

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

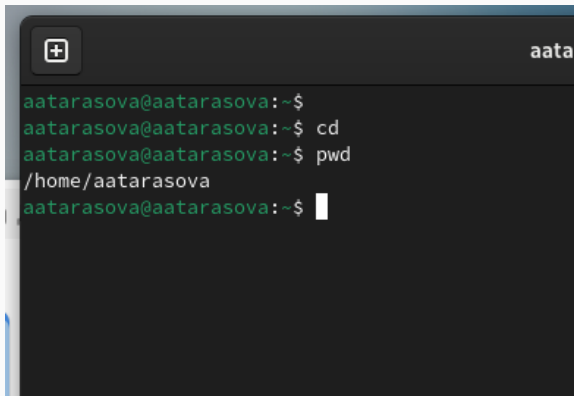
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
aatarasova@aatarasova:~$ cd /tmp
aatarasova@aatarasova:/tmp$ ls
dbus-50xi1Qvg
dbus-S1SEPYPJ
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-chrond.service-DQ5iLp
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-colord.service-sgfqe2
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-dbus-broker.service-9vRHGt
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-fwupd.service-cEaii
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-low-memory-monitor.service-KeHuBj
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-ModemManager.service-SLZjoN
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-polkit.service-CAP5RS
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-power-profiles-daemon.service-3QZd8E
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-rtkit-daemon.service-hAM5YT
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-switcheroo-control.service-QCV15E
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-systemd-logind.service-uItf6R
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-systemd-oom.service-AbMm2Q
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-systemd-resolved.service-pBGAKA
systemd-private-be1d0908ba1a4a25bf431daf6eba7d03-upower.service-a1Nltb
vmware-root_874-2689078315
aatarasova@aatarasova:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
aatarasova@aatarasova:/tmp$ ls -la
.
..
dbus-50xi1Qvg
dbus-SLSEPVPJ
.font-unix
.ICE-unix
systemd-private-be1d0908bala4a25bf431daf6eba7d03-chronyd.service-DQSiLp
systemd-private-be1d0908bala4a25bf431daf6eba7d03-colord.service-sgfqe2
systemd-private-be1d0908bala4a25bf431daf6eba7d03-dbus-broker.service-9vRHGt
systemd-private-be1d0908bala4a25bf431daf6eba7d03-fwupd.service-cEali1
systemd-private-be1d0908bala4a25bf431daf6eba7d03-low-memory-monitor.service-KeHuBj
systemd-private-be1d0908bala4a25bf431daf6eba7d03-ModemManager.service-SLZjoN
systemd-private-be1d0908bala4a25bf431daf6eba7d03-polkit.service-CAP5RS
systemd-private-be1d0908bala4a25bf431daf6eba7d03-power-profiles-daemon.service-3QZd8E
systemd-private-be1d0908bala4a25bf431daf6eba7d03-rtkit-daemon.service-hAW5YT
systemd-private-be1d0908bala4a25bf431daf6eba7d03-switcheroo-control.service-QCV15E
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-logind.service-uItf6R
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-pomod.service-AbMm2Q
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-resolved.service-pBGAKA
systemd-private-be1d0908bala4a25bf431daf6eba7d03-upower.service-a1Nltb
vmware-root_874-2689078315
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
aatarasova@aatarasova:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
as@tarasova@tarasova: /tmp$  
as@tarasova@tarasova: /tmp$ ls -l  
итого 0  
srwxrwxrwx. 1 root root 0 map 8 18:16 dbus-50xiiQvg  
srwxrwxrwx. 1 root root 0 map 8 18:16 dbus-SlSEPYpJ  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-chromyd.service-DQ5itp  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-colord.service-gfge1  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-dbus-broker.service-9vR8gt  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-fwupd.service-cfai1i  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-low-memory-monitor.service-KeHubJ  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-ModemManager.service-SLZjoM  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-polkit.service-CA95R3  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-power-profiles-daemon.service-3QZd88  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-rfkill-daemon.service-bAMxYt  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-switcheroo-control.service-QCV15E  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-systemd-logind.service-uitf6R  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-systemd-oomd.service-AHm2Q  
drwx----- 3 root root 60 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-systemd-resolved.service-p8GARA  
drwx----- 2 root root 40 map 8 18:16 systemd-private-be1d0908ba1a4a25bf431dafc6ba7d83-upower.service-a1Ntb  
drwx----- 2 root root 40 map 8 18:16 vmware-root_074-2683078315  
as@tarasova@tarasova: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
aatarasova@aatarasova: /tmp$  
aatarasova@aatarasova: /tmp$ ls -f  
.  
..  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-fwupd.service-cEali  
.X1-lock  
.X0-lock  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-colord.service-sgfqe2  
.X1025-lock  
.X1024-lock  
dbus-50xi1Qvg  
dbus-$1SEPYPJ  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-ModemManager.service-SLZjoN  
vmware-root_874-2689078315  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-upower.service-a1NLtb  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-logind.service-uItf6R  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-switcheroo-control.service-QCV15E  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-rtkit-daemon.service-hAW5YT  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-power-profiles-daemon.service-3QZd8E  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-polkit.service-CAP5RS  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-low-memory-monitor.service-KeHuBj  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-chronyd.service-DQSiLp  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-dbus-broker.service-9vRHGT  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-resolved.service-pBGAKA  
systemd-private-be1d0908bala4a25bf431daf6eba7d03-systemd-oomd.service-AbMm2Q  
.font-unix  
.XIM-unix  
.ICE-unix  
.X11-unix  
aatarasova@aatarasova: /tmp$
```

Рис. 5: Команда ls -f

