd
sdabdumannopov@sdabdumannopov:~$ pwd
/home/sdabdumannopov
sdabdumannopov@sdabdumannopov:~$
```

A terminal window with a dark background and a title bar. The title bar contains a window control icon on the left and the text 'sdabdumannopov@sdabdumannopov:~' on the right. The terminal shows a sequence of commands: 'cd' followed by 'pwd', which outputs '/home/sdabdumannopov'. The prompt 'sdabdumannopov@sdabdumannopov:~\$' is shown at the end of the line.

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
sdabduannopov@sdabduannopov:~$ cd /tmp
sdabduannopov@sdabduannopov:/tmp$ ls
dbus-QQVjCvTs
dbus-xm4aHidV
hsperfdata_sdabduannopov
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-chronyd.service-jfFJ9m
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-colord.service-5F05JK
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-dbus-broker.service-MwhaXq
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-fwupd.service-L7q4rP
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-low-memory-monitor.service-Dx8Eyo
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-ModemManager.service-seYWsJ
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-polkit.service-dbFttq
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-power-profiles-daemon.service-69TJ5f
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-rtkit-daemon.service-xoelkQ
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-switcheroo-control.service-yalHir
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-logind.service-ZzmByg
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-oomd.service-LZqXBb
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-resolved.service-oF6jRy
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-upower.service-tiB6V2
VMwareDnD
vmware-root_934-2731086592
sdabduannopov@sdabduannopov:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
sdabduannopov@sdabduannopov: /tmp$  
sdabduannopov@sdabduannopov: /tmp$ ls -la  
.  
..  
dbus-QQVjCvTs  
dbus-xm4aHidV  
.font-unix  
hsperfdata_sdabduannopov  
.ICE-unix  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-chrond.service-jifJ9m  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-colord.service-5F05JK  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-dbus-broker.service-MwhaXq  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-fwupd.service-L7q4rP  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-low-memory-monitor.service-Dx8Eyo  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-ModemManager.service-seYwSJ  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-polkit.service-dbFttq  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-power-profiles-daemon.service-69TJ5f  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-rtkit-daemon.service-xoelkQ  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-switcheroo-control.service-yaLHir  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-logind.service-Zzm8yg  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-oomd.service-lZqXBb  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-resolved.service-oF6jRy  
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-upower.service-tIb6Y2  
VMwareDnD  
vmware-root_934-2731086592  
.X0-lock  
.X1024-lock  
.X1025-lock  
.X11-unix  
.X1-lock  
.XIM-unix  
sdabduannopov@sdabduannopov: /tmp$
```

Рис. 3: Команда ls -la



# Опции команды ls

```
sdadidumannopov@sdadidumannopov1: /tmp$ ls -l
total 0
srwxrwxrwx. 1 root      root      0 ноя 22 21:52 dbus-QUVCvTs
srwxrwxrwx. 1 root      root      0 ноя 22 21:52 dbus-xmGaltfdy
drwxr-xr-x. 2 sdadidumannopov sdadidumannopov 40 ноя 22 22:23 /tmp/lsdls_sdadidumannopov
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-chronyd.service-31F79e
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-coldsd.service-5F053K
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-dbus-breaker.service-9a8afq
drwx----- 3 root      root      0 ноя 22 22:00 systemd-private-6a476e02212940b0d670ce61dfe08cb-Foxed.service-13qaf
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-lvm-memory-monitor.service-0v8Myo
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-NodesManager.service-0eV8x3
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-palList.service-dBFttq
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-power-profiles-daemon.service-60733f
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-rtkit-daemon.service-0uq1q
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-switcheroo-control.service-yalRlr
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-systemd-logind.service-2omf9g
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-systemd-remd.service-12qG0
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-systemd-resolved.service-0f3j9y
drwx----- 3 root      root      0 ноя 22 21:52 systemd-private-6a476e02212940b0d670ce61dfe08cb-upower.service-11b0r2
drwxrwxrwt. 2 sdadidumannopov sdadidumannopov 160 ноя 22 22:27 /tmp/lsdls
drwx----- 2 root      root      0 ноя 22 21:52 /tmp/lsdls_034-2731006592
sdadidumannopov@sdadidumannopov1: /tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
sdabдуманнов@sdabдуманнов: /tmp$ ls -f
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-oomd.service-lzqXbb
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-resolved.service-oF6jRy
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-dbus-broker.service-MwHaXq
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-chronyd.service-jfJ9m
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-low-memory-monitor.service-Dx8Eyo
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-polkit.service-dbFttq
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-power-profiles-daemon.service-69TJ5f
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-rtkit-daemon.service-xoelkQ
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-switcheroo-control.service-yaHir
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-systemd-logind.service-Zzm8yg
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-upower.service-tIb6Y2
vmware-root_934-2731886592
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-ModemManager.service-seYWsJ
dbus-xm4aHidV
dbus-QQVjCvTs
.X1024-lock
.X1025-lock
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-colord.service-5F05JK
.X0-lock
.X1-lock
systemd-private-6a476e02212940bdb0e70ce61d7e89cb-fwupd.service-L7q4rP
VMwareDnD
hsperrdata_sdabдуманнов
sdabдуманнов@sdabдуманнов: /tmp$
```

