

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

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10 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.

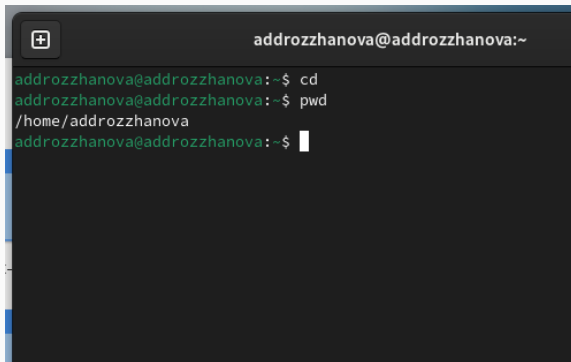
# Задачи лабораторной работы

- 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



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

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
addrozzhanova@addrozzhanova:~$ cd /tmp
addrozzhanova@addrozzhanova:/tmp$ ls
dbus-e8Byo55v
dbus-1kN56j08
systemd-private-321d542523904e38845aa66a0b686338-chrond.service-lFLksJ
systemd-private-321d542523904e38845aa66a0b686338-colord.service-kVZgHy
systemd-private-321d542523904e38845aa66a0b686338-dbus-broker.service-pyUdf6
systemd-private-321d542523904e38845aa66a0b686338-fwupd.service-b68cCf
systemd-private-321d542523904e38845aa66a0b686338-low-memory-monitor.service-wl83Df
systemd-private-321d542523904e38845aa66a0b686338-ModemManager.service-fRz31b
systemd-private-321d542523904e38845aa66a0b686338-polkit.service-0BSbXA
systemd-private-321d542523904e38845aa66a0b686338-power-profiles-daemon.service-d7tNkz
systemd-private-321d542523904e38845aa66a0b686338-rtkit-daemon.service-aZ1zoM
systemd-private-321d542523904e38845aa66a0b686338-switcheroo-control.service-auCERt
systemd-private-321d542523904e38845aa66a0b686338-systemd-logind.service-6b2PZw
systemd-private-321d542523904e38845aa66a0b686338-systemd-oemd.service-CfVjgT
systemd-private-321d542523904e38845aa66a0b686338-systemd-resolved.service-QK7bmT
systemd-private-321d542523904e38845aa66a0b686338-upower.service-I9yHbK
vmware-root_926-2731217702
addrozzhanova@addrozzhanova:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
addrozghanova@addrozghanova:/tmp$ ls -la
.
..
dbus-e8Byo55v
dbus-ikN56j08
.font-unix
.ICE-unix
systemd-private-321d542523904e38845aa66a0b686338-chrond.service-lFLksJ
systemd-private-321d542523904e38845aa66a0b686338-colord.service-kVzGHy
systemd-private-321d542523904e38845aa66a0b686338-dbus-broker.service-pyUdf6
systemd-private-321d542523904e38845aa66a0b686338-fwupd.service-bGscCf
systemd-private-321d542523904e38845aa66a0b686338-low-memory-monitor.service-wl8JDf
systemd-private-321d542523904e38845aa66a0b686338-ModemManager.service-fRz31b
systemd-private-321d542523904e38845aa66a0b686338-polkit.service-0BSbXA
systemd-private-321d542523904e38845aa66a0b686338-power-profiles-daemon.service-d7tNkz
systemd-private-321d542523904e38845aa66a0b686338-rtkit-daemon.service-aZ1zoM
systemd-private-321d542523904e38845aa66a0b686338-switcheroo-control.service-auCErT
systemd-private-321d542523904e38845aa66a0b686338-systemd-logind.service-6b2PZw
systemd-private-321d542523904e38845aa66a0b686338-systemd-oom.service-CfVjgT
systemd-private-321d542523904e38845aa66a0b686338-systemd-resolved.service-QK7bmT
systemd-private-321d542523904e38845aa66a0b686338-upower.service-I9yHbK
vmware-root_926-2731217702
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
addrozghanova@addrozghanova:/tmp$
```

Рис. 3: Команда ls -la



# Опции команды ls

