

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

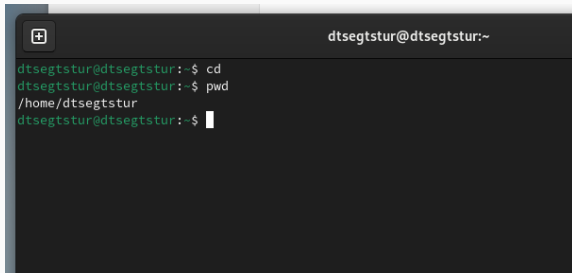
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
dtsegtstur@dtsegtstur:~$ cd /tmp
dtsegtstur@dtsegtstur:/tmp$ ls
dbus-a1DjbN2s
dbus-eG7pfKnm
hsperfdata_dtsegtstur
systemd-private-39c42eed43cd41e080b6770b1e4616f5-chronyd.service-u6IBZ6
systemd-private-39c42eed43cd41e080b6770b1e4616f5-colord.service-FfWgLU
systemd-private-39c42eed43cd41e080b6770b1e4616f5-dbus-broker.service-kUTXTI
systemd-private-39c42eed43cd41e080b6770b1e4616f5-low-memory-monitor.service-TgsECu
systemd-private-39c42eed43cd41e080b6770b1e4616f5-ModemManager.service-Rthfk9
systemd-private-39c42eed43cd41e080b6770b1e4616f5-polkit.service-XXedFx
systemd-private-39c42eed43cd41e080b6770b1e4616f5-power-profiles-daemon.service-QDp1FQ
systemd-private-39c42eed43cd41e080b6770b1e4616f5-rtkit-daemon.service-IXXQJx
systemd-private-39c42eed43cd41e080b6770b1e4616f5-switcheroo-control.service-lva2qk
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-logind.service-B41xZr
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-oomd.service-zgars6
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-resolved.service-JWjDI1
systemd-private-39c42eed43cd41e080b6770b1e4616f5-upower.service-vI9qk2
VHwarednG
vmware-root_939-4022308693
dtsegtstur@dtsegtstur:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
dtsegtstur@dtsegtstur:/tmp$  
dtsegtstur@dtsegtstur:/tmp$ ls -a  
.  
..  
dbus-a1DjbN2s  
dbus-eG7pfKnm  
.font-unix  
hsperfdata_dtsegtstur  
.ICE-unix  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-chronyd.service-u6IBZ6  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-colord.service-FfwGLU  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-dbus-broker.service-kUTXTI  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-low-memory-monitor.service-TgsECu  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-ModemManager.service-Rthfk9  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-polkit.service-XXedFx  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-power-profiles-daemon.service-QDp1FQ  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-rtkit-daemon.service-IXXQJx  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-switcheroo-control.service-lva2qk  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-logind.service-B4lxZz  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-oemd.service-zgars6  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-systemd-resolved.service-JWj0I1  
systemd-private-39c42eed43cd41e080b6770b1e4616f5-upower.service-vI9qk2  
VMwareDnD  
vmware-root_939-4022308693  
.X0-lock  
.X1024-lock  
.X1025-lock  
.X11-unix  
.X1-lock  
.XIM-unix  
dtsegtstur@dtsegtstur:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
dtsegtstur@dtsegtstur:/tmp$  
dtsegtstur@dtsegtstur:/tmp$ ls -l  
итого 0  
srw-rw-rw-. 1 root      root      0 сен 5 14:33 dbus-a1DjbN2s  
srw-rw-rw-. 1 root      root      0 сен 5 14:33 dbus-eG7pfKnm  
drwxr-xr-x. 2 dtsegtstur dtsegtstur 40 сен 5 15:07 hspcrfdata_dtsegtstur  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
chronyd.service-u6IBZ6  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
colord.service-FfwgiU  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
dbus-broker.service-kUTXTI  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
lss-memory-monitor.service-YgsECu  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
ModemManager.service-RthfK9  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
polkit.service-XKedFx  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
power-profiles-daemon.service-QDp1FQ  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
rtkit-daemon.service-IXXQJx  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
switcheroo-control.service-lva2qk  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
systemd-logind.service-B4lxZx  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
systemd-oomd.service-zgars6  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
systemd-resolved.service-JwJ0U1  
drwx-----, 3 root      root      60 сен 5 14:33 systemd-private-39c42eed43cd41e080b6770b1e4616f5-  
upower.service-v19qk2  
drwxrwxrwt. 2 dtsegtstur dtsegtstur 200 сен 5 15:41 VMware0nD  
drwx-----, 2 root      root      40 сен 5 14:33 vmware-root_939-4022308693  
dtsegtstur@dtsegtstur:/tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
dtsegtstur@dtsegtstur:~/tmp$  
dtsegtstur@dtsegtstur:~/tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-39c42eed43cd41e080b6770ble4616f5-systemd-oomd.service-zgars6  
systemd-private-39c42eed43cd41e080b6770ble4616f5-systemd-resolved.service-JWj011  
systemd-private-39c42eed43cd41e080b6770ble4616f5-dbus-broker.service-kUTXTI  
systemd-private-39c42eed43cd41e080b6770ble4616f5-chronyd.service-u6IBZ6  
systemd-private-39c42eed43cd41e080b6770ble4616f5-low-memory-monitor.service-TgsECu  
systemd-private-39c42eed43cd41e080b6770ble4616f5-polkit.service-XKedFx  
systemd-private-39c42eed43cd41e080b6770ble4616f5-power-profiles-daemon.service-QDp1FQ  
systemd-private-39c42eed43cd41e080b6770ble4616f5-rtkit-daemon.service-IXXQJx  
systemd-private-39c42eed43cd41e080b6770ble4616f5-switcheroo-control.service-lva2qk  
systemd-private-39c42eed43cd41e080b6770ble4616f5-systemd-logind.service-B4lxZz  
systemd-private-39c42eed43cd41e080b6770ble4616f5-upower.service-vI9qk2  
vmware-root_939-4022308693  
systemd-private-39c42eed43cd41e080b6770ble4616f5-ModemManager.service-Rthfk9  
dbus-a1DjbN2s  
dbus-eG7pfKNm  
.X1024-lock  
.X1025-lock  
systemd-private-39c42eed43cd41e080b6770ble4616f5-colord.service-FfwgLU  
.X0-lock  
.X1-lock  
hsperfdata_dtsegtstur  
VMwareDnD  
dtsegtstur@dtsegtstur:~/tmp$
```

Рис. 5: Команда ls -f

