

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

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Гадаборшев Заур Закреевич НПИбд-01-23<sup>1</sup>

7 марта, 2024, Москва, Россия

<sup>1</sup>Российский Университет Дружбы Народов

# Цели и задачи работы

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## Цель лабораторной работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

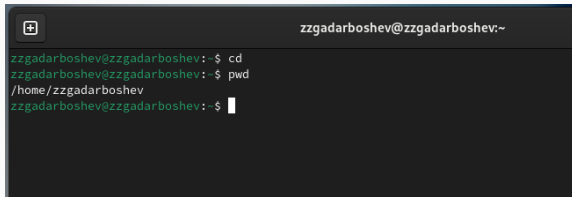
# Задачи лабораторной работы

- 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



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

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
zzgadarboshev@zzgadarboshev:~$ cd /tmp
zzgadarboshev@zzgadarboshev:/tmp$ ls
dbus-BtqQKF4F
dbus-HKth3Ygo
systemd-private-ae8393d2410f476893834426d294e153-chronyd.service-JE8cUt
systemd-private-ae8393d2410f476893834426d294e153-colord.service-IvPt0v
systemd-private-ae8393d2410f476893834426d294e153-dbus-broker.service-3hUe9d
systemd-private-ae8393d2410f476893834426d294e153-fwupd.service-SE9VaI
systemd-private-ae8393d2410f476893834426d294e153-low-memory-monitor.service-NLIWZ5
systemd-private-ae8393d2410f476893834426d294e153-ModemManager.service-lIRnhm
systemd-private-ae8393d2410f476893834426d294e153-polkit.service-KNyrKA
systemd-private-ae8393d2410f476893834426d294e153-power-profiles-daemon.service-9GRvbj
systemd-private-ae8393d2410f476893834426d294e153-rtkit-daemon.service-3HJbZp
systemd-private-ae8393d2410f476893834426d294e153-switcheroo-control.service-7Jb7A4
systemd-private-ae8393d2410f476893834426d294e153-systemd-logind.service-P1FTAN
systemd-private-ae8393d2410f476893834426d294e153-systemd-oomd.service-zYC9IE
systemd-private-ae8393d2410f476893834426d294e153-systemd-resolved.service-BoqsAu
systemd-private-ae8393d2410f476893834426d294e153-upower.service-XLm1VB
vmware-root_864-2731217831
zzgadarboshev@zzgadarboshev:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
zzgadarboshev@zzgadarboshev:/tmp$ ls -a
.
..
dbus-BtqQKF4F
dbus-HKth3Ygo
.font-unix
.ICE-unix
systemd-private-ae8393d2410f476893834426d294e153-chronyd.service-JE8cUt
systemd-private-ae8393d2410f476893834426d294e153-colord.service-IvPt0v
systemd-private-ae8393d2410f476893834426d294e153-dbus-broker.service-JhUe9d
systemd-private-ae8393d2410f476893834426d294e153-fwupd.service-SE9VaI
systemd-private-ae8393d2410f476893834426d294e153-low-memory-monitor.service-NLIWZ5
systemd-private-ae8393d2410f476893834426d294e153-ModemManager.service-liRnhm
systemd-private-ae8393d2410f476893834426d294e153-polkit.service-KHyrKA
systemd-private-ae8393d2410f476893834426d294e153-power-profiles-daemon.service-9GRVbj
systemd-private-ae8393d2410f476893834426d294e153-rtkit-daemon.service-3HJbZp
systemd-private-ae8393d2410f476893834426d294e153-switcheroo-control.service-7Jb7A4
systemd-private-ae8393d2410f476893834426d294e153-systemd-logind.service-P1FTAN
systemd-private-ae8393d2410f476893834426d294e153-systemd-oomd.service-zYC9IE
systemd-private-ae8393d2410f476893834426d294e153-systemd-resolved.service-BoqsAu
systemd-private-ae8393d2410f476893834426d294e153-upower.service-XLmiYB
vmware-root_864-2731217831
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
zzgadarboshev@zzgadarboshev:/tmp$
```

Рис. 3: Команда ls -a



# Опции команды ls

