

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Николай Рыбалко¹

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¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

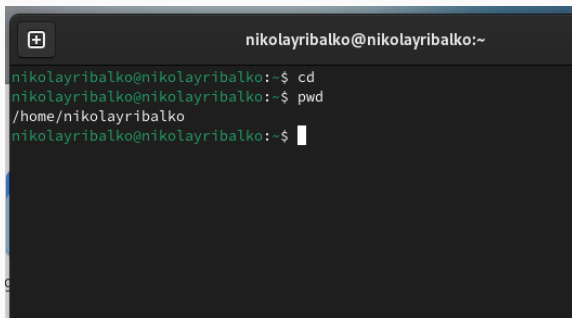
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

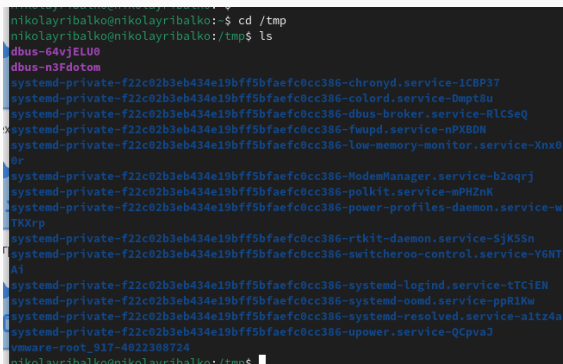
Имя и путь к домашнему каталогу



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls



```
nikolayribalko@nikolayribalko:~$ cd /tmp
nikolayribalko@nikolayribalko:/tmp$ ls
dbus-64vjELU0
dbus-n3Fdotom
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-chrond.service-1CBP37
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-colord.service-Dmpt8u
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-dbus-broker.service-RlCSeQ
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-fwupd.service-nPXBDN
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-low-memory-monitor.service-Xnx0
0r
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-ModemManager.service-b2oqrj
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-polkit.service-mPHZNk
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-power-profiles-daemon.service-w
TKXrp
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-rtkit-daemon.service-SjK5Sn
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-switcheroo-control.service-Y6NT
Ai
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-logind.service-tTCiEN
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-oond.service-ppRIKw
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-resolved.service-altz4a
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-upower.service-QCpvaJ
vmware-root_917-4022308724
nikolayribalko@nikolayribalko:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
nikolayribalko@nikolayribalko:/tmp$ ls -la
..
dbus-64vjELU0
dbus-n3Fdotom
.font-unix
.ICE-unix
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-chrond.service-1CBP37
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-colord.service-Dmpt8u
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-dbus-broker.service-RLCSeQ
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-fwupd.service-nPXBDN
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-low-memory-monitor.service-Xnx00r
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-ModemManager.service-b2oqrj
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-polkit.service-mPHZnK
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-power-profiles-daemon.service-wTKXrp
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-rtkit-daemon.service-SjK5Sn
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-switcheroo-control.service-Y6NTAi
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-logind.service-tTCiEN
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-oomd.service-ppRlKw
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-resolved.service-altz4a
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-unpower.service-0Rpuq1
```

Рис. 3: Команда ls -a

Опции команды ls

```
nikolayribalko@nikolayribalko:~$  
nikolayribalko@nikolayribalko:/$  
итого 0  
srw-rw-rw-. 1 root root 0 map 10 12:11 dbus-64vj8LU0  
srw-rw-rw-. 1 root root 0 map 10 12:11 dbus-n3fdotom  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-chromyd.service-1CBP37  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-colored.service-bep8u  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-dbus-braker.service-R1CSeQ  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-fwupd.service-nFX8D8  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-low-memory-monitor.service-xnx00r  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-ModemManager.service-b2oqrj  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-polkit.service-wPMZm  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-power-profiles-daemon.service-wTXrp  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-rtkit-daemon.service-5JX56  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-switcheroo-control.service-Y0NTAI  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-systemd-logind.service-TTCIEH  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-systemd-oomd.service-pgR1Kw  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-systemd-resolved.service-altz4a  
drwx----- 3 root root 60 map 10 12:11 systemd-private-f22c82b3eb434e19bfff5bfaefc8cc386-upower.service-QCpva3  
drwx----- 2 root root 40 map 10 12:11 vmware-root_917-4022309724  
nikolayribalko@nikolayribalko:/$
```