```
aatarasova@aatarasova:/tmp$  
aatarasova@aatarasova:/tmp$ cd /var/spool/  
aatarasova@aatarasova:/var/spool$ ls -l  
итого 0  
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  
aatarasova@aatarasova:/var/spool$
```

Рис. 6: Каталог /var/spool

```
aatarasova@aatarasova:~$  
aatarasova@aatarasova:~$ ls -l  
итого 0  
drwxr-xr-x. 1 aatarasova aatarasova 74 мар  2 20:47 git-extended  
drwxr-xr-x. 1 aatarasova aatarasova 10 фев 19 14:41 work  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Видео  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Документы  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Загрузки  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Изображения  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Музыка  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Общедоступные  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 'Рабочий стол'  
drwxr-xr-x. 1 aatarasova aatarasova  0 фев 19 14:25 Шаблоны  
aatarasova@aatarasova:~$
```

Рис. 7: Файлы в домашнем каталоге

```
aatarasova@aatarasova: /var/spool$ mkdir newdir
mkdir: невозможно создать каталог «newdir»: Отказано в доступе
aatarasova@aatarasova: /var/spool$ cd
aatarasova@aatarasova: $ mkdir newdir
aatarasova@aatarasova: $ mkdir newdir/morefun
aatarasova@aatarasova: $ mkdir letters memos misk
aatarasova@aatarasova: $ ls
git-extended  memos  newdir  Видео  Загрузки  Музыка  'Рабочий стол'
letters      misk  work    Документы  Изображения  Общедоступные  Шаблоны
aatarasova@aatarasova: $ rm letters memos misk
rm: невозможно удалить 'letters': Это каталог
rm: невозможно удалить 'memos': Это каталог
rm: невозможно удалить 'misk': Это каталог
aatarasova@aatarasova: $ rm -r letters/ memos/ misk/
aatarasova@aatarasova: $ rm -r newdir/
aatarasova@aatarasova: $ ls
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
aatarasova@aatarasova: $
```

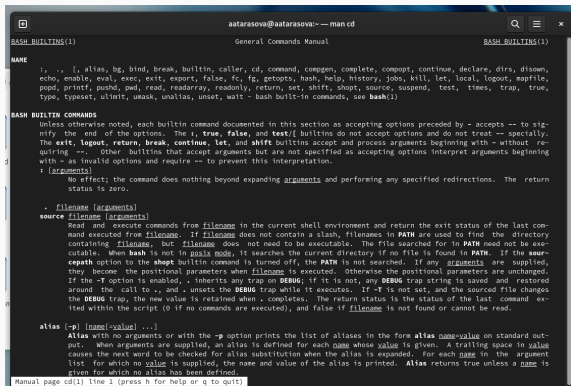
Рис. 8: Действия с каталогами

Опции команды ls

```
core.py __init__.py main.py pandocattributes.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:
aatarasova@aatarasova:~$ ls -lt
git-extended work Видео Изображения Документы Загрузки Музыка Общедоступные Шаблоны 'Рабочий стол'
aatarasova@aatarasova:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
aatarasova@aatarasova:~$ 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, umask, 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 sig-
nify the end of the options. The , true, false, and test(1) 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 re-
quiring --. 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.

