

# 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



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

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
bergeshov@bergeshov:~$ cd /tmp
bergeshov@bergeshov:/tmp$ ls
dbus-CiK0Wiaf
dbus-xD03wkL5
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-chronyd.service-mScyLV
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-colord.service-0DnLIk
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-dbus-broker.service-YfvBoK
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-fwupd.service-SHsDIO
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-low-memory-monitor.service-xVulPv
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-ModemManager.service-1oaLE1
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-polkit.service-4gL64t
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-power-profiles-daemon.service-zZGtMY
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-rtkit-daemon.service-RgZCRN
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-switcheroo-control.service-yAGNaj
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-systemd-logind.service-43WD54
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-systemd-oomd.service-kapGzI
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-systemd-resolved.service-JBa0Nd
systemd-private-84575b88bdd349f78df7c8e8b3752cf7-upower.service-DwPv5C
vmware-root_867-3988621819
bergeshov@bergeshov:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
bergeshov@bergeshov: /tmp$ ls -la
ls
..
dbus-CiK0Wiaf
dbus-xD03wkL5
.font-unix
.ICE-unix
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-chronyd.service-mScyLV
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-colord.service-0DnLIk
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-dbus-broker.service-YfvBoK
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-fwupd.service-SHsDIO
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-low-memory-monitor.service-xVulPv
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-ModemManager.service-1oaLE1
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-polkit.service-4gL64t
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-power-profiles-daemon.service-zZGtMY
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-rtkit-daemon.service-RgZCRN
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-switcheroo-control.service-yAGNaj
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-logind.service-43WD54
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-oomd.service-kap6ZI
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-resolved.service-3Ba0Nd
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-upower.service-DwPv5C
vmware-root_867-3988621819
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
bergeshov@bergeshov: /tmp$
```

Рис. 3: Команда ls -a



# Опции команды ls

```
bergeshov@bergeshov:~/tmp$ ls -l
итого 0
-rw-rw-r--. 1 root root 0 wap 8 11:50 dbus-CfK0Wiaf
-rw-rw-r--. 1 root root 0 wap 8 11:50 dbus-x002akL5
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-chronyd.service-m5cylV
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-colord.service-0Dn1Ik
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-dbus-broker.service-YfvBoK
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-fwupd.service-SHsDio
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-low-memory-monitor.service-xVulPv
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-ModemManager.service-foaE1
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-polkitt.service-4gtG4t
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-power-profiles-daemon.service-z2dtNY
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-rtkit-daemon.service-RjZCBW
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-switcheroo-control.service-yAGNaJ
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-systemd-logind.service-43W054
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-systemd-oomd.service-kapGzI
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-systemd-resolved.service-JBa9ND
drwx-----. 3 root root 60 wap 8 11:50 systemd-private-84575b88bd349f78dffc8eb3752cf7-upower.service-BuPv5C
drwx-----. 2 root root 40 wap 8 11:50 vmware-root_867-388621815
bergeshov@bergeshov:~/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
bergeshov@bergeshov: /tmp$  
bergeshov@bergeshov: /tmp$ ls -f  
.  
..  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-fwupd.service-SHsDIO  
.X1-lock  
.X0-lock  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-colord.service-ODnLIk  
.X1025-lock  
.X1024-lock  
dbus-xD03wkL5  
dbus-CiK0Wiaf  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-ModemManager.service-1oaLE1  
vmware-root_867-3988621819  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-upower.service-DwPv5C  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-logind.service-43WD54  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-switcheroo-control.service-yAGNaj  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-rtkit-daemon.service-RgZCRN  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-power-profiles-daemon.service-zZGtMY  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-polkit.service-4gL64t  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-low-memory-monitor.service-xVulPv  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-chrondy.service-mScyLV  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-dbus-broker.service-YfvBoK  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-resolved.service-JBa0Nd  
systemd-private-84575b88bbd349f78df7c8e8b3752cf7-systemd-oomd.service-kapGZI  
.font-unix  
.XIM-unix  
.ICE-unix  
.X11-unix  
bergeshov@bergeshov: /tmp$
```

Рис. 5: Команда ls -f

```
bergeshov@bergeshov:/tmp$ cd /var/spool/  
bergeshov@bergeshov:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар  8 11:49 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  
bergeshov@bergeshov:/var/spool$
```

Рис. 6: Каталог /var/spool

