

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

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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
root@bahisadial1:~# cd /home/bahisadial1
bahisadial1@bahisadial1:~$ cd
bahisadial1@bahisadial1:~$ pwd
/home/bahisadial1
bahisadial1@bahisadial1:~$ cd /tmp
bahisadial1@bahisadial1:/tmp$ ls
dbus-8CYpeX0q
dbus-b48utm3E
systemd-private-e5ebd4e525d8490caf536a189e0889f0-chrond.service-1kw9ow
systemd-private-e5ebd4e525d8490caf536a189e0889f0-colord.service-03H2y2
systemd-private-e5ebd4e525d8490caf536a189e0889f0-dbus-broker.service-x0YeIZ
systemd-private-e5ebd4e525d8490caf536a189e0889f0-low-memory-monitor.service-0VCnni
systemd-private-e5ebd4e525d8490caf536a189e0889f0-ModemManager.service-LCWnMP
systemd-private-e5ebd4e525d8490caf536a189e0889f0-polkit.service-Mb2a6L
systemd-private-e5ebd4e525d8490caf536a189e0889f0-power-profiles-daemon.service-Cdnb2R
systemd-private-e5ebd4e525d8490caf536a189e0889f0-rtkit-daemon.service-Q5o03e
systemd-private-e5ebd4e525d8490caf536a189e0889f0-switcheroo-control.service-zltcsK
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-logind.service-GXcmXz
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-pomod.service-WNI5To
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-resolved.service-ma8uqu
systemd-private-e5ebd4e525d8490caf536a189e0889f0-upower.service-DxH6Wk
tmp-112615b5-9a9e-48e0-8a51-8cd7b829bc18
VHwareDm0
vmware-root_070-2731086752
bahisadial1@bahisadial1:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
bahisadiali@bahisadiali: /tmp$ ls -la
..
dbus-8CYeX0q
dbus-b48utmJE
.font-unix
.ICE-unix
systemd-private-e5ebd4e525d8490caf536a189e0889f0-chrond.service-1kw9ow
systemd-private-e5ebd4e525d8490caf536a189e0889f0-colord.service-D3H2y2
systemd-private-e5ebd4e525d8490caf536a189e0889f0-dbus-broker.service-x0VeIZ
systemd-private-e5ebd4e525d8490caf536a189e0889f0-low-memory-monitor.service-0VCmni
systemd-private-e5ebd4e525d8490caf536a189e0889f0-ModemManager.service-LCWnMP
systemd-private-e5ebd4e525d8490caf536a189e0889f0-polkit.service-Mb2a6L
systemd-private-e5ebd4e525d8490caf536a189e0889f0-power-profiles-daemon.service-Cdnb2R
systemd-private-e5ebd4e525d8490caf536a189e0889f0-rtkit-daemon.service-Q5o03e
systemd-private-e5ebd4e525d8490caf536a189e0889f0-switcheroo-control.service-zltcsK
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-logind.service-GXcmXz
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-oomd.service-WNI5To
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-resolved.service-ma8uqu
systemd-private-e5ebd4e525d8490caf536a189e0889f0-upower.service-DxM6Wk
Temp-112615b5-9a9e-48e0-8a91-8cd7b829bc18
VMwareDnD
vmware-root_870-2731086752
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
bahisadiali@bahisadiali: /tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
root@kali:~# ssh root@10.10.10.10
root@bahisadali:~# ls -l
total 0
-rw-rw-rw- 1 root root 0 map 8 17:40 dbus-SCypeK8q
-rw-rw-rw- 1 root root 0 map 8 17:40 dbus-b4Buta3E
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-chrond.service-1kdw0w
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-caldred.service-026iy2
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-dbus-breaker.service-07ve12
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-lap-memory-monitor.service-0VCant
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-ModemManager.service-LCmnp
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-paliskit.service-0Hjadt
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-power-profiles-daemon.service-CDd28
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-rabbit-daemon.service-Q503e
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-switcheroo-control.service-0tccX
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-systemd-logind.service-0Xcnts
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-systemd-remount.service-0W1576
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-systemd-resolved.service-ma3uq
drwx----- 3 root root 60 map 8 17:40 systemd-private-e5ebd4e525d8480caf536a189e8889f0-upower.service-08M0ak
drwx----- 2 bahisadali bahisadali 40 map 8 18:00 tmp-112G15b5-9ab6-4840-ba01-8cd7b8230c18
drwxrwxrwt. 2 bahisadali bahisadali 100 map 8 17:55 /dev/shm
drwx----- 2 root root 40 map 8 17:40 /dev/shm-root-978-2731886752
```

Рис. 4: Команда ls -l

Опции команды ls

