

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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4 апреля, 2024, Москва, Россия

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Цели и задачи работы

Цель лабораторной работы

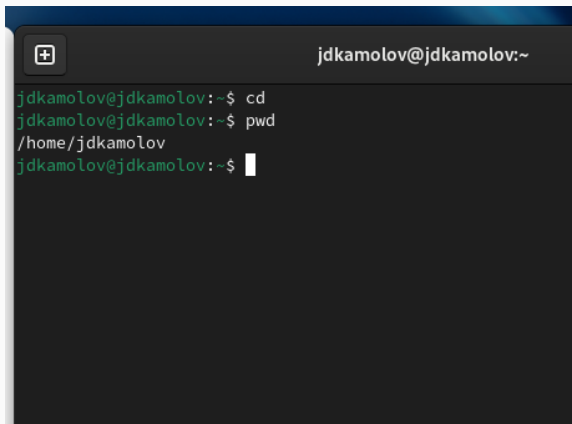
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

The image shows a terminal window with a dark background and a blue header bar. The header bar contains a plus icon in a square on the left and the text 'jdkamolov@jdkamolov:~' on the right. The terminal content shows a sequence of commands: 'cd' followed by 'pwd', which outputs '/home/jdkamolov'. The prompt 'jdkamolov@jdkamolov:~\$' is shown at the end of the output line, followed by a white cursor bar.

