

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

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12 марта, 2024, Москва, Россия

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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.

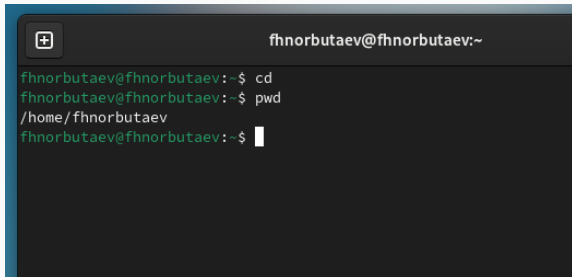
# Задачи лабораторной работы

- 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



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

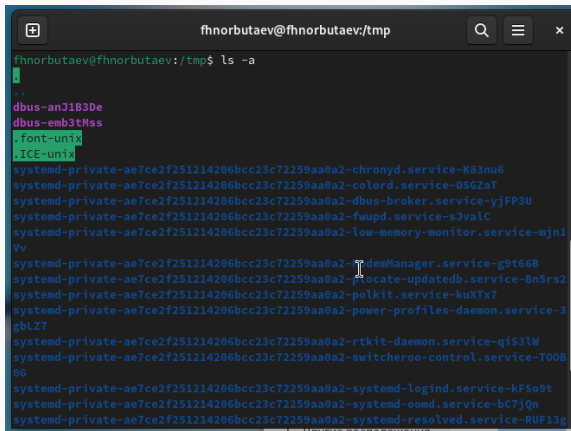
Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
fhnorbutaev@fhnorbutaev:~$ cd /tmp
fhnorbutaev@fhnorbutaev:/tmp$ ls
dbus-anJl83De
dbus-emb3tMss
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-chrond.service-K83nu6
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-colord.service-0S6ZaT
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-dbus-broker.service-yjFP3U
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-fwupd.service-sJvalC
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-geoclue.service-kupmzb
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-low-memory-monitor.service-mjn1
Vv
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-ModemManager.service-g9t66B
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-plocate-updatedb.service-Bn5rs2
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-polkit.service-kuXTx7
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-power-profiles-daemon.service-3
gbLZ7
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-rtkit-daemon.service-qis3lW
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-switcheroo-control.service-T00B
gg
```

Рис. 2: Команда ls

# Опции команды ls

A terminal window with a dark background and light-colored text. The title bar at the top shows the user 'fhnorbutaev' and the current directory 'fhnorbutaev:/tmp'. The command 'ls -a' has been entered and executed. The output lists various files and directories, including hidden ones like '.dbus-an31B3De', '.dbus-emb3tMss', '.font-unix', and '.ICE-unix'. It also lists system service files such as 'systemd-private-ae7ce2f251214206bcc23c72259aa0a2-chronyd.service-K83nu6'.

```
fhnorbutaev@fhnorbutaev:/tmp$ ls -a
.
..
dbus-an31B3De
dbus-emb3tMss
.font-unix
.ICE-unix
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-chronyd.service-K83nu6
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-colord.service-0SGZaT
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-dbus-broker.service-yjFP3U
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-fwupd.service-s3valC
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-low-memory-monitor.service-mjn1
Vv
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-ndmManager.service-g9t66B
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-plocate-updatedb.service-Bn5rs2
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-polkit.service-kuXTx7
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-power-profiles-daemon.service-3
gbLZ7
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-rtkit-daemon.service-qis3lW
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-switcheroo-control.service-T00B
0G
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-logind.service-KF5o9t
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-oond.service-bC7jqn
systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-resolved.service-RUF13g
```

Рис. 3: Команда ls -a



# Опции команды ls

```
fhnorbutaev@fhnorbutaev:/tmp$  
fhnorbutaev@fhnorbutaev:/tmp$ ls -l  
total 0  
drwx-rw-rw-. 1 root root 0 map 12 11:49 dbus-an31B3De  
drwx-rw-rw-. 1 root root 0 map 12 11:49 dbus-emb1tMss  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-chronyd.service-K83nuK  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-colord.service-05GZaT  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-dbus-broker.service-yjFP3U  
drwx----- 3 root root 60 map 12 11:52 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-fuupd.service-s3va1C  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-low-memory-monitor.service-mjn1Vv  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-hudmManager.service-p3t668  
drwx----- 3 root root 60 map 12 11:52 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-plocate-updates.service-6n5rs2  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-palokit.service-bu3T47  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-power-profiles-daemon.service-3glZ7  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-rtkit-daemon.service-q1531W  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-switcheroo-control.service-T00806  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-logind.service-KF5o9t  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-oomd.service-bC7j0n  
drwx----- 3 root root 60 map 12 11:49 systemd-private-ae7ce2f251214206bcc23c72259aa0a2-systemd-resolved.service-RUF13g  
drwx----- 2 root root 40 map 12 11:49 vmware-root_938-2689078411  
fhnorbutaev@fhnorbutaev:/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
fhnorbutaev@fhnorbutaev: /tmp$  
fhnorbutaev@fhnorbutaev: /tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-systemd-oomb.service-bC7jQn  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-systemd-resolved.service-RUF13g  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-dbus-broker.service-yJFP3U  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-chronyd.service-K83nu6  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-low-memory-monitor.service-mjn1Vv  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-polkit.service-kuXTx7  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-power-profiles-daemon.service-3gbLZ7  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-rtkit-daemon.service-qis3lW  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-switcheroo-control.service-T00B0G  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-systemd-logind.service-kFS09t  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-upower.service-9WiysK  
vmware-root_938-2689078411  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-ModemManager.service-g9t66B  
dbus-emb3tMss  
dbus-anJ183De  
.X1024-lock  
.X1025-lock  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-colord.service-0SGZaT  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-plocate-updatedb.service-Bn5rs2  
.X0-lock  
.X1-lock  
systemd-private-aef7ce2f251214206bcc23c72259aa0a2-fwupd.service-sJvalC  
fhnorbutaev@fhnorbutaev: /tmp$
```

Рис. 5: Команда ls -f