```
bahisadiali@bahisadiali:~$ ls -f
bahisadiali@bahisadiali:~/tmp$ ls -f
..
Temp-112615b5-9a9e-48e0-8a91-8cd7b829bc18
VMwareDnD
.X1-lock
.X0-lock
systemd-private-e5ebd4e525d8490caf536a189e0889f0-colord.service-D3H2y2
.X1025-lock
.X1024-lock
dbus-b48utmJE
dbus-8CYpeX0q
systemd-private-e5ebd4e525d8490caf536a189e0889f0-ModemManager.service-LCWnMP
vmware-root_870-2731086752
systemd-private-e5ebd4e525d8490caf536a189e0889f0-upower.service-DxM6Wk
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-logind.service-GXcmXz
systemd-private-e5ebd4e525d8490caf536a189e0889f0-switcheroo-control.service-zltcsK
systemd-private-e5ebd4e525d8490caf536a189e0889f0-rtkit-daemon.service-Q5o03e
systemd-private-e5ebd4e525d8490caf536a189e0889f0-power-profiles-daemon.service-Cdnb2R
systemd-private-e5ebd4e525d8490caf536a189e0889f0-polkit.service-Mb2a6L
systemd-private-e5ebd4e525d8490caf536a189e0889f0-low-memory-monitor.service-OVCmni
systemd-private-e5ebd4e525d8490caf536a189e0889f0-chrond.service-lkw9ow
systemd-private-e5ebd4e525d8490caf536a189e0889f0-dbus-broker.service-x0YeIZ
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-resolved.service-ma8uqu
systemd-private-e5ebd4e525d8490caf536a189e0889f0-systemd-oond.service-WNI5To
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
bahisadiali@bahisadiali:~/tmp$
```

Рис. 5: Команда ls -f

```
bahisadiali@bahisadiali:/tmp$  
bahisadiali@bahisadiali:/tmp$ cd /var/spool/  
bahisadiali@bahisadiali:/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 1438 мар  8 18:00 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  
bahisadiali@bahisadiali:/var/spool$
```

Рис. 6: Каталог /var/spool

```
bahisadial@bahisadial:~$ cd /var/spool$
bahisadial@bahisadial:~$ cd /var/spool$
bahisadial@bahisadial:~$ ls
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
bahisadial@bahisadial:~$ ls -al
итого 20
drwx----- 1 bahisadial bahisadial 486 мар 8 17:54
drwxr-xr-x 1 root root 1216 мар 8 17:40 ..
-rw----- 1 bahisadial bahisadial 10 мар 8 17:57 .bash_history
-rw-r--r-- 1 bahisadial bahisadial 18 июл 19 2023 .bash_logout
-rw-r--r-- 1 bahisadial bahisadial 144 июл 19 2023 .bash_profile
-rw-r--r-- 1 bahisadial bahisadial 681 мар 8 17:47 .bashrc
drwx----- 1 bahisadial bahisadial 428 мар 8 18:09 .cache
drwx----- 1 bahisadial bahisadial 376 мар 8 17:49 .config
-rw-r--r-- 1 bahisadial bahisadial 143 мар 8 17:44 .gitconfig
drwxr-xr-x 1 bahisadial bahisadial 74 мар 8 17:52 git-extended
drwx----- 1 bahisadial bahisadial 20 мар 8 17:42 .local
drwxr-xr-x 1 bahisadial bahisadial 48 мар 8 17:42 .mozilla
drwx----- 1 bahisadial bahisadial 132 мар 8 17:45 .ash
drwxr-xr-x 1 bahisadial bahisadial 10 мар 8 17:45 work
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Видео
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Документы
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Загрузки
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Изображения
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Музыка
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Общедоступные
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 'Рабочий стол'
drwxr-xr-x 1 bahisadial bahisadial 0 мар 8 17:42 Шаблоны
bahisadial@bahisadial:~$
```

Рис. 7: Файлы в домашнем каталоге

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

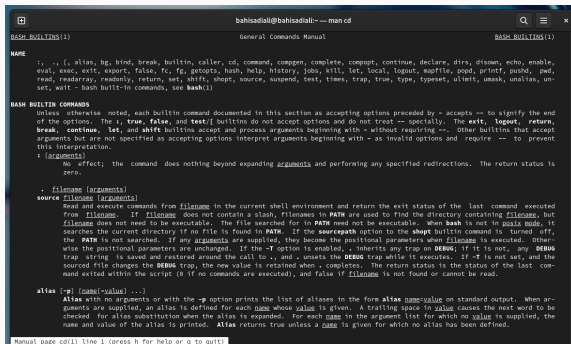
Рис. 8: Действия с каталогами

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

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
bahisdiall@bahisdiall:~ -- 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, fg, 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, unset, unset,
unset, wait -- bash built-in commands, see bash(1)

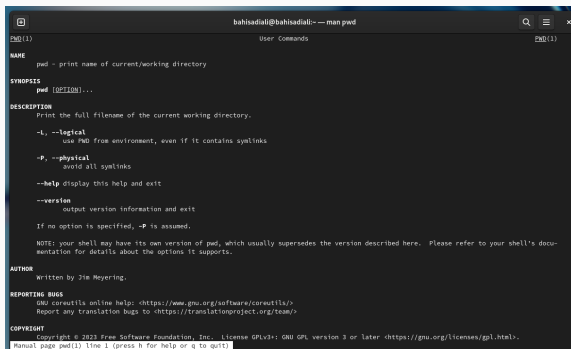
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by - accepts -- to signify the end
of the options. The i, true, false, and test/[ builtins do not accept options and do not treat -- specially. The exit, logout, return,
break, 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.
i [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. Otherw
ise 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 com
mand 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 ar
guments 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 name in the argument list for which no value is supplied, the
name and value of the alias is printed. Alias returns true unless a name is given for which no alias has been defined.
```