```
addrozhanova@addrozhanova:/tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 map 10 15:25 dbus-e88ys5sv
srw-rw-rw-. 1 root root 0 map 10 15:25 dbus-ikN56j88
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-chrond.service-lfLkxJ
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-color.service-KVZgny
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-dbus-broker.service-py0dfe
drwx----- 3 root root 60 map 10 15:28 systemd-private-321d542523904e30845aa66abb686330-fwupd.service-bG8ccf
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-low-memory-monitor.service-wl3Df
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-ModemManager.service-fRz3ib
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-polkit.service-00303a
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-power-profiles-daemon.service-d7tMkz
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-rtkit-daemon.service-aZlzeM
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-switcheroo-control.service-aucErT
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-systemd-logind.service-6h2PZe
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-systemd-oomd.service-Cfvjgt
drwx----- 3 root root 60 map 10 15:25 systemd-private-321d542523904e30845aa66abb686330-systemd-resolved.service-QK7bnf
drwx----- 2 root root 40 map 10 15:25 vmware-root_926-2731217702
addrozhanova@addrozhanova:/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
addrozzhanova@addrozzhanova: /tmp$ ls -f
t-
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-321d542523904e38845aa66a0b686338-systemd-oomd.service-CfVjgT
systemd-private-321d542523904e38845aa66a0b686338-systemd-resolved.service-QK7bmT
systemd-private-321d542523904e38845aa66a0b686338-dbus-broker.service-pyUdf6
systemd-private-321d542523904e38845aa66a0b686338-chronyd.service-lFLksJ
systemd-private-321d542523904e38845aa66a0b686338-low-memory-monitor.service-wl8JdF
systemd-private-321d542523904e38845aa66a0b686338-polkit.service-0BSbXA
systemd-private-321d542523904e38845aa66a0b686338-power-profiles-daemon.service-d7tNkz
systemd-private-321d542523904e38845aa66a0b686338-rtkit-daemon.service-aZlzoM
systemd-private-321d542523904e38845aa66a0b686338-switcheroo-control.service-auCERt
systemd-private-321d542523904e38845aa66a0b686338-systemd-logind.service-6b2PZw
systemd-private-321d542523904e38845aa66a0b686338-upower.service-I9yHbK
vmware-root_926-2731217702
systemd-private-321d542523904e38845aa66a0b686338-ModemManager.service-fRz3lb
dbus-e8Byo55v
dbus-ikN56j08
.X1024-lock
.X1025-lock
systemd-private-321d542523904e38845aa66a0b686338-colord.service-kVZgHy
.X0-lock
.X1-lock
systemd-private-321d542523904e38845aa66a0b686338-fwupd.service-bG8cCf
addrozzhanova@addrozzhanova: /tmp$
```

Рис. 5: Команда ls -f

```
addrozzhanova@addrozzhanova: /tmp$  
addrozzhanova@addrozzhanova: /tmp$ cd /var/spool/  
addrozzhanova@addrozzhanova: /var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар 10 12:45 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  
addrozzhanova@addrozzhanova: /var/spool$
```

Рис. 6: Каталог /var/spool

# Домашний каталог

