

# 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.

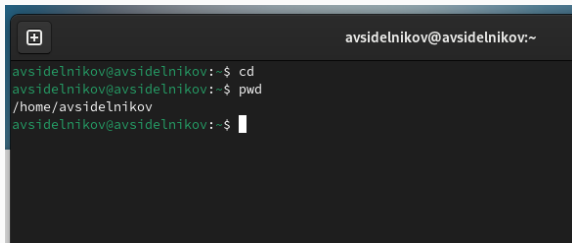
# Задачи лабораторной работы

- 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



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

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
avsidelnikov@avsidelnikov:~$ cd /tmp
avsidelnikov@avsidelnikov:/tmp$ ls
dbus-PTgSERWa
dbus-qLNbLp4F
systemd-private-eff039c763e6433aadda650359427f7c-chronyd.service-rKqJF1
systemd-private-eff039c763e6433aadda650359427f7c-colord.service-9pP6vE
systemd-private-eff039c763e6433aadda650359427f7c-dbus-broker.service-uBSmK1
systemd-private-eff039c763e6433aadda650359427f7c-fwupd.service-t3e9sk
systemd-private-eff039c763e6433aadda650359427f7c-low-memory-monitor.service-13WcuH
systemd-private-eff039c763e6433aadda650359427f7c-ModemManager.service-IUrIie
systemd-private-eff039c763e6433aadda650359427f7c-polkit.service-2D6W0K
systemd-private-eff039c763e6433aadda650359427f7c-power-profiles-daemon.service-02x5ZR
systemd-private-eff039c763e6433aadda650359427f7c-rtkit-daemon.service-yqluTj
systemd-private-eff039c763e6433aadda650359427f7c-switcheroo-control.service-ZNOKUj
systemd-private-eff039c763e6433aadda650359427f7c-systemd-logind.service-ASg7z6
systemd-private-eff039c763e6433aadda650359427f7c-systemd-oemd.service-Xsljcm
systemd-private-eff039c763e6433aadda650359427f7c-systemd-resolved.service-1DrFh4
systemd-private-eff039c763e6433aadda650359427f7c-upower.service-Mf5BpL
vmware-root_866-2722763301
avsidelnikov@avsidelnikov:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
avsideInikov@avsideInikov:/tmp$ ls -a
.
..
dbus-PTgSERWa
dbus-qLNbLp4F
.font-unix
.ICE-unix
systemd-private-eff039c763e6433aadda650359427f7c-chrond.service-rKq3F1
systemd-private-eff039c763e6433aadda650359427f7c-colord.service-9pP6vE
systemd-private-eff039c763e6433aadda650359427f7c-dbus-broker.service-uBSmK1
systemd-private-eff039c763e6433aadda650359427f7c-fwupd.service-t3e9sk
systemd-private-eff039c763e6433aadda650359427f7c-low-memory-monitor.service-13WcuH
systemd-private-eff039c763e6433aadda650359427f7c-ModemManager.service-I0rIie
systemd-private-eff039c763e6433aadda650359427f7c-polkit.service-2D6W0K
systemd-private-eff039c763e6433aadda650359427f7c-power-profiles-daemon.service-02x5ZR
systemd-private-eff039c763e6433aadda650359427f7c-rtkit-daemon.service-yqluTj
systemd-private-eff039c763e6433aadda650359427f7c-switcheroo-control.service-ZNOKUj
systemd-private-eff039c763e6433aadda650359427f7c-systemd-logind.service-ASg7z6
systemd-private-eff039c763e6433aadda650359427f7c-systemd-oomd.service-XsLjcm
systemd-private-eff039c763e6433aadda650359427f7c-systemd-resolved.service-1DrFh4
systemd-private-eff039c763e6433aadda650359427f7c-upower.service-Hf5BpL
vmware-root_866-2722763301
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
avsideInikov@avsideInikov:/tmp$
```

Рис. 3: Команда ls -a



# Опции команды ls