```
dtsegtstur@dtsegtstur:/tmp$  
dtsegtstur@dtsegtstur:/tmp$ cd /var/spool/  
dtsegtstur@dtsegtstur:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1508 сен  1 14:16 abrt  
drwx-----. 1 abrt abrt   0 июл 19  2023 abrt-upload  
drwx--x---. 1 root lp     6 фев 16  2024 cups  
drwxr-xr-x. 1 root root   0 июл 21  2023 lpd  
drwxrwxr-x. 1 root mail  694 сен  5 14:32 mail  
drwxr-xr-x. 1 root root   0 июл 21  2023 plymouth  
dtsegtstur@dtsegtstur:/var/spool$
```

Рис. 6: Каталог /var/spool

Домашний каталог

```
dtsegtstur@dtsegtstur: /var/spool$  
dtsegtstur@dtsegtstur: /var/spool$ cd  
dtsegtstur@dtsegtstur:~$ ls  
git-extended Видео Загрузки Музыка 'Рабочий стол'  
work Документы Изображения Общедоступные Шаблоны  
dtsegtstur@dtsegtstur:~$ ls -al  
итого 24  
drwx-----. 1 dtsegtstur dtsegtstur 534 сен 5 15:30 .  
drwxr-xr-x. 1 root root 688 сен 5 14:32 ..  
-rw-----. 1 dtsegtstur dtsegtstur 2693 сен 5 15:43 .bash_history  
-rw-r--r--. 1 dtsegtstur dtsegtstur 18 янв 22 2024 .bash_logout  
-rw-r--r--. 1 dtsegtstur dtsegtstur 144 янв 22 2024 .bash_profile  
-rw-r--r--. 1 dtsegtstur dtsegtstur 680 сен 5 15:28 .bashrc  
drwx-----. 1 dtsegtstur dtsegtstur 452 сен 5 15:34 .cache  
drwx-----. 1 dtsegtstur dtsegtstur 398 сен 5 15:34 .config  
-rw-r--r--. 1 dtsegtstur dtsegtstur 334 мар 25 03:00 .emacs  
-rw-r--r--. 1 dtsegtstur dtsegtstur 233 сен 5 14:58 .gitconfig  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 74 сен 5 15:38 git-extended  
drwx-----. 1 dtsegtstur dtsegtstur 136 сен 5 14:57 .gnupg  
drwx-----. 1 dtsegtstur dtsegtstur 20 сен 5 14:33 .local  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 48 сен 5 14:50 .mozilla  
drwx-----. 1 dtsegtstur dtsegtstur 132 сен 5 15:00 .ash  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 18 сен 5 15:05 .texlive2023  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 10 сен 5 14:59 work  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Видео  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Документы  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Загрузки  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Изображения  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Музыка  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Общедоступные  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 'Рабочий стол'  
drwxr-xr-x. 1 dtsegtstur dtsegtstur 0 сен 5 14:33 Шаблоны  
dtsegtstur@dtsegtstur:~$
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':  
' :  
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:  
dtsegtstur@dtsegtstur:~$ ls -t  
git-extended Видео Изображения Общедоступные 'Рабочий стол'  
work Документы Музыка Загрузки Шаблоны  
dtsegtstur@dtsegtstur:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам

```
work      докумен...  pyzama    3d.pyam    3dpyam
dtsegtstur@dtsegtstur:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [karanor]
    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.

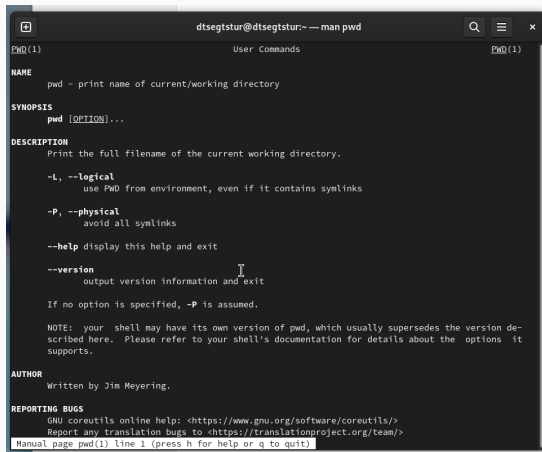
If the directory is not found, and the shell option 'cdable_vars' is set,
the word is assumed to be a variable name.  If that variable has a value,
its value is used for DIR.

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.
```