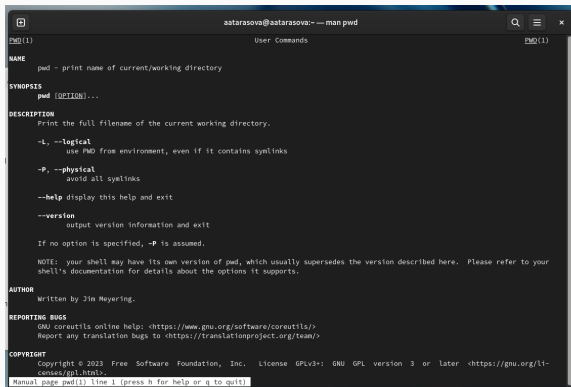
. filename [arguments]
source filename [arguments]
    Read and execute commands from filename in the current shell environment and return the exit status of the last com-
    mand executed from filename. If filename does not contain a slash, filenames in PATH are used to find the directory
    containing filename, but filename does not need to be executable. The file searched for in PATH need not be exe-
    cutable. When bash is not in posix mode, it searches the current directory if no file is found in PATH. If the sour-
    cephath 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 ex-
    ecuted 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 out-
    put. When arguments 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 an alias has been defined.

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

Рис. 10: Справка по команде cd

Справка по командам



```
astarasova@astarasova:~ -- 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.

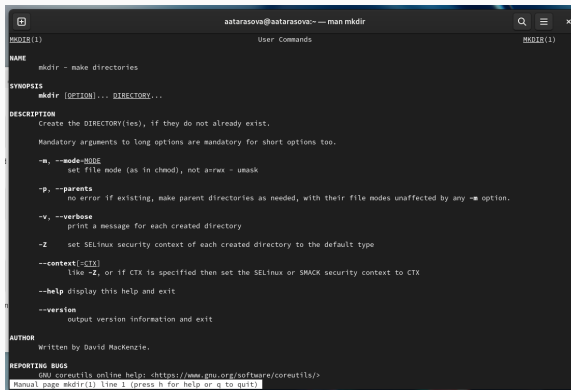
  NOTE: your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to your shell's documentation for details about the options it supports.

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



```
aatarasova@aatarasova:~ — 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 - uask

  -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

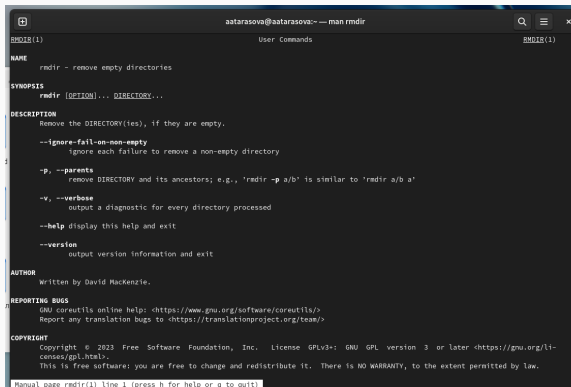
  --version
      output version information and exit

AUTHOR
  Written by David MacKenzie.

REPORTING BUGS
  GNU coreutils online help: https://www.gnu.org/software/coreutils/
  Manual page mkdir(1) line 1 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir

Справка по командам



```
aatarasova@aatarasova:~ — 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

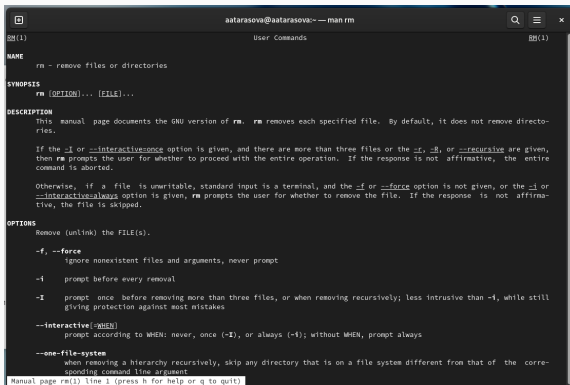
AUTHOR
  Written by David MacKenzie.

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



```
aatarasova@aatarasova:~$ 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, -d, 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

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

Рис. 14: Справка по команде rm

История командной строки

```
33 cd
34 mkdir newdir
35 mkdir newdir/morefun
36 mkdir letters memos misk
37 ls
38 rm letters memos misk
39 rm -r letters/ memos/ misk/
40 rm -r newdir/
41 ls
42 ls -R
43 ls -t
44 man cd
45 man pwd
46 man mkdir
47 man rmdir
48 man rm
49 history
aatarasova@aatarasova:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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