

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

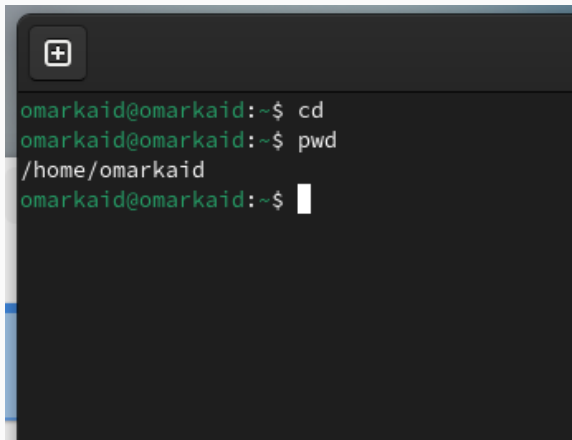
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
omarkaid@omarkaid:~$ cd /tmp
omarkaid@omarkaid: /tmp$ ls
dbus-Gao3seHp
dbus-Sla8Dtxn
systemd-private-20a73af1b5544759c4603cec8ff9447-chronyd.service-Igmcoh
systemd-private-20a73af1b5544759c4603cec8ff9447-colord.service-URU1GF
systemd-private-20a73af1b5544759c4603cec8ff9447-dbus-broker.service-ldrVLh
systemd-private-20a73af1b5544759c4603cec8ff9447-fwupd.service-9JEGWz
systemd-private-20a73af1b5544759c4603cec8ff9447-low-memory-monitor.service-5E18n8
systemd-private-20a73af1b5544759c4603cec8ff9447-ModemManager.service-r8BFQz
systemd-private-20a73af1b5544759c4603cec8ff9447-polkit.service-CxLFNO
systemd-private-20a73af1b5544759c4603cec8ff9447-power-profiles-daemon.service-3H5hfx
systemd-private-20a73af1b5544759c4603cec8ff9447-rtkit-daemon.service-87dryk
systemd-private-20a73af1b5544759c4603cec8ff9447-switcheroo-control.service-ojFT0n
systemd-private-20a73af1b5544759c4603cec8ff9447-systemd-logind.service-0MX9Kq
systemd-private-20a73af1b5544759c4603cec8ff9447-systemd-oomd.service-zXQq2a
systemd-private-20a73af1b5544759c4603cec8ff9447-systemd-resolved.service-0Qz44F
systemd-private-20a73af1b5544759c4603cec8ff9447-upower.service-Nu9JHg
vmware-root_913-4013723377
omarkaid@omarkaid: /tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
omarkaid@omarkaid:/tmp$ ls -la
..
dbus-Gao3seHp
dbus-SlaBDtxn
.font-unix
.ICE-unix
systemd-private-20a73af11b5544759c4603cec8ff9447-chrond.service-IgmcOH
systemd-private-20a73af11b5544759c4603cec8ff9447-colord.service-URU1GF
systemd-private-20a73af11b5544759c4603cec8ff9447-dbus-broker.service-ldrVLh
systemd-private-20a73af11b5544759c4603cec8ff9447-fwupd.service-9JEgWz
systemd-private-20a73af11b5544759c4603cec8ff9447-low-memory-monitor.service-5EiBn8
systemd-private-20a73af11b5544759c4603cec8ff9447-ModemManager.service-r8BFQz
systemd-private-20a73af11b5544759c4603cec8ff9447-polkit.service-CxLFNO
systemd-private-20a73af11b5544759c4603cec8ff9447-power-profiles-daemon.service-3H5hfx
systemd-private-20a73af11b5544759c4603cec8ff9447-rtkit-daemon.service-87dryk
systemd-private-20a73af11b5544759c4603cec8ff9447-switcheroo-control.service-ojFTOn
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-logind.service-0MX9Kq
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-oomd.service-zXQq2a
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-resolved.service-9Qz44F
systemd-private-20a73af11b5544759c4603cec8ff9447-upower.service-Nu9JHg
vmware-root_913-4013723377
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
omarkaid@omarkaid:/tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
omarkaid@omarkaid:~/tmp$ ls -l
total 0
srwxrwxrwx. 1 root root 0 map 10 16:33 dbus-Gao3eHq
