

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

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

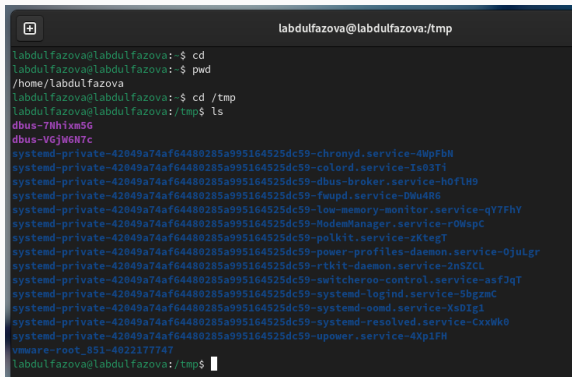
Имя и путь к домашнему каталогу



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls



```
labdulfazova@labdulfazova:/tmp

labdulfazova@labdulfazova:~$ cd
labdulfazova@labdulfazova:~$ pwd
/home/labdulfazova
labdulfazova@labdulfazova:~$ cd /tmp
labdulfazova@labdulfazova:/tmp$ ls
dbus-7Nh1xm5G
dbus-VGjW6N7c
systemd-private-42049a74af64480285a995164525dc59-chronyd.service-4WpFbH
systemd-private-42049a74af64480285a995164525dc59-colord.service-Is03Ti
systemd-private-42049a74af64480285a995164525dc59-dbus-broker.service-h0fLH9
systemd-private-42049a74af64480285a995164525dc59-fwupd.service-DNu4R6
systemd-private-42049a74af64480285a995164525dc59-low-memory-monitor.service-qY7FhY
systemd-private-42049a74af64480285a995164525dc59-ModemManager.service-r0WspC
systemd-private-42049a74af64480285a995164525dc59-polkit.service-zKtegT
systemd-private-42049a74af64480285a995164525dc59-power-profiles-daemon.service-0juLgr
systemd-private-42049a74af64480285a995164525dc59-rtkit-daemon.service-2nSZCL
systemd-private-42049a74af64480285a995164525dc59-switcheroo-control.service-asfJqT
systemd-private-42049a74af64480285a995164525dc59-systemd-logind.service-5bgzmC
systemd-private-42049a74af64480285a995164525dc59-systemd-oomd.service-Xs0Ig1
systemd-private-42049a74af64480285a995164525dc59-systemd-resolved.service-Cxxik0
systemd-private-42049a74af64480285a995164525dc59-upower.service-4Xp1FH
vmware-root_851-4022177747
labdulfazova@labdulfazova:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
labdulfazova@labdulfazova:/tmp$ ls -la
..
dbus-7Nhxm5G
dbus-VGjW6N7c
.font-unix
.ICE-unix
systemd-private-42049a74af64480285a995164525dc59-chronyd.service-4MpFbN
systemd-private-42049a74af64480285a995164525dc59-colord.service-Is03Ti
systemd-private-42049a74af64480285a995164525dc59-dbus-broker.service-h0fLH9
systemd-private-42049a74af64480285a995164525dc59-fwupd.service-DNu4R6
systemd-private-42049a74af64480285a995164525dc59-low-memory-monitor.service-qY7FHY
systemd-private-42049a74af64480285a995164525dc59-ModemManager.service-r0WspC
systemd-private-42049a74af64480285a995164525dc59-polkit.service-zKtegT
systemd-private-42049a74af64480285a995164525dc59-power-profiles-daemon.service-0juLgr
systemd-private-42049a74af64480285a995164525dc59-rtkit-daemon.service-2nSZCL
systemd-private-42049a74af64480285a995164525dc59-switcheroo-control.service-asfJqT
systemd-private-42049a74af64480285a995164525dc59-systemd-logind.service-5bgzmC
systemd-private-42049a74af64480285a995164525dc59-systemd-oomd.service-XsDIg1
systemd-private-42049a74af64480285a995164525dc59-systemd-resolved.service-CxxWk0
systemd-private-42049a74af64480285a995164525dc59-upower.service-4Xp1FH
vmware-root_.851-4022177747
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
labdulfazova@labdulfazova:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
labdufzazova@labdufzazova: /tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 map 7 15:21 dbus-7Nhixm5G
srw-rw-rw-. 1 root root 0 map 7 15:21 dbus-VGjW6N7c
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-chronyd.service-4WpFbN
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-color.service-Is03Ti
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-dbus-broker.service-h0F
lH9
drwx----- 3 root root 60 map 7 15:24 systemd-private-42049a74af64480285a995164525dc59-fwupd.service-DMu4R6
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-low-memory-monitor.serv
ice-qY7FRY
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-ModemManager.service-r0
WapC
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-polkit.service-zKtegT
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-power-profiles-daemon.s
ervice-0julgr
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-rtkit-daemon.service-2n
SZCL
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-switcheroo-control.serv
ice-asfJgT
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-systemd-logind.service-
5bgzmC
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-systemd-oned.service-Xs
0Igi
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-systemd-resolved.servic
e-CxxWk0
drwx----- 3 root root 60 map 7 15:21 systemd-private-42049a74af64480285a995164525dc59-upower.service-4XpIFH
drwx----- 2 root root 40 map 7 15:21 vmware-root_851-4022177747
labdufzazova@labdufzazova: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
labdulfazova@labdulfazova:~/tmp$  
labdulfazova@labdulfazova:~/tmp$ ls -f  
..  
..  
systemd-private-42049a74af64480285a995164525dc59-fwupd.service-DWu4R6  
.X1-lock  
.X0-lock  
systemd-private-42049a74af64480285a995164525dc59-colord.service-Is03Ti  
.X1025-lock  
.X1024-lock  
dbus-VGjW6N7c  
dbus-7Nhxm5G  
systemd-private-42049a74af64480285a995164525dc59-ModemManager.service-r0WspC  
vmware-root_851-4022177747  
systemd-private-42049a74af64480285a995164525dc59-upower.service-4Xp1FH  
systemd-private-42049a74af64480285a995164525dc59-systemd-logind.service-5bgzmC  
systemd-private-42049a74af64480285a995164525dc59-switcheroo-control.service-asfJqT  
systemd-private-42049a74af64480285a995164525dc59-rtkit-daemon.service-2nSZCL  
systemd-private-42049a74af64480285a995164525dc59-power-profiles-daemon.service-0juLgr  
systemd-private-42049a74af64480285a995164525dc59-polkit.service-zKtegT  
systemd-private-42049a74af64480285a995164525dc59-low-memory-monitor.service-qY7FHY  
systemd-private-42049a74af64480285a995164525dc59-chronyd.service-4WpFbN  
systemd-private-42049a74af64480285a995164525dc59-dbus-broker.service-h0fLH9  
systemd-private-42049a74af64480285a995164525dc59-systemd-resolved.service-CxxlWk0  
systemd-private-42049a74af64480285a995164525dc59-systemd-oond.service-XsDIg1  
.font-unix  
.XIM-unix  
.ICE-unix  
.X11-unix  
labdulfazova@labdulfazova:~/tmp$
```