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
jdkamolv@jdkamolv:~$ cd /tmp
jdkamolv@jdkamolv:/tmp$ ls
dbus-5UbQ478F
dbus-XgXxeS1Q
systemd-private-d259769d6c484e888942849e105dd88e-chrond.service-6t0kHo
systemd-private-d259769d6c484e888942849e105dd88e-colord.service-VQPcHR
systemd-private-d259769d6c484e888942849e105dd88e-dbus-broker.service-7PEbBm
systemd-private-d259769d6c484e888942849e105dd88e-fwupd.service-1NYv51
systemd-private-d259769d6c484e888942849e105dd88e-geoclue.service-0cLMas
systemd-private-d259769d6c484e888942849e105dd88e-low-memory-monitor.service-3osAjb
systemd-private-d259769d6c484e888942849e105dd88e-ModemManager.service-xc6xE
systemd-private-d259769d6c484e888942849e105dd88e-polkit.service-eBWjTy
systemd-private-d259769d6c484e888942849e105dd88e-power-profiles-daemon.service-9egLpX
systemd-private-d259769d6c484e888942849e105dd88e-rtkit-daemon.service-mVRbDM
systemd-private-d259769d6c484e888942849e105dd88e-switcheroo-control.service-r0CF3F
systemd-private-d259769d6c484e888942849e105dd88e-systemd-hostnamed.service-kSU0xH
systemd-private-d259769d6c484e888942849e105dd88e-systemd-logind.service-jtLDJK
systemd-private-d259769d6c484e888942849e105dd88e-systemd-oomd.service-WzaIJV
systemd-private-d259769d6c484e888942849e105dd88e-systemd-resolved.service-oLJgza
systemd-private-d259769d6c484e888942849e105dd88e-upower.service-lzkqZS
vmware-root_930-2722763397
jdkamolv@jdkamolv:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
jdkamolv@jdkamolv:/tmp$  
jdkamolv@jdkamolv:/tmp$ ls -la  
.  
..  
dbus-5UbQ478F  
dbus-XgXxeSlQ  
font-unix  
ICE-unix  
systemd-private-d259769d6c484e888942849e105dd88e-chrond.service-6t0kHo  
systemd-private-d259769d6c484e888942849e105dd88e-colord.service-VQPcHR  
systemd-private-d259769d6c484e888942849e105dd88e-dbus-broker.service-7PEbBm  
systemd-private-d259769d6c484e888942849e105dd88e-fwupd.service-1NYv51  
systemd-private-d259769d6c484e888942849e105dd88e-low-memory-monitor.service-3osAjb  
systemd-private-d259769d6c484e888942849e105dd88e-ModemManager.service-xc6xE  
systemd-private-d259769d6c484e888942849e105dd88e-polkit.service-eBWjTy  
systemd-private-d259769d6c484e888942849e105dd88e-power-profiles-daemon.service-9egLpX  
systemd-private-d259769d6c484e888942849e105dd88e-rtkit-daemon.service-mVRbDM  
systemd-private-d259769d6c484e888942849e105dd88e-switcheroo-control.service-rOCF3F  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-logind.service-jtLDJK  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-oomd.service-WzaIJV  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-resolved.service-oLJgza  
systemd-private-d259769d6c484e888942849e105dd88e-upower.service-lzkqZS  
vmware-root_930-2722763397  
X0-lock  
X1024-lock  
X1025-lock  
X11-unix  
X1-lock  
XIM-unix  
jdkamolv@jdkamolv:/tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
jdkamolv@jdkamolv1:tmp$  
jdkamolv@jdkamolv:tmp$ ls -l  
total 0  
srw-rw-rw-. 1 root root 0 anp 4 18:13 dbus-5UbQ476F  
srw-rw-rw-. 1 root root 0 anp 4 18:13 dbus-XgXeslQ  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-chronyd.service-6t0kWo  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-colord.service-VQPcHR  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-dbus-broker.service-7PEB8m  
drwx----- 3 root root 60 anp 4 18:22 systemd-private-d259769d6c484e888942849e105dd88e-fuopd.service-1NVv5L  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-low-memory-monitor.service-3oxAjb  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-ModemManager.service-xG6xhF  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-palKit.service-eBUjTy  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-power-profiles-daemon.service-9aglpX  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-rbkit-daemon.service-wVRBDM  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-switcheroo-control.service-roCF3F  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-systemd-logind.service-jtLOJK  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-systemd-oomd.service-WzaI3V  
drwx----- 3 root root 60 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-systemd-resolved.service-oL3gza  
drwx----- 2 root root 40 anp 4 18:13 systemd-private-d259769d6c484e888942849e105dd88e-upower.service-lzkqZ5  
drwx----- 2 root root 40 anp 4 18:13 vmware-root_936-2722763397  
jdkamolv@jdkamolv:tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
jdkaolov@jdkaolov: /tmp$  
jdkaolov@jdkaolov: /tmp$ ls -f  
..  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-oomd.service-WzaIJV  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-resolved.service-oLJgza  
systemd-private-d259769d6c484e888942849e105dd88e-dbus-broker.service-7PEbBm  
systemd-private-d259769d6c484e888942849e105dd88e-chronyd.service-6t0kHo  
systemd-private-d259769d6c484e888942849e105dd88e-low-memory-monitor.service-3osAjb  
systemd-private-d259769d6c484e888942849e105dd88e-polkit.service-eBWjIy  
systemd-private-d259769d6c484e888942849e105dd88e-power-profiles-daemon.service-9egLpX  
systemd-private-d259769d6c484e888942849e105dd88e-rtkit-daemon.service-mVRBDM  
systemd-private-d259769d6c484e888942849e105dd88e-switcheroo-control.service-rOCF3F  
systemd-private-d259769d6c484e888942849e105dd88e-systemd-logind.service-jtLDJK  
systemd-private-d259769d6c484e888942849e105dd88e-upower.service-lzkQZS  
vmware-root_930-2722763397  
systemd-private-d259769d6c484e888942849e105dd88e-ModemManager.service-xc6xhE  
dbus-XgXxeSlQ  
dbus-5UbQ478F  
.X1024-lock  
.X1025-lock  
systemd-private-d259769d6c484e888942849e105dd88e-colord.service-VQPcHR  
.X0-lock  
.X1-lock  
systemd-private-d259769d6c484e888942849e105dd88e-fwupd.service-1NYv51  
jdkaolov@jdkaolov: /tmp$
```

Рис. 5: Команда ls -f

```
jdkamolov@jdkamolov:/tmp$  
jdkamolov@jdkamolov:/tmp$ cd /var/spool/  
jdkamolov@jdkamolov:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1438 мар 24 12:13 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 1450 мар 23 21:36 mail  
drwxr-xr-x. 1 root root  0 июл 21  2023 plymouth  
jdkamolov@jdkamolov:/var/spool$
```

Рис. 6: Каталог /var/spool