srwxrwxrwx. 1 root root 0 map 10 16:33 dbus-SlaBDtyn
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-chronyd.service-1gcqoh
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-colord.service-UR016F
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-dbus-broker.service-ldrVlh
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-fuupd.service-9JlgWz
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-low-memory-monitor.service-5Ej8nd
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-ModemManager.service-r807Qz
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-pelkit.service-CxLFNo
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-power-profiles-daemon.service-3H5hFX
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-rtkit-daemon.service-87dryk
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-switcheroo-control.service-uJFT6n
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-systemd-logind.service-0MX5Kq
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-systemd-oomd.service-2FQq2a
drwx----- 3 root root 60 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-systemd-resolved.service-BQz44F
drwx----- 2 root root 40 map 10 16:33 systemd-private-2ba73af1b5544759c4603cec8ff9447-upower.service-Bu02Hg
drwx----- 2 root root 40 map 10 16:33 vmware-root_913-461372377
omarkaid@omarkaid:~/tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
omarkaid@omarkaid:/tmp$  
omarkaid@omarkaid:/tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-oomd.service-zXQq2a  
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-resolved.service-0Qz44F  
systemd-private-20a73af11b5544759c4603cec8ff9447-dbus-broker.service-ldrVLh  
systemd-private-20a73af11b5544759c4603cec8ff9447-chrond.service-Igmcoh  
systemd-private-20a73af11b5544759c4603cec8ff9447-low-memory-monitor.service-5EiBn8  
systemd-private-20a73af11b5544759c4603cec8ff9447-polkit.service-CxLFNO  
systemd-private-20a73af11b5544759c4603cec8ff9447-power-profiles-daemon.service-3H5hfx  
systemd-private-20a73af11b5544759c4603cec8ff9447-rtkit-daemon.service-87dryk  
systemd-private-20a73af11b5544759c4603cec8ff9447-switcheroo-control.service-ojFT0n  
systemd-private-20a73af11b5544759c4603cec8ff9447-systemd-logind.service-OMX9Kq  
systemd-private-20a73af11b5544759c4603cec8ff9447-upower.service-Nu9JHg  
vmware-root_913-4013723377  
systemd-private-20a73af11b5544759c4603cec8ff9447-ModemManager.service-r8BFQz  
dbus-SlaBDtxn  
dbus-Gao3seHp  
.X1024-lock  
.X1025-lock  
systemd-private-20a73af11b5544759c4603cec8ff9447-colord.service-URU1GF  
.X0-lock  
.X1-lock  
systemd-private-20a73af11b5544759c4603cec8ff9447-fwupd.service-9JEgWz  
omarkaid@omarkaid:/tmp$
```

Рис. 5: Команда ls -f

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

Рис. 6: Каталог /var/spool

Домашний каталог