```
addrozzhanova@addrozzhanova: /var/spool$ cd
addrozzhanova@addrozzhanova: ~$ ls
git-extended Видео Загрузки Музыка 'Рабочий стол'
work Документы Изображения Общедоступные Шаблоны
addrozzhanova@addrozzhanova: ~$ ls -al
итого 20
drwx----- 1 addrozzhanova addrozzhanova 498 мар 4 15:03 .
drwxr-xr-x 1 root root 1216 мар 8 17:40 ..
-rw----- 1 addrozzhanova addrozzhanova 198 мар 4 15:14 .bash_history
-rw-r--r-- 1 addrozzhanova addrozzhanova 18 июл 19 2023 .bash_logout
-rw-r--r-- 1 addrozzhanova addrozzhanova 144 июл 19 2023 .bash_profile
-rw-r--r-- 1 addrozzhanova addrozzhanova 683 мар 4 14:50 .bashrc
drwx----- 1 addrozzhanova addrozzhanova 452 мар 10 15:28 .cache
drwx----- 1 addrozzhanova addrozzhanova 424 мар 4 14:52 .config
-rw-r--r-- 1 addrozzhanova addrozzhanova 237 мар 4 15:03 .gitconfig
drwxr-xr-x 1 addrozzhanova addrozzhanova 74 мар 4 14:55 git-extended
drwx----- 1 addrozzhanova addrozzhanova 136 фев 28 10:55 .gnupg
drwx----- 1 addrozzhanova addrozzhanova 20 фев 28 10:46 .local
drwxr-xr-x 1 addrozzhanova addrozzhanova 48 фев 28 10:48 .mozilla
drwx----- 1 addrozzhanova addrozzhanova 132 фев 28 10:58 .ssh
drwxr-xr-x 1 addrozzhanova addrozzhanova 10 фев 28 10:57 work
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Видео
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Документы
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Загрузки
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Изображения
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Музыка
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Общедоступные
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 'Рабочий стол'
drwxr-xr-x 1 addrozzhanova addrozzhanova 0 фев 28 10:46 Шаблоны
addrozzhanova@addrozzhanova: ~$
```

Рис. 7: Файлы в домашнем каталоге

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

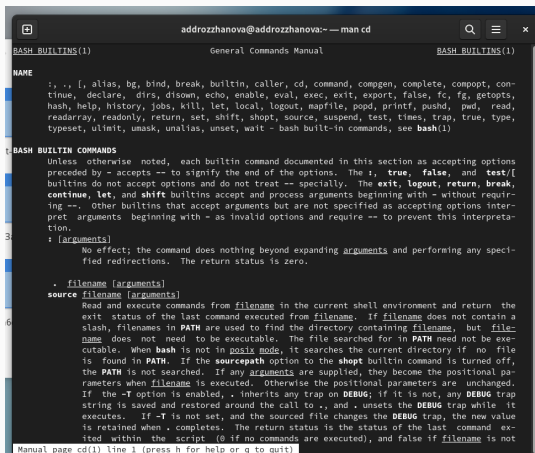
Рис. 8: Действия с каталогами

# Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
3  
./Видео:  
./Документы:  
./Загрузки:  
6 ./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол':  
./Шаблоны:  
addrozzhanova@addrozzhanova:~$ ls -lt  
git-extended Видео Загрузки Музыка 'Рабочий стол'  
work Документы Изображения Общедоступные Шаблоны  
addrozzhanova@addrozzhanova:~$
```

Рис. 9: Команда ls -R и ls -t

# Справка по командам



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

NAME
:, ,, [, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, compopt, continue, declare, dirs, disown, echo, enable, eval, exec, exit, export, false, fc, fg, getopts, hash, help, history, jobs, kill, let, local, logout, mapfile, 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)

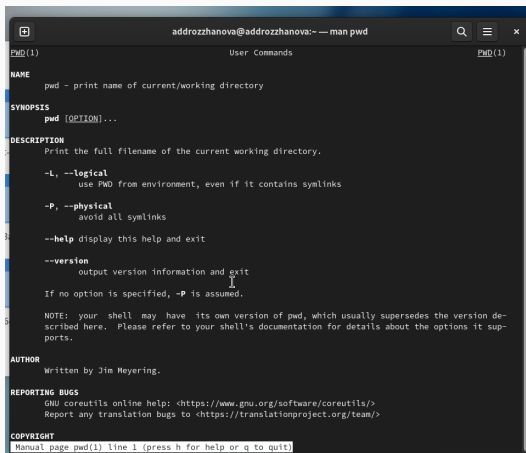
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by - accepts -- to signify the end of the options. The :, true, false, and test/[ builtins do not accept options and do not treat -- specially. The exit, logout, return, break, 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 interpret arguments beginning with - as invalid options and require -- to prevent this interpretation.

