

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

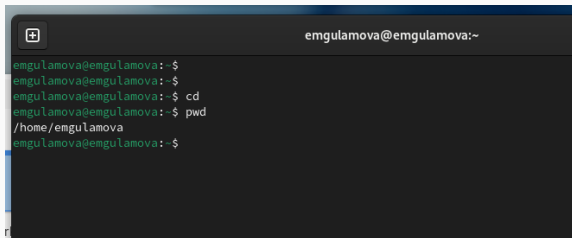
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
emgulamova@emgulamova:~$ cd /tmp
emgulamova@emgulamova:/tmp$ ls
dbus-j7QNg319
dbus-MvKMt5JC
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-chrond.service-YwnxKL
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-colord.service-Vnwt95
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-dbus-broker.service-YKTtqj
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-fwupd.service-z3mu5K
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-low-memory-monitor.service-f1vQQo
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-ModemManager.service-EH7spg
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-polkit.service-XQlcrV
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-power-profiles-daemon.service-U97r2q
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-rtkit-daemon.service-n51XCi
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-switcheroo-control.service-8dKACF
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-logind.service-Puowru
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-oomd.service-DA7rSb
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-resolved.service-nXaLCh
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-upower.service-fVp035
vmware-root_867-3988621819
emgulamova@emgulamova:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
emgulamova@emgulamova:/tmp$ ls -la
.
.
d-bus-j7QNg319
d-bus-MvKmt5JC
font-unix
ICE-unix
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-chrond.service-YwnxKL
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-colord.service-Vnwt95
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-dbus-broker.service-YKTTqj
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-fwupd.service-z3mu5K
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-low-memory-monitor.service-flvQqo
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-ModemManager.service-EN7spg
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-polkit.service-XQlcrV
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-power-profiles-daemon.service-U97r2q
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-rtkit-daemon.service-nS1XCi
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-switcheroo-control.service-8dKACF
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-logind.service-Puowru
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-oond.service-DA7rSb
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-resolved.service-nXaLcH
systemd-private-51e8235701e24b6482fd4cbbc3dea16d-upower.service-fVp035
vmware-root_867-3988621819
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
emgulamova@emgulamova:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
regulakov@regulakov: /tmp$  
regulakov@regulakov: /tmp$ ls -l  
итого 8  
srwx-rw-rw-. 1 root root 0 map 8 11:31 dbus-j7QNg319  
srwx-rw-rw-. 1 root root 0 map 8 11:31 dbus-RvKHE5JC  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-chromd.service-Pm0xL  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-colord.service-Pm0xS  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-dbus-broker.service-YK7Tqj  
drwx----- 3 root root 60 map 8 11:36 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-fwupd.service-zbm9K  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-low-memory-monitor.service-FlvQ0e  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-ModemManager.service-ER7ppg  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-polkIt.service-XqlcrV  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-power-profiles-daemon.service-U07r2q  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-rfkill-daemon.service-nS1Kc1  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-switcheroo-control.service-SdKACF  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-logind.service-Powuru  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-oomd.service-Ba7rsh  
drwx----- 3 root root 60 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-systemd-resolved.service-nXALch  
drwx----- 2 root root 40 map 8 11:31 systemd-private-51e8235701e24b6482fd4cbbc3dea16d-upower.service-Fyp0IS  
regulakov@regulakov: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
emgulamova@emgulamova: /tmp$  
emgulamova@emgulamova: /tmp$ ls -f  
..  
..  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-fwupd.service-z3mu5K  
.X1-lock  
.X0-lock  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-colord.service-Vnwt95  
.X1025-lock  
.X1024-lock  
dbus-j7QNg319  
dbus-MvKMT5JC  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-ModemManager.service-EN7spg  
vmware-root_867-3988621819  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-upower.service-fVp035  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-systemd-logind.service-Puowru  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-switcheroo-control.service-8dKACF  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-rtkit-daemon.service-nS1XCi  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-power-profiles-daemon.service-U97r2q  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-polkit.service-XQlcrV  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-low-memory-monitor.service-f1vQqo  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-chrond.service-YwnxKL  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-dbus-broker.service-YKTTqj  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-systemd-resolved.service-nXaLcH  
systemd-private-51e8235701e24b6482fd4cbbc3deal6d-systemd-oomd.service-DA7rSb  
..font-unix  
..XIM-unix  
..ICE-unix  
..X11-unix  
emgulamova@emgulamova: /tmp$
```

Рис. 5: Команда ls -f