Рис. 5: Команда ls -f

```
sdabdumannopov@sdabdumannopov: /tmp$  
sdabdumannopov@sdabdumannopov: /tmp$ cd /var/spool/  
sdabdumannopov@sdabdumannopov: /var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 июн 10 10:47 abrt  
drwx-----. 1 abrt abrt 0 июл 19 2023 abrt-upload  
drwx--x---. 1 root lp 6 фев 16 03:00 cups  
drwxr-xr-x. 1 root root 0 июл 21 2023 lpd  
drwxrwxr-x. 1 root mail 1392 июн 22 21:51 mail  
drwxr-xr-x. 1 root root 0 июл 21 2023 plymouth  
sdabdumannopov@sdabdumannopov: /var/spool$
```

Рис. 6: Каталог /var/spool

# Домашний каталог

```
sdabduannopov@sdabduannopov: /var/spool$ cd
sdabduannopov@sdabduannopov:~$ ls
work  Документы  Изображения  Общедоступные  Шаблоны
Видео  Загрузки  Музыка  'Рабочий стол'
sdabduannopov@sdabduannopov:~$ ls -al
итого 24
drwx----- 1 sdabduannopov sdabduannopov 486 июн 22 22:17 .
drwxr-xr-x 1 root root 1386 июн 22 21:51 ..
-rw----- 1 sdabduannopov sdabduannopov 1207 июн 22 22:27 .bash_history
-rw-r--r-- 1 sdabduannopov sdabduannopov 18 янв 22 03:00 .bash_logout
-rw-r--r-- 1 sdabduannopov sdabduannopov 144 янв 22 03:00 .bash_profile
-rw-r--r-- 1 sdabduannopov sdabduannopov 522 янв 22 03:00 .bashrc
-rw----- 1 sdabduannopov sdabduannopov 424 июн 22 22:19 .cache
drwx----- 1 sdabduannopov sdabduannopov 388 июн 22 22:24 .config
-rw-r--r-- 1 sdabduannopov sdabduannopov 334 мар 25 03:00 .emacs
-rw-r--r-- 1 sdabduannopov sdabduannopov 237 июн 22 22:15 .gitconfig
drwx----- 1 sdabduannopov sdabduannopov 136 июн 22 22:14 .gnupg
drwx----- 1 sdabduannopov sdabduannopov 20 июн 22 22:08 .local
drwxr-xr-x 1 sdabduannopov sdabduannopov 48 июн 22 22:08 .mozilla
drwx----- 1 sdabduannopov sdabduannopov 132 июн 22 22:16 .ssh
drwxr-xr-x 1 sdabduannopov sdabduannopov 10 июн 22 22:15 work
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Видео
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Документы
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Загрузки
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Изображения
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Музыка
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Общедоступные
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 'Рабочий стол'
drwxr-xr-x 1 sdabduannopov sdabduannopov 0 июн 22 22:08 Шаблоны
sdabduannopov@sdabduannopov:~$
```

Рис. 7: Файлы в домашнем каталоге

# Работа с каталогами

```
sdabdumannopov@sdabdumannopov:~$  
sdabdumannopov@sdabdumannopov:~$ mkdir newdir  
sdabdumannopov@sdabdumannopov:~$ mkdir newdir/morefun  
sdabdumannopov@sdabdumannopov:~$ mkdir letters memos misk  
sdabdumannopov@sdabdumannopov:~$ ls  
letters  misk  work  Документы  Изображения  Общедоступные  Шаблоны  
memos    newdir Видео  Загрузки  Музыка      'Рабочий стол'  
sdabdumannopov@sdabdumannopov:~$ rm letters/ memos/ misk/  
rm: невозможно удалить 'letters/': Это каталог  
rm: невозможно удалить 'memos/': Это каталог  
rm: невозможно удалить 'misk/': Это каталог  
sdabdumannopov@sdabdumannopov:~$ rm -r letters/ memos/ misk/  
sdabdumannopov@sdabdumannopov:~$ rm -r newdir/  
sdabdumannopov@sdabdumannopov:~$ ls  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка      'Рабочий стол'
```

