

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

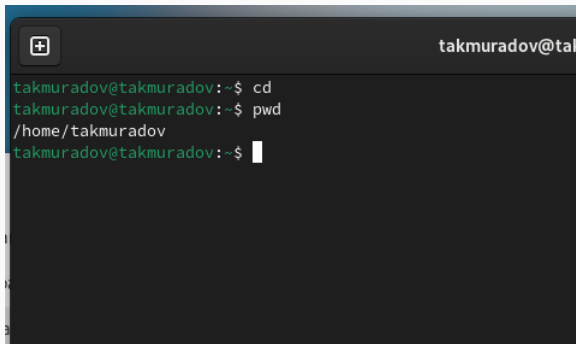
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

A terminal window with a dark background. The title bar shows a window icon and the text 'takmuradov@tak'. The terminal content shows a user running 'cd' and 'pwd' commands, resulting in the path '/home/takmuradov'.

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
takmuradov@takmuradov:~$ cd /tmp
takmuradov@takmuradov:/tmp$ ls
dbus-0sWdMki
dbus-Q6aouqYJ
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-chrond.service-9mEHqJ
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-colord.service-7Y1LZD
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-dbus-broker.service-403qyR
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-fwupd.service-r5sQCx
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-low-memory-monitor.service-qrnkX
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-ModemManager.service-mS2i9p
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-polkit.service-3uErZx
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-power-profiles-daemon.service-uYABZb
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-rtkit-daemon.service-Tqjb0Q
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-switcheroo-control.service-d2Y8oS
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-logind.service-0wip0j
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-oomd.service-ohbYeu
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-resolved.service-HC9WfN
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-upower.service-Rsh6Va
vmware-root_869-3988752892
takmuradov@takmuradov:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
takmuradov@takmuradov:~$ cd /tmp
takmuradov@takmuradov:/tmp$ ls -la
total 12
drwxr-xr-x 3 root root 4096 Aug 11 12:00 .
drwxr-xr-x 1 root root 4096 Aug 11 12:00 ..
-rw-r--r-- 1 root root    0 Aug 11 12:00 .dbus-0sWdDmKi
-rw-r--r-- 1 root root    0 Aug 11 12:00 .dbus-Q6aouqYJ
-rw-r--r-- 1 root root    0 Aug 11 12:00 .font-unix
-rw-r--r-- 1 root root    0 Aug 11 12:00 .ICE-unix
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-chrond.service-9mEHqJ
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-colord.service-7Y1LZD
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-dbus-broker.service-403qyR
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-fwupd.service-r5sQCx
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-low-memory-monitor.service-grn1kX
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-ModemManager.service-mS2i9p
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-polkit.service-3uErZx
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-power-profiles-daemon.service-uYABZb
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-rtkit-daemon.service-TqjbOQ
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-switcheroo-control.service-d2Y8oS
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-logind.service-0wip0j
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-oomd.service-ohYeu
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-resolved.service-HC9WfN
-rw-r--r-- 1 root root    0 Aug 11 12:00 .systemd-private-67dd31e8cb9549fc933d4ecedb31018e-upower.service-Rsh6Va
-rw-r--r-- 1 root root    0 Aug 11 12:00 .vmware-root_869-3988752892
-rw-r--r-- 1 root root    0 Aug 11 12:00 .X0-lock
-rw-r--r-- 1 root root    0 Aug 11 12:00 .X1024-lock
-rw-r--r-- 1 root root    0 Aug 11 12:00 .X1025-lock
-rw-r--r-- 1 root root    0 Aug 11 12:00 .X11-unix
-rw-r--r-- 1 root root    0 Aug 11 12:00 .X1-lock
-rw-r--r-- 1 root root    0 Aug 11 12:00 .XIM-unix
takmuradov@takmuradov:/tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
taksur adv@taksur adv: /tmp$ ls -l
итого 0
-rw-rw-rw-. 1 root root 0 map 8 19:19 dbus-0sldhmKi
-rw-rw-rw-. 1 root root 0 map 8 19:19 dbus-Q6aouqY2
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-chronyd.service-b6BqJ
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-colord.service-771L2D
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-dbus-broker.service-403qy8
drwx----- 3 root root 60 map 8 19:28 systemd-private-67d31e8cb0549fc933d4cedb31018e-fwupd.service-r5vQcx
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-low-memory-monitor.service-grnlkX
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-ModemManager.service-m5215p
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-polkit.service-3uFr2x
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-power-profiles-daemon.service-uYAB2b
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-rtkit-daemon.service-TqJbq
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-switcheroo-control.service-d2Y8o5
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-systemd-logind.service-0wtpJ
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-systemd-oomd.service-0hbYeu
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-systemd-resolved.service-RC9WfN
drwx----- 3 root root 60 map 8 19:19 systemd-private-67d31e8cb0549fc933d4cedb31018e-upower.service-Rsh6Va
drwx----- 2 root root 40 map 8 19:19 vmware-root_869-3988752892
taksur adv@taksur adv: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
takmuradov@takmuradov: /tmp$ ls -f
a.
..
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-fwupd.service-r5sQCx
.X1-lock
.X0-lock
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-colord.service-7Y1LZD
.X1025-lock
.X1024-lock
dbus-0sWdDmKi
dbus-Q6aouqYJ
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-ModemManager.service-mS219p
vmware-root_869-3988752892
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-upower.service-Rsh6Va
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-logind.service-0wip0j
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-switcheroo-control.service-d2Y8oS
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-rtkit-daemon.service-Tqjb0Q
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-power-profiles-daemon.service-uYABZb
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-polkit.service-3uErZx
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-low-memory-monitor.service-grnlkX
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-chronyd.service-9mEHqJ
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-dbus-broker.service-403qyR
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-resolved.service-HC9WfN
systemd-private-67dd31e8cb9549fc933d4ecedb31018e-systemd-oomd.service-ohbYeu
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
takmuradov@takmuradov: /tmp$
```

Рис. 5: Команда ls -f

Каталог /var/spool

