

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

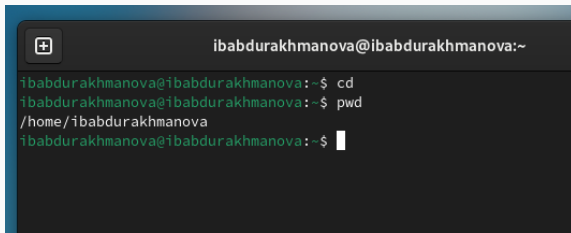
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
ibabdurakhmanova@ibabdurakhmanova:~$ cd /tmp
ibabdurakhmanova@ibabdurakhmanova:/tmp$ ls
dbus-3vnTgq3J
dbus-sdxmyI1T
systemd-private-e236cb33c33c4f0b854c351f6a981828-chrond.service-F4rzA2
systemd-private-e236cb33c33c4f0b854c351f6a981828-colord.service-A2TA2b
systemd-private-e236cb33c33c4f0b854c351f6a981828-dbus-broker.service-Ekl55m
systemd-private-e236cb33c33c4f0b854c351f6a981828-lwupd.service-L43qPx
systemd-private-e236cb33c33c4f0b854c351f6a981828-low-memory-monitor.service-W9Sm
rU
systemd-private-e236cb33c33c4f0b854c351f6a981828-ModemManager.service-iJWZ3U
systemd-private-e236cb33c33c4f0b854c351f6a981828-polkit.service-zd30fz
systemd-private-e236cb33c33c4f0b854c351f6a981828-power-profiles-daemon.service-S
rQuWe
systemd-private-e236cb33c33c4f0b854c351f6a981828-rtkit-daemon.service-6hy8pz
systemd-private-e236cb33c33c4f0b854c351f6a981828-switcheroo-control.service-VU6Z
wb
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-hostnamed.service-UMRNY
k
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-logind.service-1MNdTI
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-sd.service-wYubHu
```

Рис. 2: Команда ls

Опции команды ls

```
ibabdurakhmanova@ibabdurakhmanova: /tmp$  
ibabdurakhmanova@ibabdurakhmanova: /tmp$  
ibabdurakhmanova@ibabdurakhmanova: /tmp$ ls -la  
.  
..  
dbus-3vnTgq3J  
dbus-sdxmyT  
.font-unix  
.ICE-unix  
systemd-private-e236cb33c33c4f0b854c351f6a981828-chronyd.service-F4rzA2  
systemd-private-e236cb33c33c4f0b854c351f6a981828-colord.service-A2TA2b  
systemd-private-e236cb33c33c4f0b854c351f6a981828-dbus-broker.service-Ekl55m  
systemd-private-e236cb33c33c4f0b854c351f6a981828-fwupd.service-L42qPx  
systemd-private-e236cb33c33c4f0b854c351f6a981828-low-memory-monitor.service-W9Sm  
rU  
systemd-private-e236cb33c33c4f0b854c351f6a981828-ModemManager.service-1jWZ3U  
systemd-private-e236cb33c33c4f0b854c351f6a981828-polkit.service-zd30fz  
systemd-private-e236cb33c33c4f0b854c351f6a981828-power-profiles-daemon.service-S  
rQuWe  
systemd-private-e236cb33c33c4f0b854c351f6a981828-rtkit-daemon.service-6hyBpz  
systemd-private-e236cb33c33c4f0b854c351f6a981828-switcheroo-control.service-VU6Z  
wb
```

Рис. 3: Команда ls -a

Опции команды ls