```
avast@lnikov@avast:~/lnikov$ ls -l
итого 0
srwx-rw-rw-. 1 root root 0 мар 8 11:11 dbus-PTGSErWA
srwx-rw-rw-. 1 root root 0 мар 8 11:11 dbus-qLNBp4F
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-chromyd.service-r6QF1
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-caldred.service-9pP0d
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-dbus-broker.service-u85uK1
drwx----- 3 root root 60 мар 8 11:12 systemd-private-eff039c763e6433aadda650359427ffc-fwupd.service-t3e9sk
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-low-memory-monitor.service-13WcuH
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-ModemManager.service-1UxTie
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-polkkit.service-2B0WKK
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-power-profiles-daemon.service-02x5ZB
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-rbkit-daemon.service-yqluTj
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-switcheroo-control.service-ZM0KUj
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-systemd-logind.service-ASg7z6
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-systemd-oomd.service-XoIjcn
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-systemd-rsolved.service-1DrFh4
drwx----- 3 root root 60 мар 8 11:11 systemd-private-eff039c763e6433aadda650359427ffc-upower.service-MF58pi
drwx----- 2 root root 40 мар 8 11:11 vmware-root_866-2722763301
avast@lnikov$ avast@lnikov: /tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
avside@avside:~/tmp$ ls -f
..
systemd-private-eff039c763e6433aadda650359427f7c-fwupd.service-t3e9sk
.X1-lock
.X0-lock
systemd-private-eff039c763e6433aadda650359427f7c-colord.service-9pP6vE
.X1025-lock
.X1024-lock
dbus-QLNblp4F
dbus-PTgSERWa
systemd-private-eff039c763e6433aadda650359427f7c-ModemManager.service-IUrIie
vmware-root_866-2722763301
systemd-private-eff039c763e6433aadda650359427f7c-upower.service-Mf5BpL
systemd-private-eff039c763e6433aadda650359427f7c-systemd-logind.service-ASg7z6
systemd-private-eff039c763e6433aadda650359427f7c-switcheroo-control.service-ZMOKUj
systemd-private-eff039c763e6433aadda650359427f7c-rtkit-daemon.service-yqluTj
systemd-private-eff039c763e6433aadda650359427f7c-power-profiles-daemon.service-02x5ZR
systemd-private-eff039c763e6433aadda650359427f7c-polkit.service-2D6W0K
systemd-private-eff039c763e6433aadda650359427f7c-low-memory-monitor.service-13WcuH
systemd-private-eff039c763e6433aadda650359427f7c-chrond.service-rKqJF1
systemd-private-eff039c763e6433aadda650359427f7c-dbus-broker.service-uBSmK1
systemd-private-eff039c763e6433aadda650359427f7c-systemd-resolved.service-1DrFh4
systemd-private-eff039c763e6433aadda650359427f7c-systemd-oomd.service-XsLjcm
.font-unix
.IM-unix
.ICE-unix
.X11-unix
avside@avside:~/tmp$
```

Рис. 5: Команда ls -f

```
avsidelnikov@avsidelnikov:/tmp$  
avsidelnikov@avsidelnikov:/tmp$ cd /var/spool/  
avsidelnikov@avsidelnikov:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1436 мар  7 16:33 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  
avsidelnikov@avsidelnikov:/var/spool$
```

Рис. 6: Каталог /var/spool

```
avsidelnikov@avsidelnikov: /var/spool$ cd
avsidelnikov@avsidelnikov: $ ls
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
avsidelnikov@avsidelnikov: $ ls -al
итого 20
drwx----- 1 avsidelnikov avsidelnikov 496 map 2 12:15 .
drwxr-xr-x 1 root root 1172 map 6 14:27 ..
-rw----- 1 avsidelnikov avsidelnikov 216 map 2 12:25 .bash_history
-rw-r--r-- 1 avsidelnikov avsidelnikov 18 mon 19 2023 .bash_logout
-rw-r--r-- 1 avsidelnikov avsidelnikov 144 mon 19 2023 .bash_profile
-rw-r--r-- 1 avsidelnikov avsidelnikov 682 map 2 12:14 .bashrc
drwx----- 1 avsidelnikov avsidelnikov 418 map 2 12:16 .cache
drwx----- 1 avsidelnikov avsidelnikov 424 map 2 12:16 .config
-rw-r--r-- 1 avsidelnikov avsidelnikov 237 feb 26 17:57 .gitconfig
drwxr-xr-x 1 avsidelnikov avsidelnikov 74 map 2 12:19 git-extended
drwx----- 1 avsidelnikov avsidelnikov 136 feb 14 11:40 .gnupg
drwx----- 1 avsidelnikov avsidelnikov 20 feb 14 11:15 .local
drwxr-xr-x 1 avsidelnikov avsidelnikov 48 feb 14 11:32 .mozilla
drwx----- 1 avsidelnikov avsidelnikov 132 feb 14 11:44 .ssh
drwxr-xr-x 1 avsidelnikov avsidelnikov 10 feb 14 11:43 work
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Видео
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Документы
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Загрузки
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Изображения
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Музыка
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Общедоступные
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 'Рабочий стол'
drwxr-xr-x 1 avsidelnikov avsidelnikov 0 feb 14 11:15 Шаблоны
avsidelnikov@avsidelnikov: $
```

Рис. 7: Файлы в домашнем каталоге

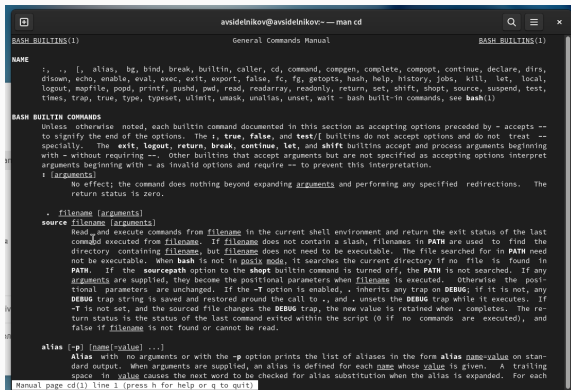
```
avsideInikov@avsideInikov:~$  
avsideInikov@avsideInikov:~$ mkdir newdir  
avsideInikov@avsideInikov:~$ mkdir newdir/morefun  
avsideInikov@avsideInikov:~$ mkdir letters memos misk  
avsideInikov@avsideInikov:~$ ls  
git-extended  memos  newdir  Видео  Загрузки  Музыка  'Рабочий стол'  
letters 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