```
bergeshov@bergeshov: /var/spool$ cd
bergeshov@bergeshov: $ ls
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
bergeshov@bergeshov: $ ls -al
итого 20
drwx-----, 1 bergeshov bergeshov 498 мар 2 14:35 .
drwxr-xr-x, 1 root root 1172 мар 6 14:27 ..
-rw-----, 1 bergeshov bergeshov 1317 мар 2 14:47 .bash_history
-rw-r--r--, 1 bergeshov bergeshov 18 июл 19 2023 .bash_logout
-rw-r--r--, 1 bergeshov bergeshov 144 июл 19 2023 .bash_profile
-rw-r--r--, 1 bergeshov bergeshov 679 мар 2 14:34 .bashrc
drwx-----, 1 bergeshov bergeshov 418 мар 2 14:36 .cache
drwx-----, 1 bergeshov bergeshov 424 мар 2 14:36 .config
-rw-r--r--, 1 bergeshov bergeshov 239 фев 27 09:38 .gitconfig
drwxr-xr-x, 1 bergeshov bergeshov 74 мар 2 14:39 git-extended
drwx-----, 1 bergeshov bergeshov 136 фев 18 11:05 .gnupg
drwx-----, 1 bergeshov bergeshov 20 фев 18 10:56 .local
drwxr-xr-x, 1 bergeshov bergeshov 48 фев 18 10:57 .mozilla
drwx-----, 1 bergeshov bergeshov 132 фев 18 11:10 .ssh
drwxr-xr-x, 1 bergeshov bergeshov 10 фев 18 11:10 work
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Видео
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Документы
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Загрузки
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Изображения
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Музыка
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Общедоступные
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 'Рабочий стол'
drwxr-xr-x, 1 bergeshov bergeshov 0 фев 18 10:56 Шаблоны
bergeshov@bergeshov: $
```

Рис. 7: Файлы в домашнем каталоге

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

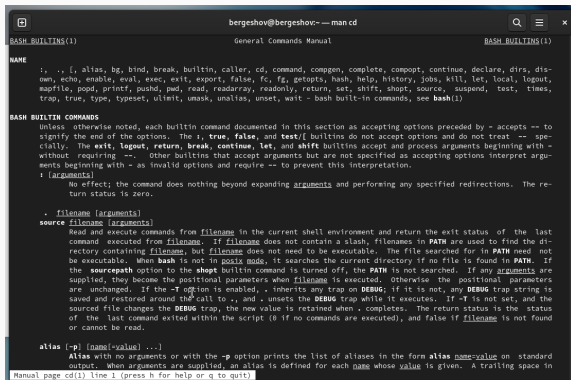
Рис. 8: Действия с каталогами

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

Рис. 9: Команда ls -R и ls -t

# Справка по командам



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

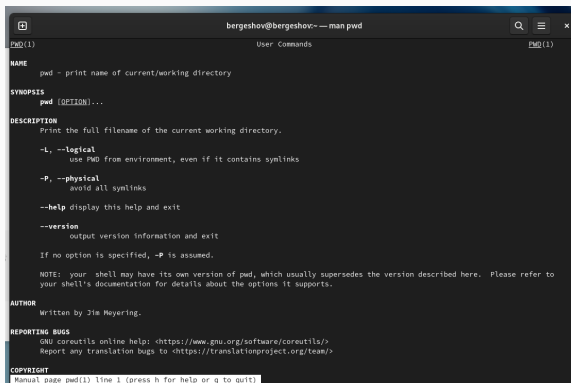
NAME
: , . , [ , alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, compopt, continue, declare, dirs, disown, echo, enable, eval, exec, exit, export, false, fc, fg, getopts, hash, help, history, jobs, kill, let, local, logout, mapfile, popd, printf, pushd, pwd, read, readarray, readonly, return, set, shift, shopt, source, suspend, test, times, trap, true, type, typeset, ulimit, 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]
    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.

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 standard output. When arguments are supplied, an alias is defined for each name whose value is given. A trailing space in Manual page cd(1) line 1 (press h for help or q to quit)
```

Рис. 10: Справка по команде cd



```
bergeshov@bergeshov:~ — 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.

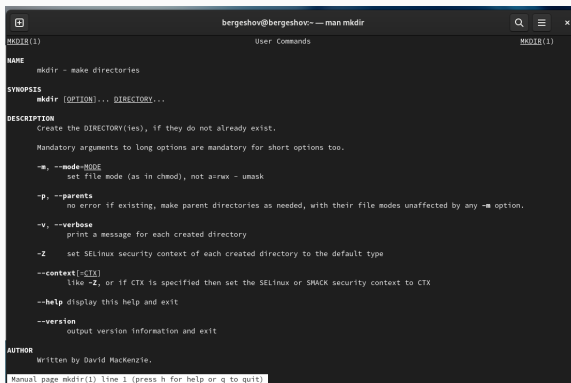
AUTHOR
  Written by Jim Mayering.

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

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

Рис. 11: Справка по команде pwd





```
bergeshov@bergeshov:~ — 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

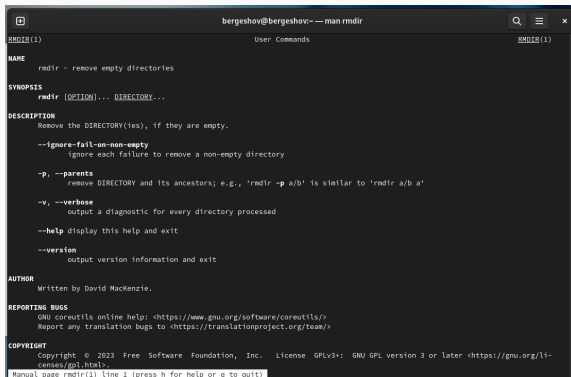
  --help
      display this help and exit

  --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



```
bergeshov@bergeshov:~$ 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

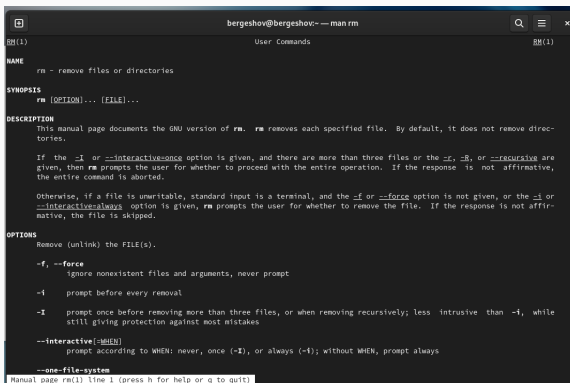
AUTHOR
  Written by David MacKenzie.

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



```
bergeshov@bergeshov:~ -- 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 -x, -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

```
56 ls
57 ls -al
58 mkdir newdir
59 mkdir newdir/morefun
60 mkdir letters memos misk
61 ls
62 rm letters/ memos/ misk/
63 rm -r letters/ memos/ misk/
64 rm -r newdir/
65 ls
66 ls -R
67 ls -t
68 man cd
69 man pwd
70 man mkdir
71 man rmdir
72 man rm
73 history
bergeshov@bergeshov:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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