```
ibabdurakhmanova@ibabdurakhmanova: /tmp$  
ibabdurakhmanova@ibabdurakhmanova: /tmp$ ls -l  
итого 8  
srwx-rw-rw-. 1 root root 0 map 12 12:29 dbus-3vnTgq33  
srwx-rw-rw-. 1 root root 0 map 12 12:29 dbus-sdxmy11f  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-chromyd.service-F4rsA2  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-color.service-A7TA2b  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-dbus-broker.service-Ekl55e  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-fwupd.service-L43qPx  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-low-memory-monitor.service-W95arU  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-NodeManager.service-1WZ3U  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-polkit.service-zd38fz  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-power-profiles-daemon.service-5rQwke  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-rtkit-daemon.service-6hy8pz  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-switcheroo-control.service-VWZub  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-logind.service-1Wu11  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-oomd.service-wYuhW  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-resolved.service-U1nA95  
dwx----- 3 root root 60 map 12 12:29 systemd-private-e236cb33c33c4f0b854c351f6a981828-upower.service-UQ4ZZ  
dwx----- 2 root root 40 map 12 12:29 umount-root_916-2689078442  
ibabdurakhmanova@ibabdurakhmanova: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
ibabdurakhmanova@ibabdurakhmanova: /tmp$  
ibabdurakhmanova@ibabdurakhmanova: /tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-oomd.service-wYuhHu  
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-resolved.service-UinA9S  
systemd-private-e236cb33c33c4f0b854c351f6a981828-dbus-broker.service-Ekl55m  
systemd-private-e236cb33c33c4f0b854c351f6a981828-chronyd.service-F4rzA2  
systemd-private-e236cb33c33c4f0b854c351f6a981828-low-memory-monitor.service-W9SmrU  
systemd-private-e236cb33c33c4f0b854c351f6a981828-polkit.service-zd30fz  
systemd-private-e236cb33c33c4f0b854c351f6a981828-power-profiles-daemon.service-SrQuWe  
systemd-private-e236cb33c33c4f0b854c351f6a981828-rtkit-daemon.service-6hy8pz  
systemd-private-e236cb33c33c4f0b854c351f6a981828-switcheroo-control.service-VU6Zwb  
systemd-private-e236cb33c33c4f0b854c351f6a981828-systemd-logind.service-1MNdtI  
systemd-private-e236cb33c33c4f0b854c351f6a981828-upower.service-UQjdZZ  
vmware-root_916-2689078442  
systemd-private-e236cb33c33c4f0b854c351f6a981828-ModemManager.service-iJWZ3U  
dbus-3vnTgq3J  
dbus-sdxyIIT  
.X1024-lock  
.X1025-lock  
systemd-private-e236cb33c33c4f0b854c351f6a981828-colord.service-A2TA2b  
.X0-lock  
.X1-lock  
systemd-private-e236cb33c33c4f0b854c351f6a981828-fwupd.service-L4JqPx  
ibabdurakhmanova@ibabdurakhmanova: /tmp$
```

Рис. 5: Команда ls -f

```
ibabdurakhmanova@ibabdurakhmanova:/tmp$  
ibabdurakhmanova@ibabdurakhmanova:/tmp$ cd /var/spool/  
ibabdurakhmanova@ibabdurakhmanova:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар 11 12:08 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  
ibabdurakhmanova@ibabdurakhmanova:/var/spool$
```

Рис. 6: Каталог /var/spool

```
ibabdurakhmanova@ibabdurakhmanova:~$ cd /var/spool$ cd
ibabdurakhmanova@ibabdurakhmanova:~$ ls
git-extended  Видео      Загрузки    Музыка      'Рабочий стол'
work          Документы  Изображения Общедоступные  Шаблоны
ibabdurakhmanova@ibabdurakhmanova:~$ ls -al
итого 20
drwx-----. 1 ibabdurakhmanova ibabdurakhmanova 486 мар 6 14:51 .
drwxr-xr-x. 1 root root 1216 мар 8 17:40 ..
-rw-----. 1 ibabdurakhmanova ibabdurakhmanova 1567 мар 6 14:51 .bash_history
-rw-r--r--. 1 ibabdurakhmanova ibabdurakhmanova 18 июл 19 2023 .bash_logout
-rw-r--r--. 1 ibabdurakhmanova ibabdurakhmanova 144 июл 19 2023 .bash_profile
-rw-r--r--. 1 ibabdurakhmanova ibabdurakhmanova 686 мар 6 14:37 .bashrc
drwx-----. 1 ibabdurakhmanova ibabdurakhmanova 452 мар 12 12:29 .cache
drwx-----. 1 ibabdurakhmanova ibabdurakhmanova 402 мар 6 14:51 .config
-rw-r--r--. 1 ibabdurakhmanova ibabdurakhmanova 178 мар 6 14:51 .gitconfig
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 74 мар 6 14:45 git-extended
drwx-----. 1 ibabdurakhmanova ibabdurakhmanova 20 мар 6 14:28 .local
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 48 мар 6 14:33 .mozilla
drwx-----. 1 ibabdurakhmanova ibabdurakhmanova 132 мар 6 14:37 .ssh
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 10 мар 6 14:37 work
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Видео
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Документы
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Загрузки
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Изображения
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Музыка
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Общедоступные
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 'Рабочий стол'
drwxr-xr-x. 1 ibabdurakhmanova ibabdurakhmanova 0 мар 6 14:28 Шаблоны
ibabdurakhmanova@ibabdurakhmanova:~$
```

Рис. 7: Файлы в домашнем каталоге

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

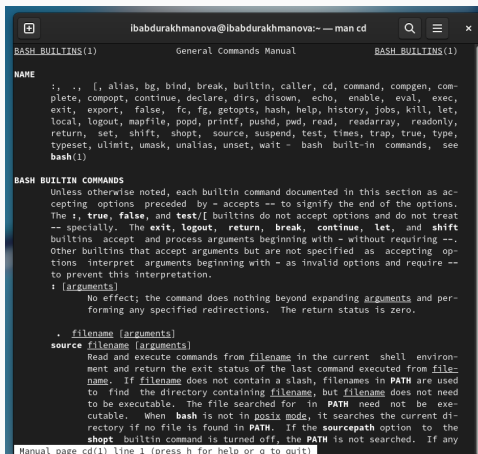
Рис. 8: Действия с каталогами

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

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
ibabdurakhmanova@ibabdurakhmanova:~ — 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, umask, unalias, unset, wait - bash built-in commands, see bash(1)

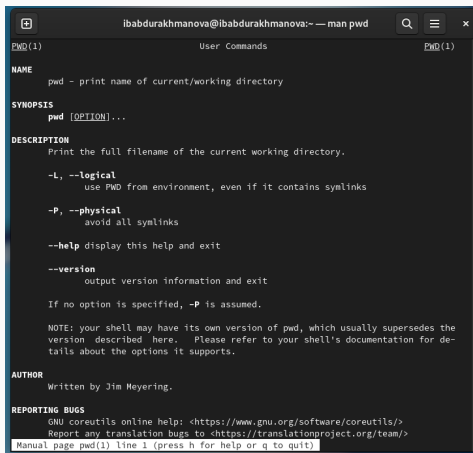
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by - accepts -- to signify the end of the options. The :, true, false, and test/[ builtins do not accept options and do not treat -- specially. The exit, logout, return, break, 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]
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
```