Рис. 8: Действия с каталогами

# Опции команды ls

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

Рис. 9: Команда ls -R и ls -t



```
avsidelnikov@avsidelnikov:~ — man cd
BASH_BUILTINS(1) General Commands Manual BASH_BUILTINS(1)

NAME
:  ., .x, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, compopt, continue, declare, dirs,
disown, echo, enable, eval, exec, exit, export, false, fg, fg, getopts, hash, help, history, job, 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.

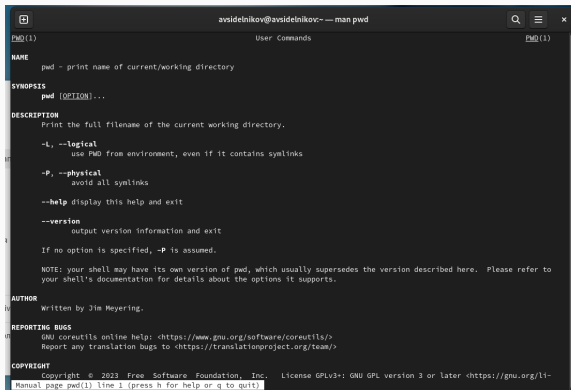
: \[arguments\]
    No effect; the command does nothing beyond expanding arguments and performing any specified redirections. The
    return status is zero.

. 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 re-
    turn 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.

alias [-p] [name[=value] ...]
    Alias with no arguments or with the -p option prints the list of aliases in the form alias name=value on stan-
    dard output. When arguments are supplied, an alias is defined for each name whose value is given. A trailing
    space in value causes the next word to be checked for alias substitution when the alias is expanded. For each

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

Рис. 10: Справка по команде cd



The screenshot shows a terminal window titled "avsidelnikov@avsidelnikov:~ — man pwd". The terminal displays the manual page for the 'pwd' command. The content is as follows:

```
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.

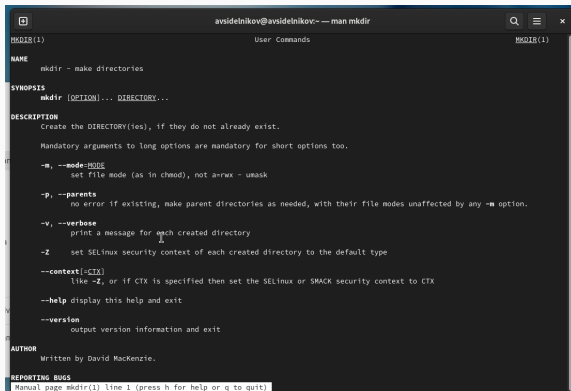
AUTHOR
  Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd





```
avsidelnikov@avsidelnikov:~$ 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

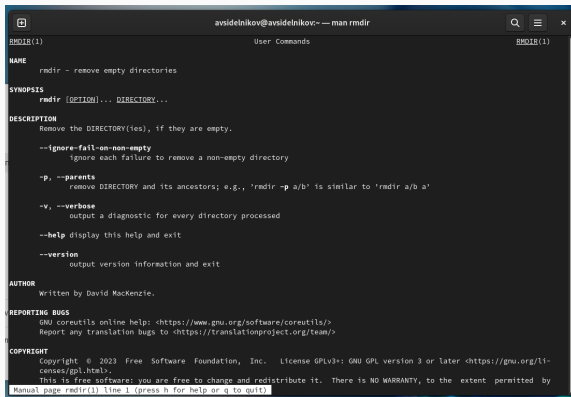
  --help
      display this help and exit

  --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



```
avsidelnikov@avsidelnikov:~ -- 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

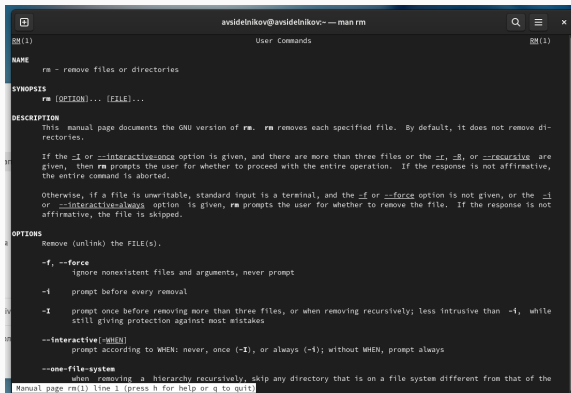
    --version
        output version information and exit

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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    This is free software; you are free to change and redistribute it. There is NO WARRANTY, to the extent permitted by
    Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir



```
avsidebnikov@avsidebnikov:~ — 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 di-
  rectories.

  If the -I or --interactive=once option is given, and there are more than three files or the -f, -I, 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 from that of the

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

Рис. 14: Справка по команде rm

# История командной строки

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

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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