Рис. 4: Команда ls -l

Опции команды ls

```
nikolayribalko@nikolayribalko:~$ cd /tmp
nikolayribalko@nikolayribalko:/tmp$ ls -f
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-oomd.service-ppR1Kw
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-resolved.service-altz4a
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-dbus-broker.service-RLCSeQ
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-chronyd.service-1CBP37
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-low-memory-monitor.service-Xnx00r
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-polkit.service-mPHZnK
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-powertop.service-wTKXrp
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-rtkit-daemon.service-SjK5Sn
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-switcheroo-control.service-Y6NTAi
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-systemd-logind.service-tTCiEN
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-upower.service-QCpvaJ
vmware-root_917-4022308724
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-ModemManager.service-b2oqrj
dbus-n3Fdotom
dbus-64vjELU0
.X1024-lock
.X1025-lock
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-colord.service-Dmpt8u
.X0-lock
.X1-lock
systemd-private-f22c02b3eb434e19bff5bfaefc0cc386-fwupd.service-nPXBND
nikolayribalko@nikolayribalko:/tmp$
```

Рис. 5: Команда ls -f

```
nikolayribalko@nikolayribalko:/tmp$  
nikolayribalko@nikolayribalko:/tmp$  
nikolayribalko@nikolayribalko:/tmp$ cd /var/spool/  
nikolayribalko@nikolayribalko:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар  8 19:18 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  
nikolayribalko@nikolayribalko:/var/spool$
```

Рис. 6: Каталог /var/spool

```
nikolayribalko@nikolayribalko:~/var/spool$ cd
nikolayribalko@nikolayribalko:~$ ls
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
nikolayribalko@nikolayribalko:~$ ls -al
итого 20
drwx-----, 1 nikolayribalko nikolayribalko 496 мар  4 11:33 .
drwxr-xr-x, 1 root root 1216 мар  8 17:40 ..
-rw-r-----, 1 nikolayribalko nikolayribalko 2866 мар  4 11:33 .bash_history
-rw-r--r--, 1 nikolayribalko nikolayribalko 10 июл 19 2023 .bash_logout
-rw-r--r--, 1 nikolayribalko nikolayribalko 144 июл 19 2023 .bash_profile
-rw-r--r--, 1 nikolayribalko nikolayribalko 684 мар  4 11:22 .bashrc
drwx-----, 1 nikolayribalko nikolayribalko 452 мар 10 12:13 .cache
drwx-----, 1 nikolayribalko nikolayribalko 402 мар  4 11:24 .config
-rw-r--r--, 1 nikolayribalko nikolayribalko 238 мар  4 11:33 .gitconfig
drwxr-xr-x, 1 nikolayribalko nikolayribalko 74 мар  4 11:27 git-extended
drwx-----, 1 nikolayribalko nikolayribalko 136 мар  4 11:23 .gnupg
drwx-----, 1 nikolayribalko nikolayribalko 20 фев 26 10:30 .local
drwxr-xr-x, 1 nikolayribalko nikolayribalko 48 фев 26 10:32 .mozilla
drwx-----, 1 nikolayribalko nikolayribalko 132 фев 26 10:54 .ssh
drwxr-xr-x, 1 nikolayribalko nikolayribalko 10 фев 26 10:51 work
drwxr-xr-x, 1 nikolayribalko nikolayribalko 0 фев 26 10:30 Видео
drwxr-xr-x, 1 nikolayribalko nikolayribalko 0 фев 26 10:30 Документы
drwxr-xr-x, 1 nikolayribalko nikolayribalko 0 фев 26 10:30 Загрузки
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

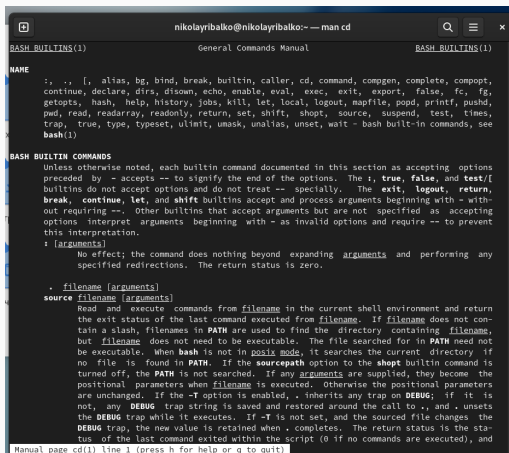
Опции команды ls

```
П ' ./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':
image-report mpv-shot

./Видео:
./Документы:
./Загрузки:
./Изображения:
./Музыка:
./Общедоступные:
'./Рабочий стол':
./Шаблоны:
nikolayribalko@nikolayribalko:~$ ls -t
git-extended Видео Изображения Загрузки 'Рабочий стол'
work Документы Музыка Общедоступные Шаблоны
nikolayribalko@nikolayribalko:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам

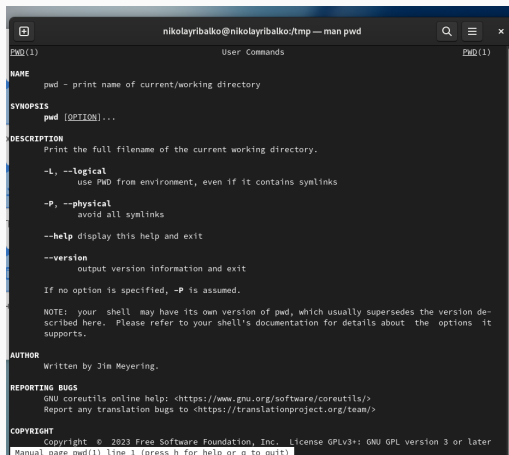


```
nikolayribalko@nikolayribalko:~ — man cd
BASH BUILTINS(1)                                General Commands Manual                                BASH BUILTINS(1)

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 - with-
out 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 con-
tain 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 sta-
tus of the last command exited within the script (0 if no commands are executed), and
Manual page cd(1) line 1 (press h for help or q to quit)
```

Рис. 10: Справка по команде cd



```
nikolayribalko@nikolayribalko/tmp — 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.

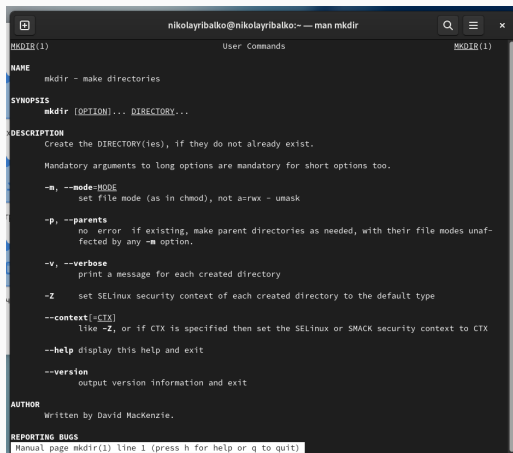
NOTE: your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to your shell's documentation for details about the options it supports.

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



```
nikolayribalko@nikolayribalko:~ -- 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

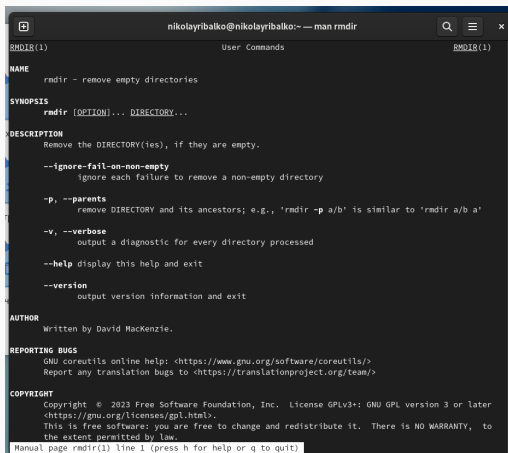
  --help
        display this help and exit

  --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



```
nikolayribalko@nikolayribalko:~$ 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

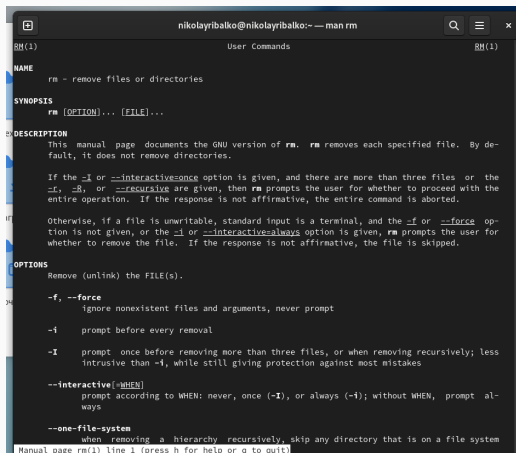
AUTHOR
  Written by David MacKenzie.

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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  the extent permitted by law.

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

Рис. 13: Справка по команде rmdir



```
nikolayribalko@nikolayribalko:~ — 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

```
121 ls
122 ls -al
123 mkdir newdir
124 mkdir newdir/morefun
125 mkdir letters memos misk
126 ls
127 rm letters/ memos/ misk/
128 rm -r letters/ memos/ misk/
129 rm -r newdir/
130 ls
131 ls -R
132 ls -t
133 man cd
134 man pwd
135 man mkdir
136 man rmdir
137 man rm
138 history
nikolayribalko@nikolayribalko:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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