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

Рис. 10: Справка по команде cd

Справка по командам



```
ibabdurakhmanova@ibabdurakhmanova:~ — 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.

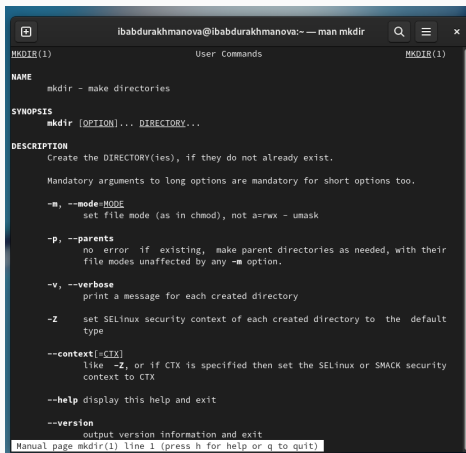
    NOTE: your shell may have its own version of pwd, which usually supersedes the
    version described here. Please refer to your shell's documentation for de-
    tails about the options it supports.

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



```
ibabdurakhmanova@ibabdurakhmanova:~ — 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

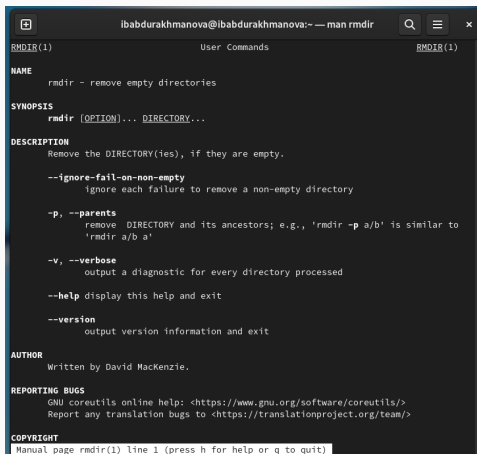
  --context[=CTX]
      like -Z, or if CTX is specified then set the SELinux or SMACK security
      context to CTX

  --help
      display this help and exit

  --version
      output version information and exit

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

Рис. 12: Справка по команде mkdir



```
ibabdurakhmanova@ibabdurakhmanova:~ — 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

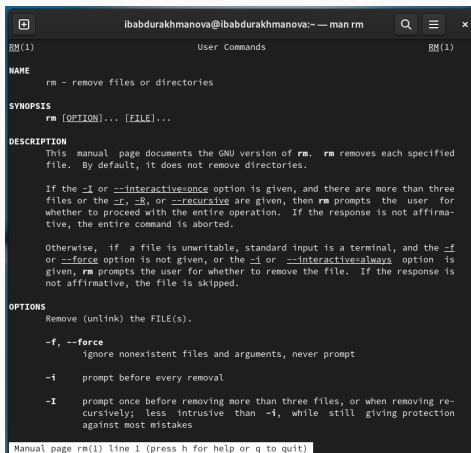
    --version
        output version information and exit

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

Рис. 13: Справка по команде rmdir



```
ibabdurakhmanova@ibabdurakhmanova:~ -- 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, -B, 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 re-
                       cursively; less intrusive than -i, while still giving protection
                       against most mistakes

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

Рис. 14: Справка по команде rm

История командной строки

```
80 mkdir newdir
81 mkdir newdir/morefun
82 mkdir letters memos misk
83 ls
84 rm letters/ memos/ misk/
85 rm -r letters/ memos/ misk/
86 rm -r newdir/
87 ls
88 ls -R
89 ls -t
90 man cd
91 man pwd
92 man mkdir
93 man rmdir
94 man rm
95 history
ibabdurakhmanova@ibabdurakhmanova:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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