Рис. 10: Справка по команде cd

Справка по командам



```
dtsegtstur@dtsegtstur:~ -- 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.

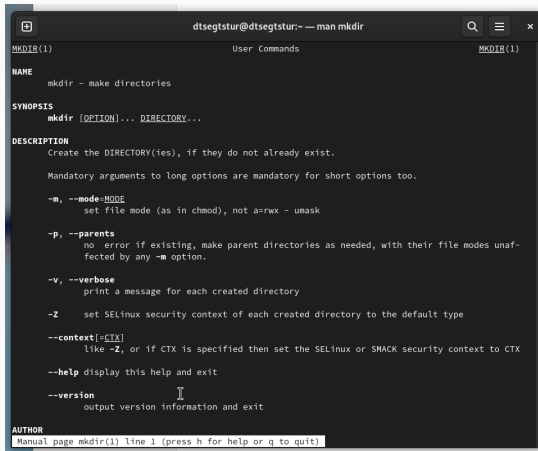
NOTE: your shell may have its own version of pwd, which usually supersedes the version de-
scribed here. Please refer to your shell's documentation for details about the options it
supports.

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/>

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

Рис. 11: Справка по команде pwd



```
dtsegtstur@dtsegtstur:~ — 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

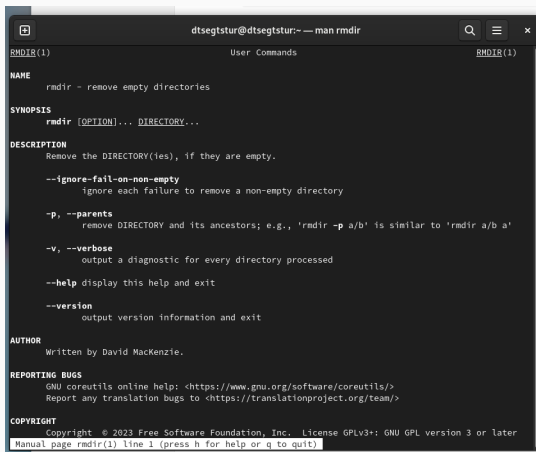
    --context[=CTX]
        like -Z, or if CTX is specified then set the SELinux or SMACK security context to CTX

    --help display this help and exit

    --version
        output version information and exit

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

Рис. 12: Справка по команде mkdir



```
dtsegtstur@dtsegtstur:~ -- 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

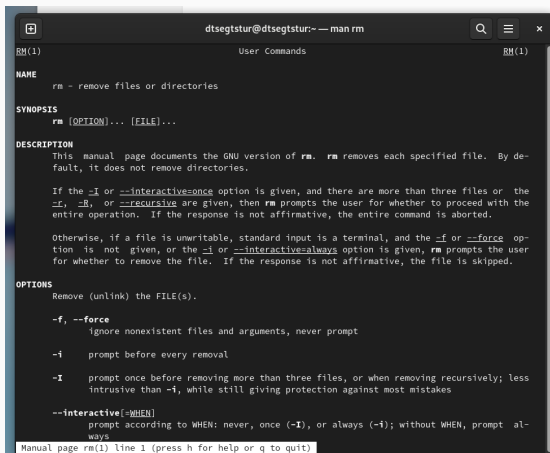
    --version
        output version information and exit

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



```
dtsegtstur@dtsegtstur:~ — 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, -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

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

Рис. 14: Справка по команде rm

История командной строки

```
111 ls -l
112 cd
113 ls
114 ls -al
115 mkdir newdir
116 mkdir newdir/morefun
117 mkdir letters memos misk
118 ls
119 rm letters/ memos/ misk/
120 rm -r letters/ memos/ misk/
121 rm -r newdir/
122 ls
123 ls -R
124 ls -t
125 help cd
126 man pwd
127 man mkdir
128 man rmdir
129 man rm
130 history
dtsegtstur@dtsegtstur:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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