Рис. 5: Команда ls -f

```
labdulfazova@labdulfazova:/tmp$ cd /var/spool/  
labdulfazova@labdulfazova:/var/spool$ ls  
abrt  abrt-upload  cups  lpd  mail  plymouth  
labdulfazova@labdulfazova:/var/spool$ ls -al  
итого 0  
drwxr-xr-x. 1 root root   68 ноя  1 04:09 .  
drwxr-xr-x. 1 root root  200 ноя  1 04:15 ..  
drwxr-x--x. 1 root abrt 1366 мар  7 15:21 abrt  
drwx-----. 1 abrt abrt    0 июл 19  2023 abrt-upload  
drwx--x---. 1 root lp     6 ноя  1 04:09 cups  
drwxr-xr-x. 1 root root    0 июл 21  2023 lpd  
drwxrwxr-x. 1 root mail 1178 мар  6 14:27 mail  
drwxr-xr-x. 1 root root    0 июл 21  2023 plymouth  
labdulfazova@labdulfazova:/var/spool$
```

Рис. 6: Каталог /var/spool

Домашний каталог

```
labdulfazova@labdulfazova:~$ ls -la
total 20
drwxr-xr-x 1 labdulfazova labdulfazova 498 мар 1 23:12 .
drwxr-xr-x 1 root root 1172 мар 6 14:27 ..
-rw-r--r-- 1 labdulfazova labdulfazova 2808 мар 1 23:25 .bash_history
-rw-r--r-- 1 labdulfazova labdulfazova 18 июл 19 2023 .bash_logout
-rw-r--r-- 1 labdulfazova labdulfazova 144 июл 19 2023 .bash_profile
-rw-r--r-- 1 labdulfazova labdulfazova 682 мар 1 23:11 .bashrc
drwxr-xr-x 1 labdulfazova labdulfazova 418 мар 1 23:13 .cache
drwxr-xr-x 1 labdulfazova labdulfazova 424 мар 1 23:13 .config
-rw-r--r-- 1 labdulfazova labdulfazova 236 мар 1 23:10 .gitconfig
drwxr-xr-x 1 labdulfazova labdulfazova 74 мар 1 23:16 git-extended
drwxr-xr-x 1 labdulfazova labdulfazova 136 фев 10 18:00 .gnupg
drwxr-xr-x 1 labdulfazova labdulfazova 20 фев 10 17:42 .local
drwxr-xr-x 1 labdulfazova labdulfazova 48 фев 10 17:43 .mozilla
drwxr-xr-x 1 labdulfazova labdulfazova 132 фев 10 18:02 .ssh
drwxr-xr-x 1 labdulfazova labdulfazova 10 фев 10 18:02 work
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Видео
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Документы
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Загрузки
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Изображения
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Музыка
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Общедоступные
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 'Рабочий стол'
drwxr-xr-x 1 labdulfazova labdulfazova 0 фев 10 17:42 Шаблоны
labdulfazova@labdulfazova:~$
```

Рис. 7: Файлы в домашнем каталоге

```
labdulfazova@labdulfazova:~$ mkdir newdir
labdulfazova@labdulfazova:~$ mkdir newdir/morefun
labdulfazova@labdulfazova:~$ mkdir letters memos misk
labdulfazova@labdulfazova:~$ ls