```
zzgadarboshev@zzgadarboshev:/tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 map 7 18:20 dbus-BtqKF4F
srw-rw-rw-. 1 root root 0 map 7 18:20 dbus-HKth3Ygo
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-chronyd.service-3E8Cu
t
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-colord.service-ivPt0v
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-dbus-broker.service-J
hUehd
drwx-----, 3 root root 60 map 7 18:21 systemd-private-ae8393d2410f476893834426d294e153-fwupd.service-SE9VaI
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-low-memory-monitor.se
rvice-RLIMZ5
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-ModemManager.service-
V1knha
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-polkit.service-KMyrKA
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-power-profiles-daemon
.service-9GRvbj
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-rtkit-daemon.service-
3ak3zp
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-switcheroo-control.se
rvice-T3U7AA
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-systemd-logind.servic
e-P1FTAN
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-systemd-oomd.service-
pVC8IE
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-systemd-resolved.serv
ice-Bog8au
drwx-----, 3 root root 60 map 7 18:20 systemd-private-ae8393d2410f476893834426d294e153-upower.service-Xln1YB
drwx-----, 2 root root 40 map 7 18:20 vmware-root_864-2731217031
zzgadarboshev@zzgadarboshev:/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
zzgadarboshev@zzgadarboshev: /tmp$ ls -f
.
..
systemd-private-ae8393d2410f476893834426d294e153-fwupd.service-SE9VaI
.X1-lock
.X0-lock
systemd-private-ae8393d2410f476893834426d294e153-colord.service-IvPt0v
.X1025-lock
.X1024-lock
dbus-BtqQKF4F
dbus-HKth3Ygo
systemd-private-ae8393d2410f476893834426d294e153-ModemManager.service-liRnhm
vmware-root_864-2731217831
systemd-private-ae8393d2410f476893834426d294e153-upower.service-XLm1YB
systemd-private-ae8393d2410f476893834426d294e153-systemd-logind.service-P1FTAN
systemd-private-ae8393d2410f476893834426d294e153-switcheroo-control.service-7Jb7A4
systemd-private-ae8393d2410f476893834426d294e153-rtkit-daemon.service-3HJbZp
systemd-private-ae8393d2410f476893834426d294e153-power-profiles-daemon.service-9GRvbJ
systemd-private-ae8393d2410f476893834426d294e153-polkit.service-KNyrKA
systemd-private-ae8393d2410f476893834426d294e153-low-memory-monitor.service-NLIWZ5
systemd-private-ae8393d2410f476893834426d294e153-chronyd.service-JE8cUt
systemd-private-ae8393d2410f476893834426d294e153-dbus-broker.service-JhUe9d
systemd-private-ae8393d2410f476893834426d294e153-systemd-resolved.service-BoqsAu
systemd-private-ae8393d2410f476893834426d294e153-systemd-oomd.service-ZYC9IE
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
zzgadarboshev@zzgadarboshev: /tmp$
```

Рис. 5: Команда ls -f

```
zzgadarboshev@zzgadarboshev:/tmp$ cd /var/spool/  
zzgadarboshev@zzgadarboshev:/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 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  
zzgadarboshev@zzgadarboshev:/var/spool$
```

Рис. 6: Каталог /var/spool

```
zzgadarboshev@zzgadarboshev:/var/spool$ mkdir newdir
mkdir: невозможно создать каталог «newdir»: Отказано в доступе
zzgadarboshev@zzgadarboshev:/var/spool$ cd
zzgadarboshev@zzgadarboshev:~$ ls
git-extended  Видео      Загрузки    Музыка      'Рабочий стол'
work          Документы  Изображения Общедоступные Шаблоны
zzgadarboshev@zzgadarboshev:~$ ls -l
итого 0
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev 74 мар  2 11:53 git-extended
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev 10 фев 13 11:24 work
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Видео
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Документы
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Загрузки
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Изображения
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Музыка
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Общедоступные
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 'Рабочий стол'
drwxr-xr-x. 1 zzgadarboshev zzgadarboshev  0 фев 13 10:46 Шаблоны
zzgadarboshev@zzgadarboshev:~$
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

# Опции команды ls

```
core.py __init__.py main.py randomaccess.py
'./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':
image-report mpv-shot

./Видео:

./Документы:

./Загрузки:

./Изображения:

./Музыка:

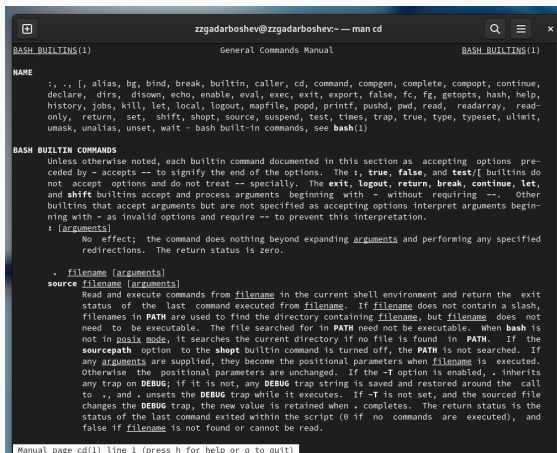
./Общедоступные:

'./Рабочий стол':

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

Рис. 9: Команда ls -R и ls -t

# Справка по командам



```
zzgadarboshev@zzgadarboshev:~ — 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, read-
only, 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 pre-
ceded by - accepts -- to signify the end of the options. The set, 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 begin-
ning with - as invalid options and require -- to prevent this interpretation.

