

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

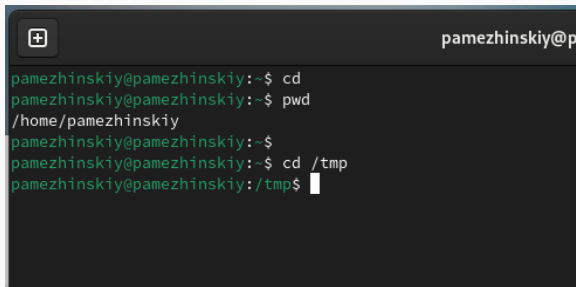
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



```
pamezhinskiy@pamezhinskiy:~$ cd
pamezhinskiy@pamezhinskiy:~$ pwd
/home/pamezhinskiy
pamezhinskiy@pamezhinskiy:~$
pamezhinskiy@pamezhinskiy:~$ cd /tmp
pamezhinskiy@pamezhinskiy:/tmp$
```

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
pamezhinskiy@pamezhinskiy:~$ cd /tmp
pamezhinskiy@pamezhinskiy:/tmp$ ls
dbus-KSX0PJF7
dbus-woDnibmk
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-chrond.service-QuHVgk
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-colord.service-wd8kRp
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-dbus-broker.service-njQKfb
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-fwupd.service-ynTUjY
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-low-memory-monitor.service-2qF4vy
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-ModemManager.service-3obyd0
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-polkit.service-fJLq0T
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-power-profiles-daemon.service-UAzXx8
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-rtkit-daemon.service-9LPL7w
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-switcheroo-control.service-yKIn51
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-logind.service-ID30Fl
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-oomd.service-A1W60U
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-resolved.service-o6RQGG
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-upower.service-p5W0A
vmware-root_951-4013330126
pamezhinskiy@pamezhinskiy:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
pamezhinskiy@pamezhinskiy:/tmp$  
pamezhinskiy@pamezhinskiy:/tmp$ ls -la  
.  
..  
dbus-KSX0PJF7  
dbus-woDnibmk  
.font-unix  
.ICE-unix  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-chronyd.service-QuHVgk  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-colord.service-wd8kRp  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-dbus-broker.service-njQKfb  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-fwupd.service-ynTujY  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-low-memory-monitor.service-2qF4vy  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-ModemManager.service-3obyd0  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-polkit.service-fJLq0T  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-power-profiles-daemon.service-UAzXx8  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-rtkit-daemon.service-9LPL7w  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-switcheroo-control.service-yKIn51  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-logind.service-i038Fl  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-oomd.service-A1W60U  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-resolved.service-o6RQGD  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-upower.service-p5McOA  
vmware-root_951-4013330126  
.X0-lock  
.X1024-lock  
.X1025-lock  
.X11-unix  
.X1-lock  
.XIM-unix  
pamezhinskiy@pamezhinskiy:/tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```

pamezhinskiy@pamezhinskiy:~$ ls -l
total 0
srwx-rw-rw- 1 root root 0 map 9 16:53 dbus-K5X8P3F7
srwx-rw-rw- 1 root root 0 map 9 16:53 dbus-w0bNlbeK
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-chromyd.service-QuWVGK
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-colord.service-w88Kp
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-dbus-broker.service-rjQrB
drwx----- 3 root root 60 map 9 16:54 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-fwupd.service-p0t0jY
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-low-memory-monitor.service-2qF4y
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-NodeManager.service-3obyD0
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-polkIt.service-72LqBT
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-power-profiles-daemon.service-0A2x8
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-rtkit-daemon.service-8LPL7e
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-switcheroo-control.service-yKi0I
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-systemd-logind.service-1030f1
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-systemd-oomd.service-A1W8W
drwx----- 3 root root 60 map 9 16:53 systemd-private-2773d8ebc5844ef0a6671d92ba577d35-systemd-resolved.service-u6Q5D
drwx----- 2 root root 40 map 9 16:53 /usr-root_951-4613336126
pamezhinskiy@pamezhinskiy:~$
```

Рис. 4: Команда ls -l

Опции команды ls