```
fhnorbutaev@fhnorbutaev: /tmp$  
fhnorbutaev@fhnorbutaev:/tmp$ cd /var/spool/  
fhnorbutaev@fhnorbutaev:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар 11 12:08 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 1222 мар  8 17:40 mail  
drwxr-xr-x. 1 root root  0 июл 21 2023 plymouth  
fhnorbutaev@fhnorbutaev:/var/spool$
```

Рис. 6: Каталог /var/spool

# Домашний каталог

```
fhnorbutaev@fhnorbutaev:/var/spool$  
fhnorbutaev@fhnorbutaev:/var/spool$ cd  
fhnorbutaev@fhnorbutaev:~$ ls  
  git-extended  Видео      Загрузки    Музыка      'Рабочий стол'  
  work          Документы  Изображения  Общедоступные  Шаблоны  
fhnorbutaev@fhnorbutaev:~$ ls -al  
итого 20  
drwx-----. 1 fhnorbutaev fhnorbutaev 486 мар 6 14:22 .  
drwxr-xr-x. 1 root root 1216 мар 8 17:40 ..  
-rw-----. 1 fhnorbutaev fhnorbutaev 10 мар 6 14:20 .bash_history  
-rw-r--r--. 1 fhnorbutaev fhnorbutaev 18 июл 19 2023 .bash_logout  
-rw-r--r--. 1 fhnorbutaev fhnorbutaev 144 июл 19 2023 .bash_profile  
-rw-r--r--. 1 fhnorbutaev fhnorbutaev 681 мар 6 14:10 .bashrc  
drwx-----. 1 fhnorbutaev fhnorbutaev 452 мар 12 11:52 .cache  
drwx-----. 1 fhnorbutaev fhnorbutaev 402 мар 6 14:26 .config  
-rw-r--r--. 1 fhnorbutaev fhnorbutaev 173 мар 6 14:22 .gitconfig  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 74 мар 6 14:17 git-extended  
drwx-----. 1 fhnorbutaev fhnorbutaev 20 мар 6 13:56 .local  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 48 мар 6 13:59 .mozilla  
drwx-----. 1 fhnorbutaev fhnorbutaev 132 мар 6 14:09 .ssh  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 10 мар 6 14:09 work  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Видео  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Документы  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Загрузки  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Изображения  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Музыка  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Общедоступные  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 'Рабочий стол'  
drwxr-xr-x. 1 fhnorbutaev fhnorbutaev 0 мар 6 13:56 Шаблоны  
fhnorbutaev@fhnorbutaev:~$
```

Рис. 7: Файлы в домашнем каталоге

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

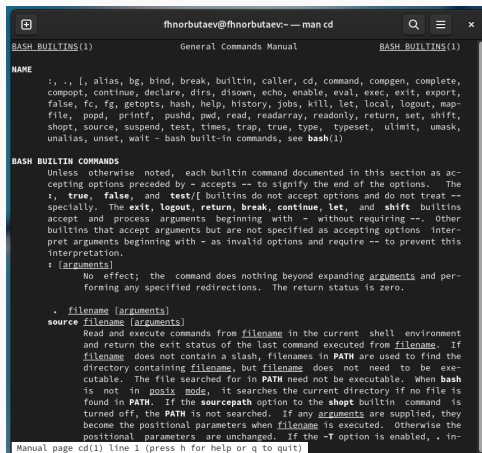
Рис. 8: Действия с каталогами

# Опции команды ls

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

Рис. 9: Команда ls -R и ls -t

# Справка по командам



```
fhnorbutaev@fhnorbutaev:~ — man cd
BASH BUILTINS(1) General Commands Manual BASH BUILTINS(1)