Рис. 10: Справка по команде cd

Справка по командам



```

bahisadi@bahisadi:~ — 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.

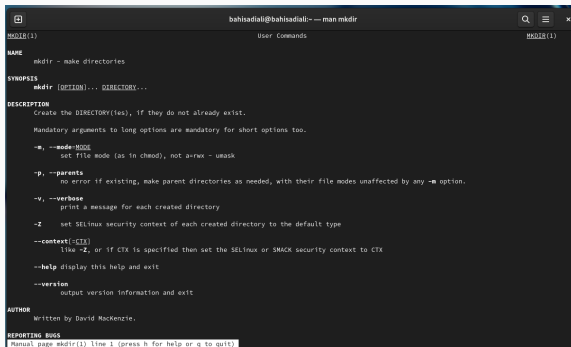
AUTHOR
  Written by Jim Meyering.

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

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



```
bahisadiali@bahisadiali:~ -- 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

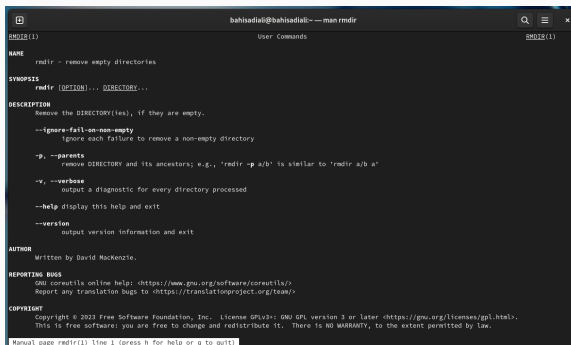
    --version
        output version information and exit

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

Справка по командам



```

bahisadieli@bahisadieli:~ -- 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.

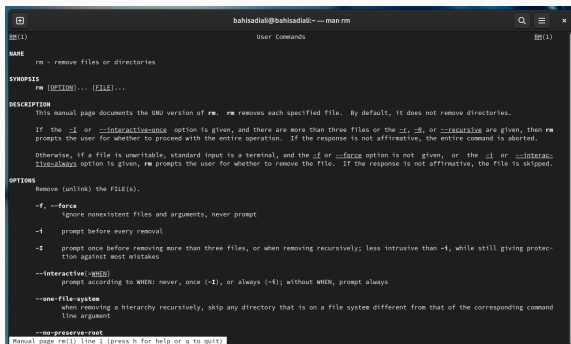
REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
  Report any translation bugs to <https://translationproject.org/team/>

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

Рис. 13: Справка по команде rmdir

Справка по командам



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

Рис. 14: Справка по команде rm

История командной строки

```
11 ls -al
12 cd
13 ls
14 ls -al
15 mkdir newdir
16 mkdir newdir/morefun
17 mkdir letters memos misk
18 ls
19 rm letters/ memos/ misk/
20 rm -r letters/ memos/ misk/
21 rm -r newdir/
22 ls
23 ls -R
24 ls -t
25 man cd
26 man pwd
27 man mkdir
28 man rmdir
29 man rm
30 history
bahisadiali@bahisadiali:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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