```
pamezhinskiy@pamezhinskiy: /tmp$  
pamezhinskiy@pamezhinskiy: /tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-oomd.service-A1W60U  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-resolved.service-o6RQGD  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-dbus-broker.service-njQKfb  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-chrond.service-QuHVGk  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-low-memory-monitor.service-2qF4vy  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-polkit.service-fJLq0T  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-power-profiles-daemon.service-UAzXx8  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-rtkit-daemon.service-9LPL7w  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-switcheroo-control.service-yKIn51  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-systemd-logind.service-iD38Fl  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-upower.service-p5Wc0A  
vmware-root_951-4013330126  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-ModemManager.service-3obyD0  
dbus-KSX0PJF7  
dbus-woDnibmk  
.X1024-lock  
.X1025-lock  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-colord.service-wd8kRp  
.X0-lock  
.X1-lock  
systemd-private-2773d8ebc5044ef0a6671d92bd577d35-fwupd.service-ynTujY  
pamezhinskiy@pamezhinskiy: /tmp$
```

Рис. 5: Команда ls -f

```
pamezhinskiy@pamezhinskiy:/tmp$  
pamezhinskiy@pamezhinskiy:/tmp$ cd /var/spool/  
pamezhinskiy@pamezhinskiy:/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 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  
pamezhinskiy@pamezhinskiy:/var/spool$
```

Рис. 6: Каталог /var/spool

```
pamezhinskiy@pamezhinskiy: /var/spool$  
pamezhinskiy@pamezhinskiy: /var/spool$ cd  
pamezhinskiy@pamezhinskiy: $ ls  
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
pamezhinskiy@pamezhinskiy: $ ls -al  
итого 20  
drwx----- 1 pamezhinskiy pamezhinskiy 498 мар 3 15:00 .  
drwxr-xr-x 1 root root 1216 мар 8 17:40 ..  
-rw----- 1 pamezhinskiy pamezhinskiy 210 мар 3 15:11 .bash_history  
-rw-r--r-- 1 pamezhinskiy pamezhinskiy 18 июл 19 2023 .bash_logout  
-rw-r--r-- 1 pamezhinskiy pamezhinskiy 144 июл 19 2023 .bash_profile  
-rw-r--r-- 1 pamezhinskiy pamezhinskiy 682 мар 3 14:58 .bashrc  
drwx----- 1 pamezhinskiy pamezhinskiy 452 мар 9 16:54 .cache  
drwx----- 1 pamezhinskiy pamezhinskiy 482 мар 3 15:00 .config  
-rw-r--r-- 1 pamezhinskiy pamezhinskiy 236 мар 3 14:56 .gitconfig  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 74 мар 3 15:04 git-extended  
drwx----- 1 pamezhinskiy pamezhinskiy 276 фев 24 14:48 gnupg  
drwx----- 1 pamezhinskiy pamezhinskiy 20 фев 24 13:53 .local  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 48 фев 24 13:53 .mozilla  
drwx----- 1 pamezhinskiy pamezhinskiy 132 фев 24 14:03 .ssh  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 10 фев 24 14:01 work  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Видео  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Документы  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Загрузки  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Изображения  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Музыка  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Общедоступные  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 'Рабочий стол'  
drwxr-xr-x 1 pamezhinskiy pamezhinskiy 0 фев 24 13:53 Шаблоны  
pamezhinskiy@pamezhinskiy: $
```

Рис. 7: Файлы в домашнем каталоге

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

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

Рис. 9: Команда ls -R и ls -t

Справка по командам

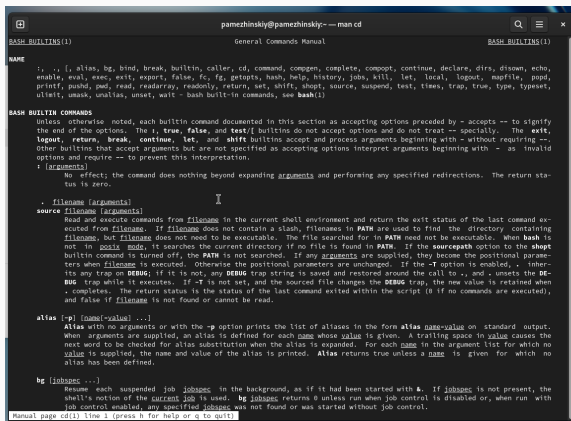
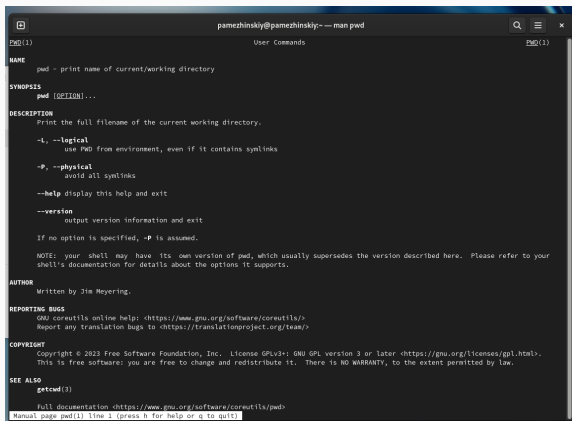


Рис. 10: Справка по команде cd

Справка по командам



```
pamezhinskiy@pamezhinskiy:~$ man pwd
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.