```
jdkamolv@jdkamolv: /var/spool$ cd
jdkamolv@jdkamolv:~$ ls
work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
jdkamolv@jdkamolv:~$ ls -al
итого 20
drwx-----. 1 jdkamolv jdkamolv 474 мар 24 10:20 .
drwxr-xr-x. 1 root root 1444 мар 23 21:36 ..
-rw-----. 1 jdkamolv jdkamolv 1156 мар 24 10:30 .bash_history
-rw-r--r--. 1 jdkamolv jdkamolv 18 янв 22 03:00 .bash_logout
-rw-r--r--. 1 jdkamolv jdkamolv 144 янв 22 03:00 .bash_profile
-rw-r--r--. 1 jdkamolv jdkamolv 522 янв 22 03:00 .bashrc
drwx-----. 1 jdkamolv jdkamolv 424 мар 24 10:20 .cache
drwx-----. 1 jdkamolv jdkamolv 414 мар 24 10:30 .config
-rw-r--r--. 1 jdkamolv jdkamolv 233 мар 24 10:13 .gitconfig
drwx-----. 1 jdkamolv jdkamolv 136 мар 24 10:10 .gnupg
drwx-----. 1 jdkamolv jdkamolv 20 мар 24 10:04 .local
drwxr-xr-x. 1 jdkamolv jdkamolv 48 мар 24 10:05 .mozilla
drwx-----. 1 jdkamolv jdkamolv 132 мар 24 10:12 .ssh
drwxr-xr-x. 1 jdkamolv jdkamolv 10 мар 24 10:12 work
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Видео
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Документы
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Загрузки
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Изображения
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Музыка
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Общедоступные
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 'Рабочий стол'
drwxr-xr-x. 1 jdkamolv jdkamolv 0 мар 24 10:04 Шаблоны
jdkamolv@jdkamolv:~$
```

Рис. 7: Файлы в домашнем каталоге

```
jdkamolv@jdkamolv: $  
jdkamolv@jdkamolv: $ mkdir newdir  
jdkamolv@jdkamolv: $ mkdir newdir/morefun  
jdkamolv@jdkamolv: $ mkdir letters memos misk  
jdkamolv@jdkamolv: $ ls  
letters memos misk newdir work Багаи Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
jdkamolv@jdkamolv: $ rm letters/ memos/ misk/  
rm: невозможно удалить 'letters/': это каталог  
rm: невозможно удалить 'memos/': это каталог  
rm: невозможно удалить 'misk/': это каталог  
jdkamolv@jdkamolv: $ rm -r letters/ memos/ misk/  
jdkamolv@jdkamolv: $ rm -r newdir/  
jdkamolv@jdkamolv: $ ls  
work Багаи Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
jdkamolv@jdkamolv: $
```

Рис. 8: Действия с каталогами

Опции команды ls

```
root@192.168.0.200:~/test#  
'. /work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters':  
pandoc_eqnos.py pandoc_fignos.py pandoc_secnos.py pandoc_tablenos.py pandocxnos  
'. /work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':  
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:  
jdkamolv@jdkamolv:~$ ls -lt  
work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
jdkamolv@jdkamolv:~$
```

Рис. 9: Команда ls -R и ls -t

```
jdkamolv@jdkamolv:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [pathname]
Change the shell working directory.

Change the current directory to DIR. The default DIR is the value of the
HOME shell variable. If DIR is "-", it is converted to $OLDPWD.

The variable CDPATH defines the search path for the directory containing
DIR. Alternative directory names in CDPATH are separated by a colon (:).
A null directory name is the same as the current directory. If DIR begins
with a slash (/), then CDPATH is not used.

If the directory is not found, and the shell option 'cdable_vars' is set,
the word is assumed to be a variable name. If that variable has a value,
its value is used for DIR.

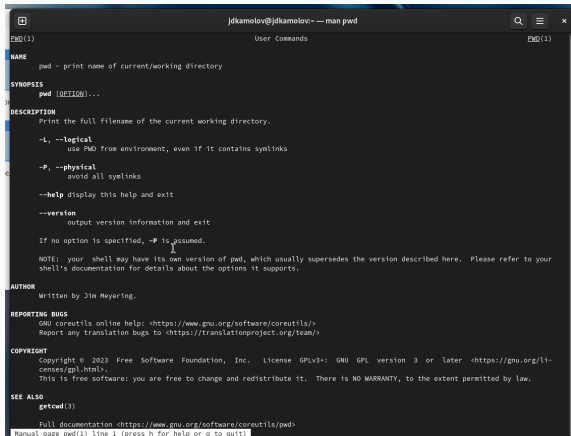
Options:
  -L      force symbolic links to be followed: resolve symbolic
          links in DIR after processing instances of '..'
  -P      use the physical directory structure without following
          symbolic links: resolve symbolic links in DIR before
          processing instances of '..'
  -e      if the -P option is supplied, and the current working
          directory cannot be determined successfully, exit with
          a non-zero status
  -@      on systems that support it, present a file with extended
          attributes as a directory containing the file attributes

The default is to follow symbolic links, as if '-L' were specified.
'..' is processed by removing the immediately previous pathname component
back to a slash or the beginning of DIR.