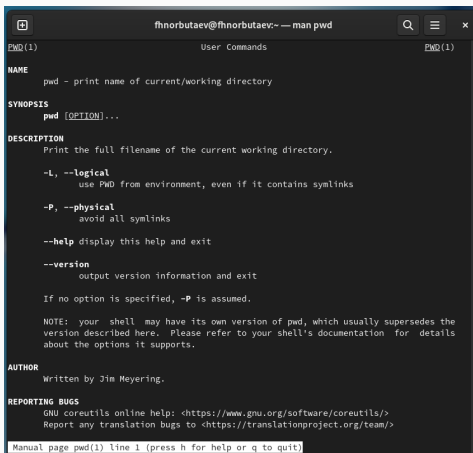
NAME
:, ., [, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete,
comptop, continue, declare, dirs, disown, echo, enable, eval, exec, exit, export,
false, fc, fg, getopts, hash, help, history, jobs, kill, let, local, logout, map-
file, popd, printf, pushd, pwd, read, readarray, readonly, return, set, shift,
shopt, source, suspend, test, times, trap, true, type, typeset, ulimit, umask,
unalias, unset, wait - bash built-in commands, see bash(1)

BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as ac-
cepting options preceded by - accepts -- to signify the end of the options. The
:, true, false, and test/[ builtins do not accept options and do not treat --
specially. The exit, logout, return, break, continue, let, and shift builtins
accept and process arguments beginning with - without requiring --. Other
builtins that accept arguments but are not specified as accepting options inter-
pret arguments beginning with - as invalid options and require -- to prevent this
interpretation.
: [arguments]
    No effect; the command does nothing beyond expanding arguments and per-
forming any specified redirections. The return status is zero.

. filename [arguments]
source filename [arguments]
    Read and execute commands from filename in the current shell environment
    and return the exit status of the last command executed from filename. If
    filename does not contain a slash, filenames in PATH are used to find the
    directory containing filename, but filename does not need to be exe-
    cutable. The file searched for in PATH need not be executable. When bash
    is not in posix mode, it searches the current directory if no file is
    found in PATH. If the sourcepath option to the shopt builtin command is
    turned off, the PATH is not searched. If any arguments are supplied, they
    become the positional parameters when filename is executed. Otherwise the
    positional parameters are unchanged. If the -T option is enabled, . in-
```

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

Рис. 10: Справка по команде cd



```
fhnorbutaev@fhnorbutaev:~$ 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 described here. Please refer to your shell's documentation for details
  about the options it supports.

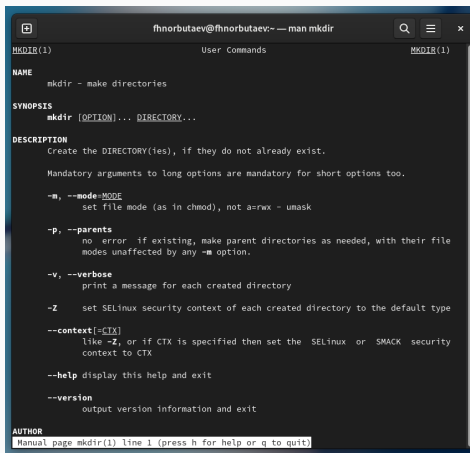
AUTHOR
  Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd





```
fhnorbutaev@fhnorbutaev:~ — 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

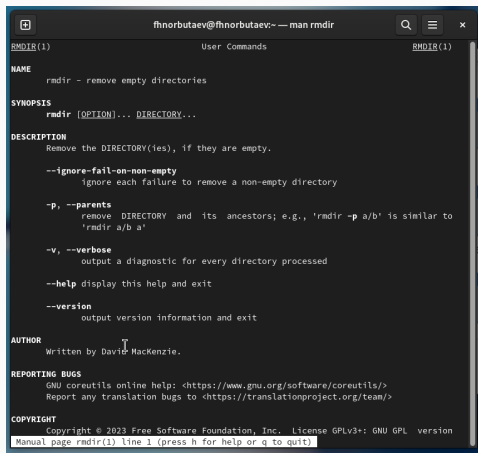
--help display this help and exit

--version
    output version information and exit

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

Рис. 12: Справка по команде mkdir

# Справка по командам



```
fhnorbutaev@fhnorbutaev:~ — 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

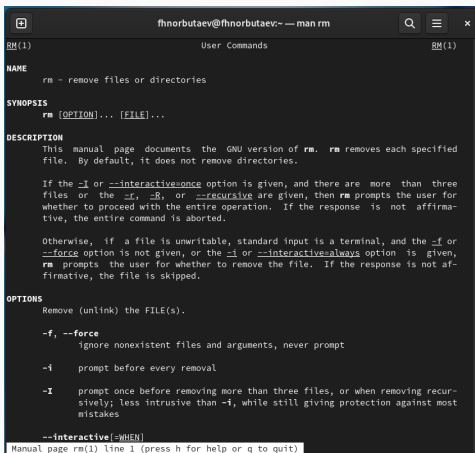
    --version
        output version information and exit

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/>

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

Рис. 13: Справка по команде rmdir



```
fhnorbutaev@fhnorbutaev:~ -- 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 af-
firmative, 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 recur-
    sively; less intrusive than -i, while still giving protection against most
    mistakes

--interactive=WHEN

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

Рис. 14: Справка по команде rm

# История командной строки

```
17 mkdir letters memos misk
18 ls
19 rm letters/ memos/ misk/
20 rm -r letters/ memos/ misk/
21 rm -r newdir/
22 ls
23 ls -R
24 ls -t
25 man cd
26 man pwd
27 man mkdir
28 man rmdir
29 man rm
30 history
fhnorbutaev@fhnorbutaev:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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