: [arguments]
    No effect; the command does nothing beyond expanding arguments and performing 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 executable. 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, . inherits any trap on DEBUG; if it is not, any DEBUG trap string is saved and restored around the call to ., and . unsets the DEBUG trap while it executes. If -T is not set, and the sourced file changes the DEBUG trap, the new value is retained when . completes. The return status is the status of the last command exited within the script (0 if no commands are executed), and false if filename is not found.
```

Рис. 10: Справка по команде cd

# Справка по командам



```
addr0zzhanova@addr0zzhanova:~ — 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.

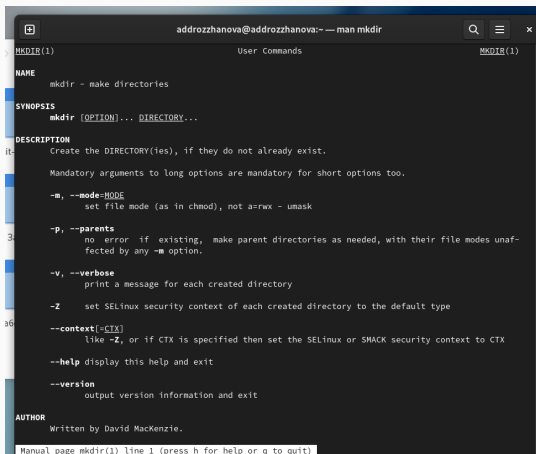
AUTHOR
    Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd





```
addr0zzhanova@addr0zzhanova:~ -- 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

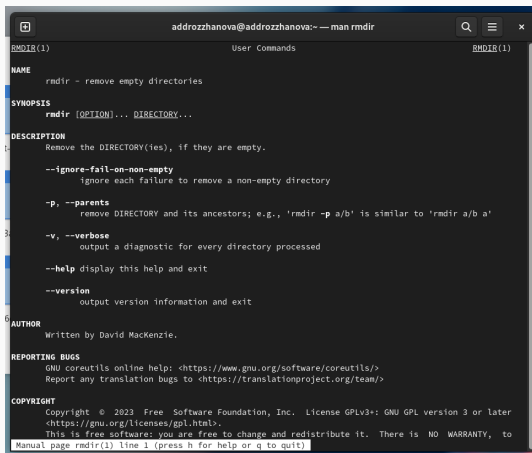
--version
    output version information and exit

AUTHOR
Written by David MacKenzie.

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

Рис. 12: Справка по команде mkdir

# Справка по командам



```
addrozhanova@addrozhanova:~ — 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

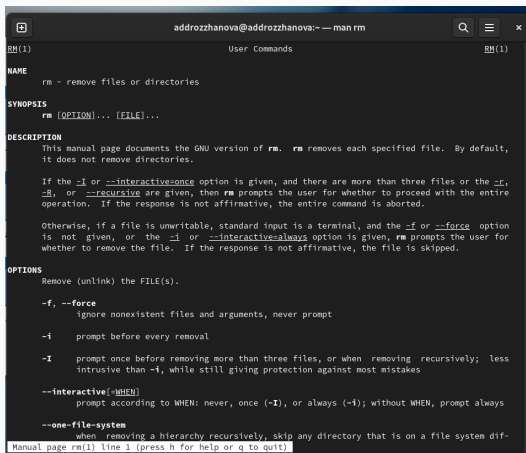
    --version
        output version information and exit

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
    Copyright © 2023 Free Software Foundation, Inc. License GPLv3+: GNU GPL version 3 or later
    <https://gnu.org/licenses/gpl.html>.
    This is free software: you are free to change and redistribute it. There is NO WARRANTY, to
    Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir



```
addrozzhanova@addrozzhanova:~ -- 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 dif-

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

Рис. 14: Справка по команде rm

# История командной строки

```
25 ls
26 ls -al
27 mkdir newdir
28 mkdir newdir/morefun
29 mkdir letters memos misk
30 ls
31 rm letters/ memos/ misk/
32 rm -r letters/ memos/ misk/
33 rm -r newdir/
34 ls
35 ls -R
36 ls -t
37 man cd
38 man pwd
39 man mkdir
40 man rmdir
41 man rm
42 history
addrozzhanova@addrozzhanova:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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