Exit Status:
Returns 0 if the directory is changed, and if $PWD is set successfully when
-P is used; non-zero otherwise.
jdkamolv@jdkamolv:~$
```

Рис. 10: Справка по команде cd

Справка по командам



```
jdkamolov@jdkamolov:~ — 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 Meyerling.

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

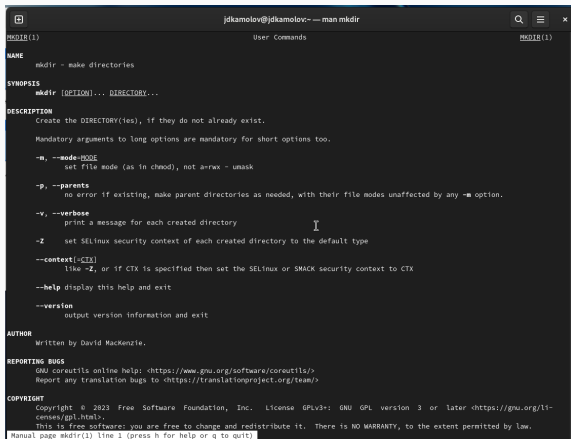
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SEE ALSO
  getcwd(3)

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

Рис. 11: Справка по команде pwd

Справка по командам



```
jdkamolov@jdkamolov:~$ 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.

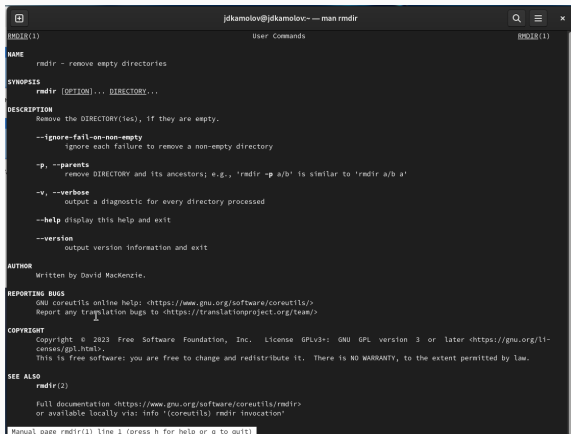
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    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
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Manual page mkdir(1) line 1 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir

Справка по командам



```
jdkamolov@jdkamolov:~ -- 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/>
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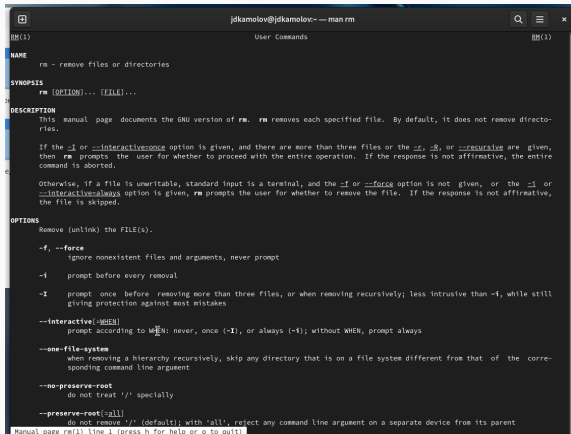
SEE ALSO
  rmdir(2)

  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

Справка по командам



```
jdkamolov@jdkamolov:~ — 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 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 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

```
38 ls -l
39 ls -l
40 ls -f
41 cd /var/spool/
42 ls -l
43 cd
44 ls
45 ls -al
46 mkdir newdir
47 mkdir newdir/morefun
48 mkdir letters memos misk
49 ls
50 rm letters/ memos/ misk/
51 rm -r letters/ memos/ misk/
52 rm -r newdir/
53 ls
54 ls -R
55 ls -t
56 help cd
57 man pwd
58 man mkdir
59 man rmdir
60 man rm
61 history
jdkamolv@jdkamolv:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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