git-extended  memos  newdir  Видео  Загрузки  Музыка  'Рабочий стол'
letters       misk   work    Документы  Изображения  Общедоступные  Шаблоны
labdulfazova@labdulfazova:~$ em letters/ memos/ misk/
bash: em: команда не найдена...
labdulfazova@labdulfazova:~$ rm letters/ memos/ misk/
rm: невозможно удалить 'letters/': Это каталог
rm: невозможно удалить 'memos/': Это каталог
rm: невозможно удалить 'misk/': Это каталог
labdulfazova@labdulfazova:~$ rm -r letters/ memos/ misk/
labdulfazova@labdulfazova:~$ rm -r newdir/
labdulfazova@labdulfazova:~$ ls
git-extended  Видео  Загрузки  Музыка  'Рабочий стол'
work          Документы  Изображения  Общедоступные  Шаблоны
labdulfazova@labdulfazova:~$
```

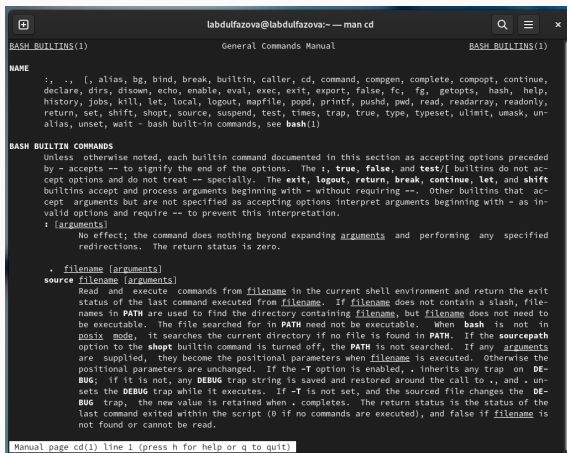
Рис. 8: Действия с каталогами

Опции команды ls

```
'./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':  
core.py __init__.py main.py pandocattributes.py  
  
'./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол':  
./Шаблоны:  
labdulfazova@labdulfazova:~$ ls -lt  
git-extended Видео Загрузки Музыка 'Рабочий стол'  
work Документы Изображения Общедоступные Шаблоны  
labdulfazova@labdulfazova:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
labdulfazova@labdulfazova:~ — 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 , un-
alias , unset , wait - bash built-in commands, see bash(1)

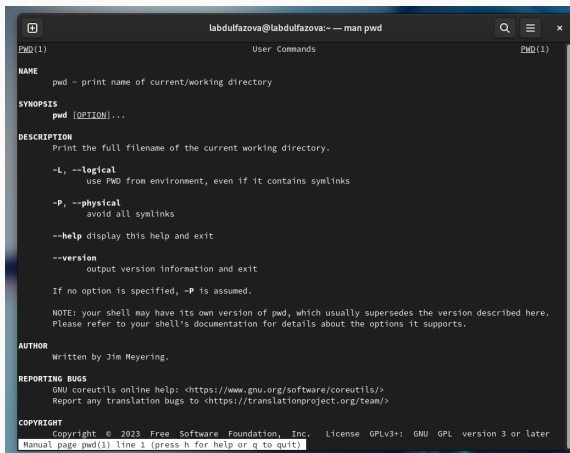
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded
by - accepts -- to signify the end of the options. The i, true, false, and test/f builtins do not ac-
cept options and do not treat -- specially. The exit, logout, return, break, continue, let, and shift
builtins accept and process arguments beginning with - without requiring --. Other builtins that ac-
cept arguments but are not specified as accepting options interpret arguments beginning with - as in-
valid options and require -- to prevent this interpretation.
i [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, file-
    names 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 DE-
    BUG; if it is not, any DEBUG trap string is saved and restored around the call to ., and . un-
    sets the DEBUG trap while it executes. If -T is not set, and the sourced file changes the DE-
    BUG 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 or cannot be read.

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

Рис. 10: Справка по команде cd

Справка по командам