```
takmuradov@takmuradov:/tmp$ cd /var/spool/  
takmuradov@takmuradov:/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 ноя  1 04:09 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  
takmuradov@takmuradov:/var/spool$
```

Рис. 6: Каталог /var/spool

```
takmuradov@takmuradov: /var/spool$ cd
takmuradov@takmuradov: $ ls
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
takmuradov@takmuradov: $ ls -al
итого 20
drwx----- 1 takmuradov takmuradov 498 map 2 22:31 .
drwxr-xr-x 1 root      root      1216 map 8 17:40 ..
-rw----- 1 takmuradov takmuradov 2756 map 2 22:41 .bash_history
-rw-r--r-- 1 takmuradov takmuradov 18  mon 19 2023 .bash_logout
-rw-r--r-- 1 takmuradov takmuradov 144  mon 19 2023 .bash_profile
-rw-r--r-- 1 takmuradov takmuradov 680  map 2 22:30 .bashrc
drwx----- 1 takmuradov takmuradov 418  map 2 22:32 .cache
drwx----- 1 takmuradov takmuradov 424  map 2 22:32 .config
-rw-r--r-- 1 takmuradov takmuradov 234  map 2 22:28 .gitconfig
drwxr-xr-x 1 takmuradov takmuradov 74   map 2 22:35 git-extended
drwx----- 1 takmuradov takmuradov 136  feb 21 10:40 .gnupg
drwx----- 1 takmuradov takmuradov 20   feb 21 10:33 .local
drwxr-xr-x 1 takmuradov takmuradov 48   feb 21 10:40 .mozilla
drwx----- 1 takmuradov takmuradov 132  feb 21 10:44 .ssh
drwxr-xr-x 1 takmuradov takmuradov 10   feb 21 10:43 work
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Видео
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Документы
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Загрузки
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Изображения
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Музыка
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Общедоступные
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 'Рабочий стол'
drwxr-xr-x 1 takmuradov takmuradov 0     feb 21 10:33 Шаблоны
takmuradov@takmuradov: $
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

Опции команды ls

```
1 './work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':  
2 image-report mpv-shot  
3  
4 ./Видео:  
5  
6 ./Документы:  
7  
8 ./Загрузки:  
9  
10 ./Изображения:  
11  
12 ./Музыка:  
13  
14 ./Общедоступные:  
15  
16 './Рабочий стол':  
17  
18 ./Шаблоны:  
takeuradov@takeuradov:~$ ls -lt  
git-extended work Видео Изображения Документы Загрузки Музыка Общедоступные 'Рабочий стол' Шаблоны  
takeuradov@takeuradov:~$
```