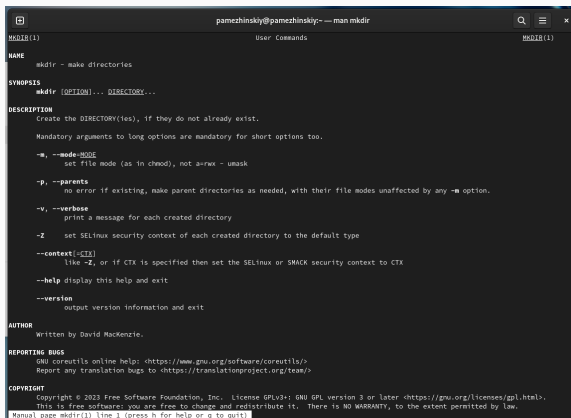
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    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report any translation bugs to <https://translationproject.org/team/>

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SEE ALSO
    getcwd(3)

    full documentation <https://www.gnu.org/software/coreutils/pwd>
    Manual page pwd(1) line 2 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd



```
pamezhinsky@pamezhinsky:~$ 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

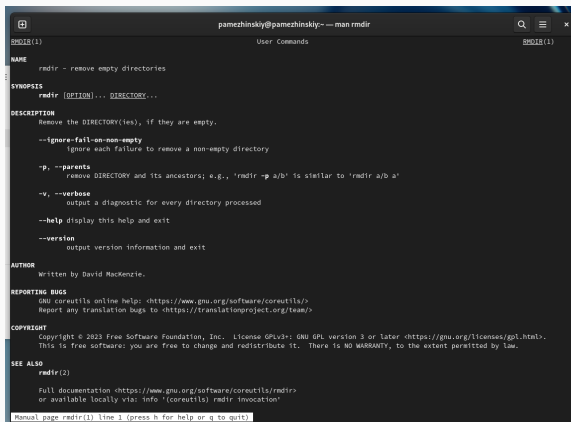
--version
    output version information and exit

AUTHOR
Written by David MacKenzie.

REPORTING BUGS
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 mkdir(1) line 1 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir



```
pamezhinskiy@pamezhinskiy: ~ — 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/>

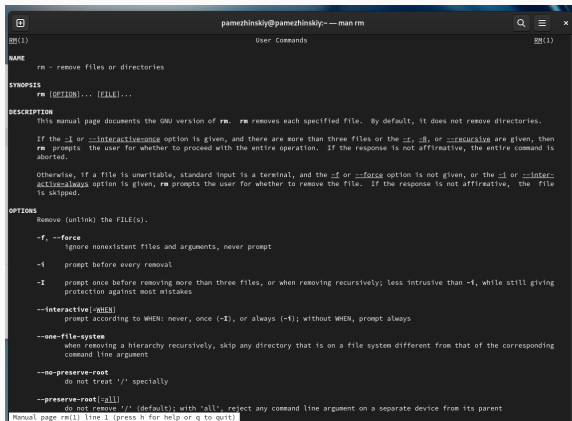
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  <https://gnu.org/licenses/gpl.html>.  This is free software: you are free to change and
  redistribute it.  There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
  rmdir(2)

  Full documentation <https://www.gnu.org/software/coreutils/rmdir>
  or available locally via: 'info '(coreutils) rmdir invocation'

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

Рис. 13: Справка по команде rmdir



```
pamezhinskii@pamezhinskii:~$ man rm
rm(1)                                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 option is given, and there are more than three files or the -r, -s, 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 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
    do not treat '/' specially

  --preserve-root[=all]
    do not remove '/' (default); with 'all', reject any command line argument on a separate device from its parent

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

Рис. 14: Справка по команде rm

История командной строки

```
27 cd
28 mkdir newdir
29 mkdir newdir/morefun
30 mkdir letters memos misk
31 ls
32 rm letters memos misk
33 rm -r letters/ memos/ misk/
34 rm -r newdir/
35 ls
36 ls -R
37 ls -t
38 man cd
39 man pwd
40 man mkdir
41 man rmdir
42 man rm
43 history
pamezhinskiy@pamezhinskiy:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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