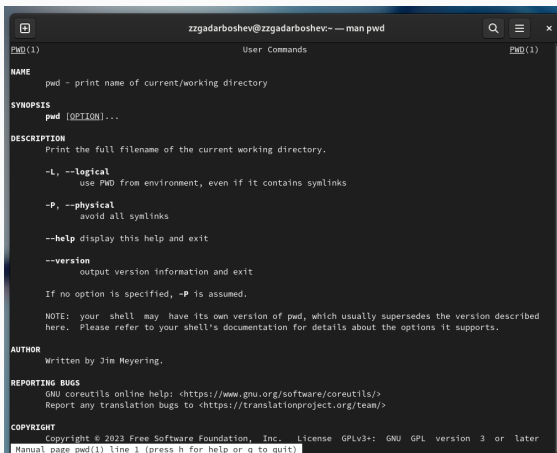
: [arguments]
    No effect; the command does nothing beyond expanding arguments and performing any specified
    redirections. The return status is zero.

. 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 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



```
zzgadarboshev@zzgadarboshev:~ — 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.

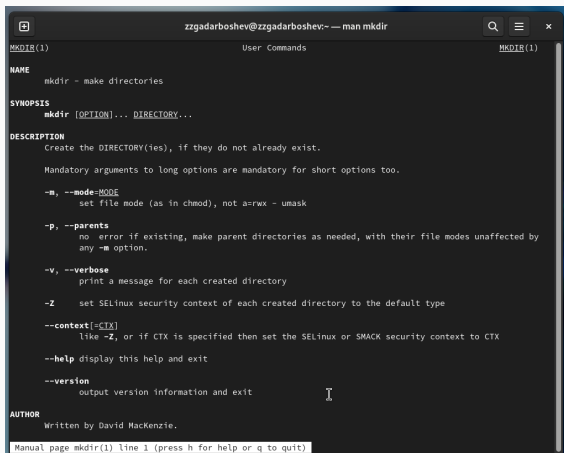
AUTHOR
  Written by Jim Meyering.

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





```
zzgadarboshev@zzgadarboshev:~$ 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

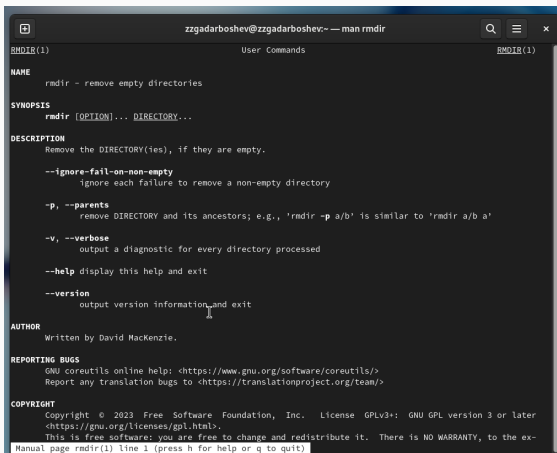
    --help
        display this help and exit

    --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



```
zzgadarboshev@zzgadarboshev:~ — 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

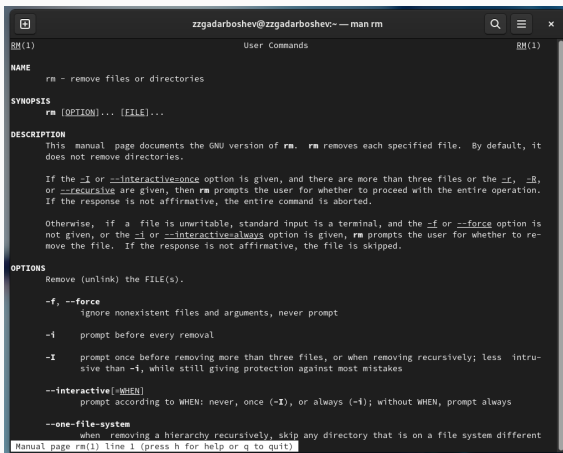
    --version
        output version information and exit

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

Рис. 13: Справка по команде rmdir



```
zzgadarboshev@zzgadarboshev:~ -- 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 -f, -B, 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

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

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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