Рис. 8: Действия с каталогами

# Опции команды ls

```
sdabduманнов@sdabduманнов: ~/work/study/2023-2024/Операционные системы/os-intro/template/report/scripts$  
image-report mpv-shot  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол:  
./Шаблоны:  
sdabduманнов@sdabduманнов: ~$  
sdabduманнов@sdabduманнов: ~$ ls -t  
work  Изображения  Документы  Общедоступные  Шаблоны  
Видео  Музыка      Загрузки  'Рабочий стол'
```

Рис. 9: Команда ls -R и ls -t

# Справка по командам

```
sdabdumannopov@sdabdumannopov:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [катанор]
Change the shell working directory.

Change the current directory to DIR. The default DIR is the value of the
HOME shell variable. If DIR is "-", it is converted to $OLDPWD.

The variable CDPATH defines the search path for the directory containing
DIR. Alternative directory names in CDPATH are separated by a colon (:).
A null directory name is the same as the current directory. If DIR begins
with a slash (/), then CDPATH is not used.

If the directory is not found, and the shell option 'cdable_vars' is set,
the word is assumed to be a variable name. If that variable has a value,
its value is used for DIR.

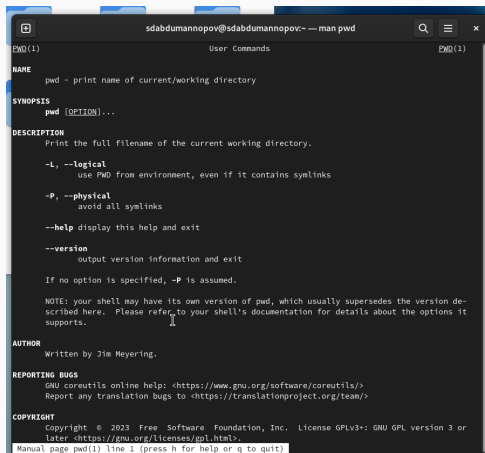
Options:
-L      force symbolic links to be followed: resolve symbolic
        links in DIR after processing instances of '..'
-P      use the physical directory structure without following
        symbolic links: resolve symbolic links in DIR before
        processing instances of '..'
-e      if the -P option is supplied, and the current working
        directory cannot be determined successfully, exit with
        a non-zero status
-@      on systems that support it, present a file with extended
        attributes as a directory containing the file attributes

The default is to follow symbolic links, as if '-L' were specified.
'..' is processed by removing the immediately previous pathname component
back to a slash or the beginning of DIR.

Exit Status:
Returns 0 if the directory is changed, and if $PWD is set successfully when
-P is used; non-zero otherwise.
sdabdumannopov@sdabdumannopov:~$
```

Рис. 10: Справка по команде cd

# Справка по командам



```
sdabduumannopov@sdabduumannopov:~ — man pwd
PWD(1)                                User Commands                                PWD(1)

NAME
  pwd - print name of current/working directory

SYNOPSIS
  pwd [OPTION]...

DESCRIPTION
  Print the full filename of the current working directory.

  -L, --logical
        use PWD from environment, even if it contains symlinks

  -P, --physical
        avoid all symlinks

  --help display this help and exit

  --version
        output version information and exit

  If no option is specified, -P is assumed.

  NOTE: your shell may have its own version of pwd, which usually supersedes the version de-
  scribed here. Please refer to your shell's documentation for details about the options it
  supports.

AUTHOR
  Written by Jim Meyering.

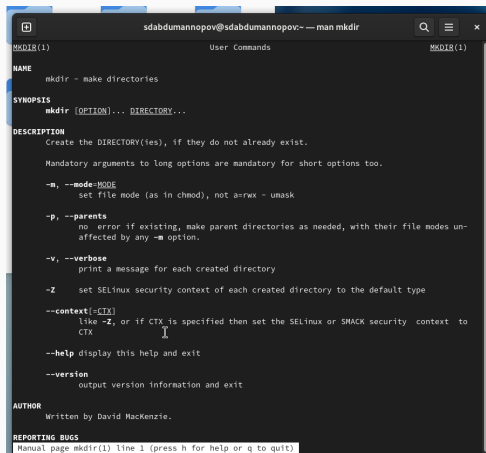
REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
  Report any translation bugs to <https://translationproject.org/team/>

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

Рис. 11: Справка по команде pwd





```
sdabdumannopov@sdabdumannopov:~ -- man mkdir
mkdir(1)                                User Commands                                mkdir(1)

NAME
    mkdir - make directories

SYNOPSIS
    mkdir [OPTION]... DIRECTORY...

DESCRIPTION
    Create the DIRECTORY(ies), if they do not already exist.

    Mandatory arguments to long options are mandatory for short options too.

    -m, --mode=MODE
        set file mode (as in chmod), not a=rwx - umask

    -p, --parents
        no error if existing, make parent directories as needed, with their file modes unaffected by any -m option.