```
omarkaid@omarkaid:~$  
omarkaid@omarkaid:~$ cd  
omarkaid@omarkaid:~$ ls  
git-extended Видео Загрузки Музыка 'Рабочий стол'  
work Документы Изображения Общедоступные Шаблоны  
omarkaid@omarkaid:~$ ls -al  
итого 20  
drwx----- 1 omarkaid omarkaid 498 мар 4 15:53 .  
drwxr-xr-x 1 root root 1216 мар 8 17:40 ..  
-rw----- 1 omarkaid omarkaid 198 мар 4 16:04 .bash_history  
-rw-r--r-- 1 omarkaid omarkaid 18 июл 19 2023 .bash_logout  
-rw-r--r-- 1 omarkaid omarkaid 144 июл 19 2023 .bash_profile  
-rw-r--r-- 1 omarkaid omarkaid 678 мар 4 15:52 .bashrc  
drwx----- 1 omarkaid omarkaid 453 мар 10 16:33 .cache  
drwx----- 1 omarkaid omarkaid 409 мар 4 15:55 .config  
-rw-r--r-- 1 omarkaid omarkaid 240 мар 4 15:50 .gitconfig  
drwxr-xr-x 1 omarkaid omarkaid 74 мар 4 15:58 git-extended  
drwx----- 1 omarkaid omarkaid 136 фев 28 19:19 .gnupg  
drwx----- 1 omarkaid omarkaid 20 фев 28 19:13 .local  
drwxr-xr-x 1 omarkaid omarkaid 48 фев 28 19:14 .mozilla  
drwx----- 1 omarkaid omarkaid 132 фев 28 19:21 .ssh  
drwxr-xr-x 1 omarkaid omarkaid 10 фев 28 19:20 work  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Видео  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Документы  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Загрузки  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Изображения  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Музыка  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Общедоступные  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 'Рабочий стол'  
drwxr-xr-x 1 omarkaid omarkaid 0 фев 28 19:13 Шаблоны  
omarkaid@omarkaid:~$
```

Рис. 7: Файлы в домашнем каталоге

Работа с каталогами

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

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:  
omarkaid@omarkaid:~$ ls -lt  
git-extended Видео Загрузки Музыка 'Рабочий стол'  
work Документы Изображения Общедоступные Шаблоны  
omarkaid@omarkaid:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам

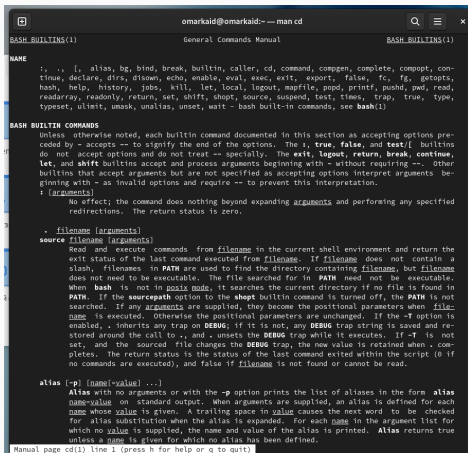
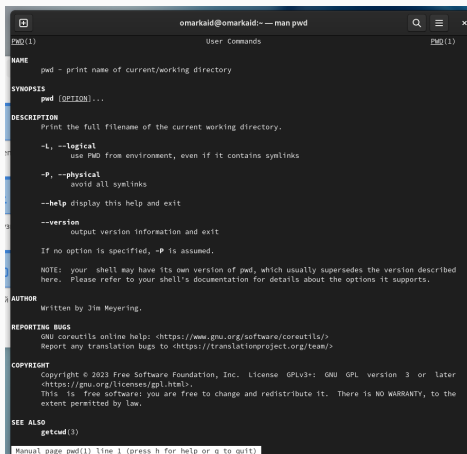


Рис. 10: Справка по команде cd