```
labdulfazova@labdulfazova:~ -- 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.

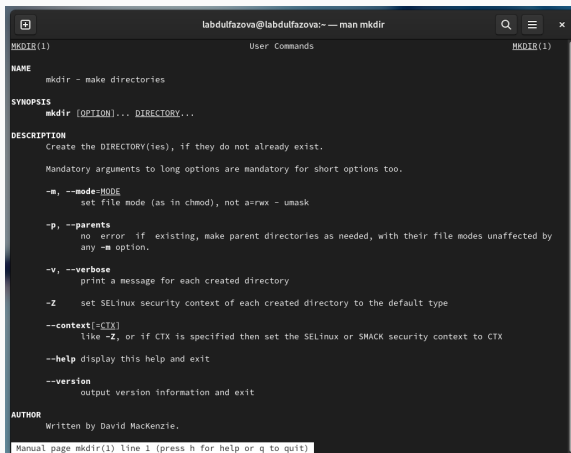
AUTHOR
  Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd

Справка по командам



```
labdulfazova@labdulfazova:~ — 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 SHACK security context to CTX

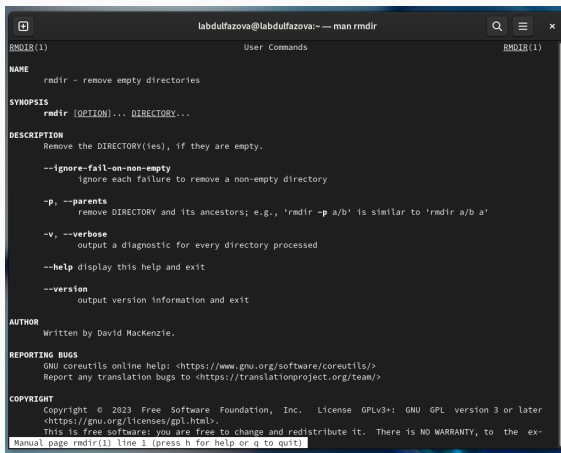
  --help
      display this help and exit

  --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



```
labdulfazova@labdulfazova:~ — 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

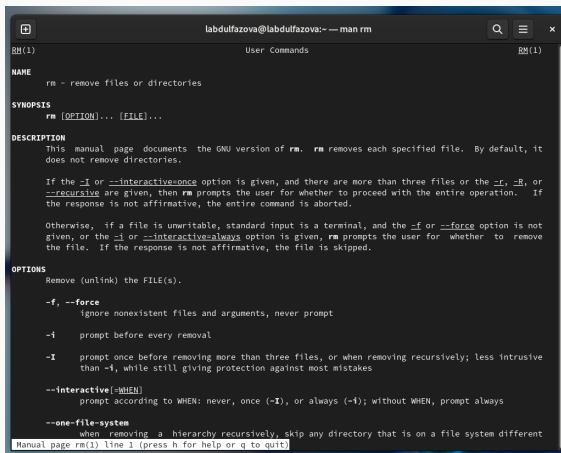
    --version
        output version information and exit

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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    <https://gnu.org/licenses/gpl.html>.
    This is free software: you are free to change and redistribute it. There is NO WARRANTY, to the ex-
    Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir



```
labdulfazova@labdulfazova:~ -- 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 different

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

Рис. 14: Справка по команде rm

История командной строки

```
117 cd /var/spool/
118 ls
119 ls -al
120 cd
121 ls
122 ls -al
123 mkdir newdir
124 mkdir newdir/morefun
125 mkdir letters memos misk
126 ls
127 em letters/ memos/ misk/
128 rm letters/ memos/ misk/
129 rm -r letters/ memos/ misk/
130 rm -r newdir/
131 ls
132 ls -r
133 ls -R
134 ls -t
135 man cd
136 man mkdir
137 man rmdir
138 man rm
139 man pwd
140 history
labdulfazova@labdulfazova:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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