Рис. 9: Команда ls -R и ls -t

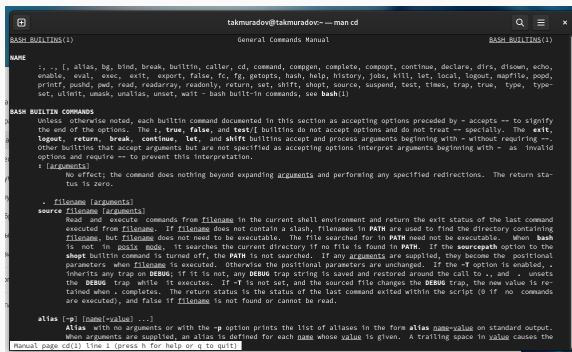
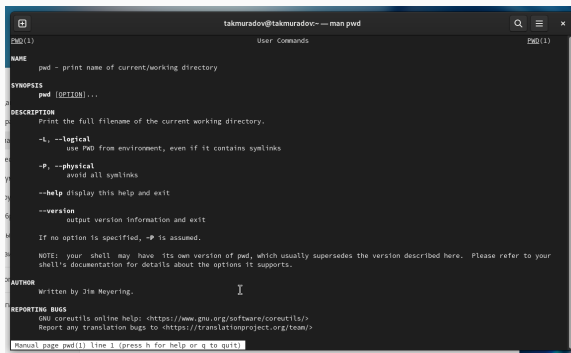


Рис. 10: Справка по команде cd

Справка по командам



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

```
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.

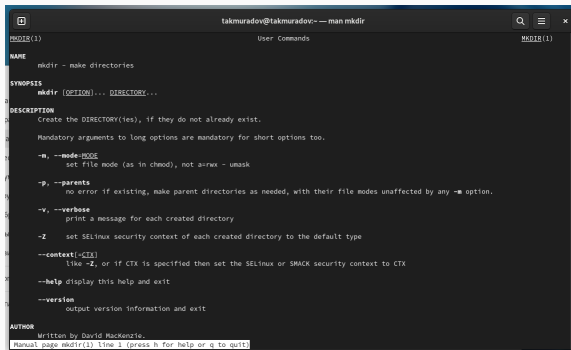
  NOTE: your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to your shell's documentation for details about the options it supports.

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/>

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

Рис. 11: Справка по команде pwd



```
takmuradov@takmuradov:~ -- 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

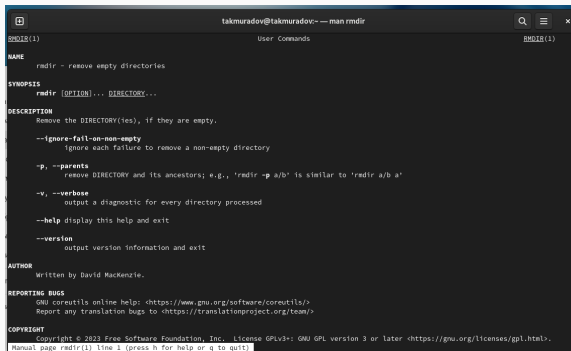
    --help
        display this help and exit

    --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



```
takmuradov@takmuradov:~$ 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

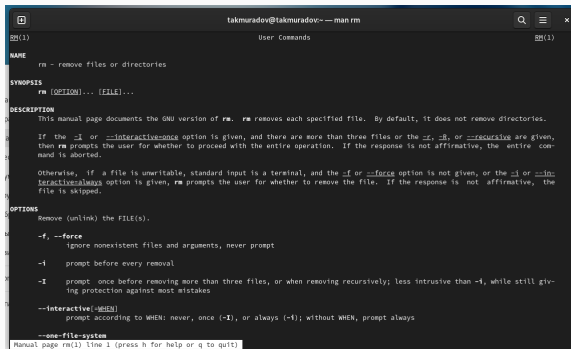
AUTHOR
  Written by David MacKenzie.

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

COPYRIGHT
  Copyright © 2023 Free Software Foundation, Inc.  License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
  Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir

Справка по командам



```
takmuradov@takmuradov:~ -- man rm
User Commands
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
Manual page rm(1) line 1 (press h for help or q to quit)
```

Рис. 14: Справка по команде rm

История командной строки

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

Рис. 15: Команда history

Выводы по проделанной работе

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