    -v, --verbose
        print a message for each created directory

    -Z
        set SELinux security context of each created directory to the default type

    --context[=CTX]
        like -Z, or if CTX is specified then set the SELinux or SMACK security context to CTX

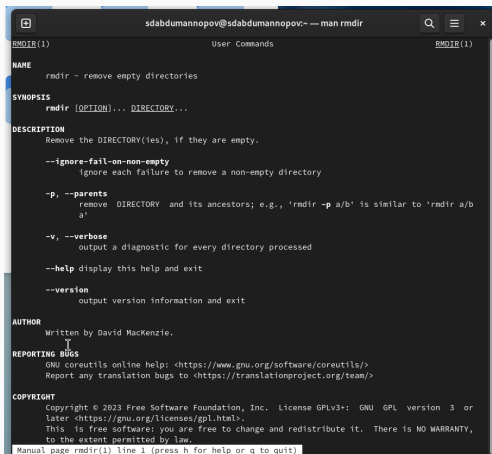
    --help
        display this help and exit

    --version
        output version information and exit

AUTHOR
    Written by David MacKenzie.

REPORTING BUGS
    Manual page mkdir(1) line 1 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir



```
sdabdumannopov@sdabdumannopov:~ — man rmdir
rmdir(1)                                User Commands                                rmdir(1)

NAME
  rmdir - remove empty directories

SYNOPSIS
  rmdir [OPTION]... DIRECTORY...

DESCRIPTION
  Remove the DIRECTORY(ies), if they are empty.

  --ignore-fail-on-non-empty
      ignore each failure to remove a non-empty directory

  -p, --parents
      remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b' is similar to 'rmdir a/b
      a'

  -v, --verbose
      output a diagnostic for every directory processed

  --help
      display this help and exit

  --version
      output version information and exit

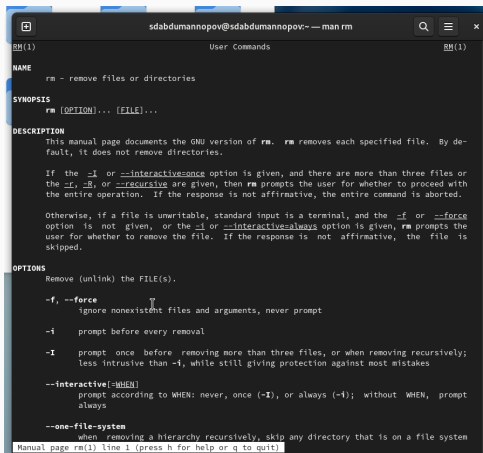
AUTHOR
  Written by David MacKenzie.

REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
  Report any translation bugs to <https://translationproject.org/team/>

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

Рис. 13: Справка по команде rmdir



```
sdabduumannopov@sdabduumannopov:~ man rm
RM(1) User Commands RM(1)
NAME
rm - remove files or directories
SYNOPSIS
rm [OPTION]... [FILE]...
DESCRIPTION
This manual page documents the GNU version of rm. rm removes each specified file. By default, it does not remove directories.

If the -I or --interactive=once option is given, and there are more than three files or the -r, -R, or --recursive are given, then rm prompts the user for whether to proceed with the entire operation. If the response is not affirmative, the entire command is aborted.

Otherwise, if a file is unwritable, standard input is a terminal, and the -f or --force option is not given, or the -i or --interactive=always option is given, rm prompts the user for whether to remove the file. If the response is not affirmative, the file is skipped.
OPTIONS
Remove (unlink) the FILE(s).

-f, --force
    ignore nonexistent files and arguments, never prompt

-i
    prompt before every removal

-I
    prompt once before removing more than three files, or when removing recursively; less intrusive than -i, while still giving protection against most mistakes

--interactive=[WHEN]
    prompt according to WHEN: never, once (-I), or always (-i); without WHEN, prompt always

--one-file-system
    when removing a hierarchy recursively, skip any directory that is on a file system

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

Рис. 14: Справка по команде rm

# История командной строки

```
39 ls -a
40 ls -l
41 ls -f
42 cd /var/spool/
43 ls -l
44 cd
45 ls
46 ls -al
47 mkdir newdir
48 mkdir newdir/morefun
49 mkdir letters memos misk
50 ls
51 rm letters/ memos/ misk/
52 rm -r letters/ memos/ misk/
53 rm -r newdir/
54 ls
55 ls -R
56 ls -t
57 help cd
58 man pwd
59 man mkdir
60 man rmdir
61 man rm
62 history
sdabdumannopov@sdabdumannopov:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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Мы приобрели практические навыки взаимодействия пользователя с системой посредством командной строки.