```
omarkald@omarkald:~ — man pwd
pwd(1) User Commands
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.

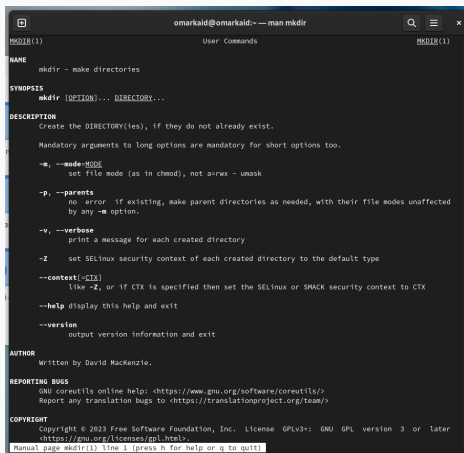
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  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
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  extent permitted by law.

SEE ALSO
  getcwd(3)

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

Рис. 11: Справка по команде pwd



```
omarkald@omarkald:- 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

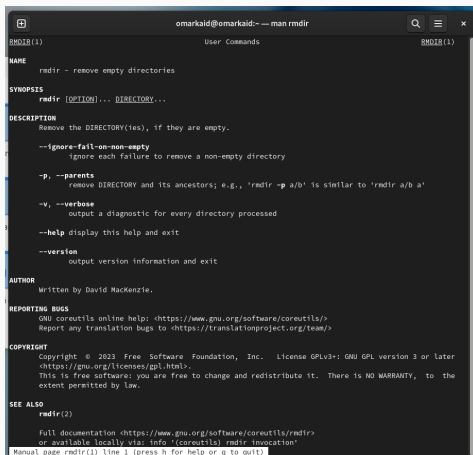
--version
    output version information and exit

AUTHOR
Written by David MacKenzie.

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

Рис. 12: Справка по команде mkdir



```
omarkaid@omarkaid:~ -- 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/>

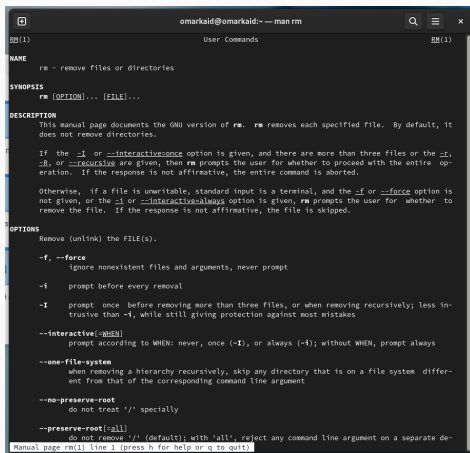
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  <https://gnu.org/licenses/gpl.html>.
  This is free software: you are free to change and redistribute it. There is NO WARRANTY, to the
  extent permitted by law.

SEE ALSO
  rmdir(2)

  Full documentation <https://www.gnu.org/software/coreutils/rmdir>
  or available locally via: info '(coreutils) rmdir invocation'

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

Рис. 13: Справка по команде rmdir



```
omarkaid@omarkaid:~ -- 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

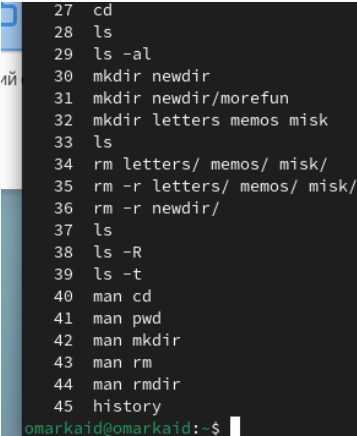
--one-file-system
    when removing a hierarchy recursively, skip any directory that is on a file system different from that of the corresponding command line argument

--no-preserve-root
    do not treat '/' specially

--preserve-root=[all]
    do not remove '/' (default); with 'all', reject any command line argument on a separate de-
Manual page rm(1) line 1 (press h for help or q to quit)
```

Рис. 14: Справка по команде rm

История командной строки

A terminal window with a dark background and light blue text. The window shows a list of 19 commands, each preceded by a line number from 27 to 45. The commands are: cd, ls, ls -al, mkdir newdir, mkdir newdir/morefun, mkdir letters memos misk, ls, rm letters/ memos/ misk/, rm -r letters/ memos/ misk/, rm -r newdir/, ls, ls -R, ls -t, man cd, man pwd, man mkdir, man rm, man rmdir, and history. The prompt 'omarkaid@omarkaid:~\$' is visible at the bottom, followed by a white cursor.

```
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 rm
44 man rmdir
45 history
omarkaid@omarkaid:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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