```
emgulamova@emgulamova:/tmp$ cd /var/spool/  
emgulamova@emgulamova:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1436 мар  7 16:33 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 1178 мар  6 14:27 mail  
drwxr-xr-x. 1 root root    0 июл 21  2023 plymouth  
emgulamova@emgulamova:/var/spool$
```

Рис. 6: Каталог /var/spool

```
engulanova@engulanova:~/var/spool$  
engulanova@engulanova:~/var/spool$ cd  
engulanova@engulanova:~$ ls  
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
engulanova@engulanova:~$ ls -al  
итого 28  
drwx----- 1 engulanova engulanova 498 мар  2 14:14 .  
drwxr-xr-x. 1 root      root      1172 мар  6 14:27 ..  
-rw----- 1 engulanova engulanova 2625 мар  2 14:25 .bash_history  
-rw-r--r-- 1 engulanova engulanova  18 июл 19 2023 .bash_logout  
-rw-r--r-- 1 engulanova engulanova 144 июл 19 2023 .bash_profile  
-rw-r--r-- 1 engulanova engulanova 680 мар  2 14:13 .bashrc  
drwx----- 1 engulanova engulanova 418 мар  2 14:15 .cache  
drwx----- 1 engulanova engulanova 424 мар  2 14:15 .config  
-rw-r--r-- 1 engulanova engulanova 237 фев 26 18:03 .gitconfig  
drwxr-xr-x. 1 engulanova engulanova  74 мар  2 14:19 git-extended  
drwx----- 1 engulanova engulanova 136 фев 16 11:01 gnupg  
drwx----- 1 engulanova engulanova  20 фев 16 10:52 .local  
drwxr-xr-x. 1 engulanova engulanova  48 фев 16 10:52 .mozilla  
drwx----- 1 engulanova engulanova 132 фев 16 11:04 .ssh  
drwxr-xr-x. 1 engulanova engulanova  10 фев 16 11:03 work  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Видео  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Документы  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Загрузки  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Изображения  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Музыка  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Общедоступные  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 'Рабочий стол'  
drwxr-xr-x. 1 engulanova engulanova  0 фев 16 10:52 Шаблоны  
engulanova@engulanova:~$
```

Рис. 7: Файлы в домашнем каталоге

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

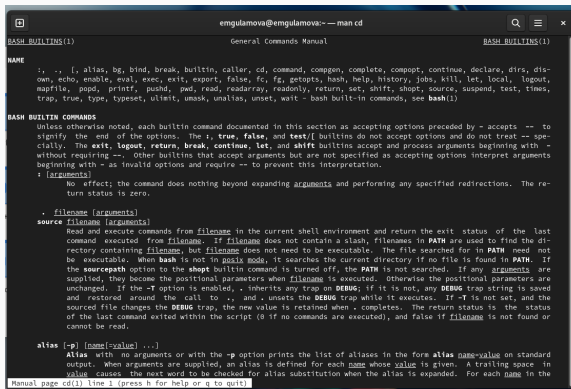
Рис. 8: Действия с каталогами

Опции команды ls

```
engulamova@engulamova: ~/work/study/2023-2024/Операционные системы/os-1intro/template/report/scripts$  
image-report mpv-shot  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол:  
./Шаблоны:  
engulamova@engulamova:~$ ls -lt  
git-extended work home Документы Загрузки Изображения Музыка Общедоступные Шаблоны 'Рабочий стол'  
engulamova@engulamova:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
emgulamova@emgulamova:~ — 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 -- to signify the end of the options. The set, 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.

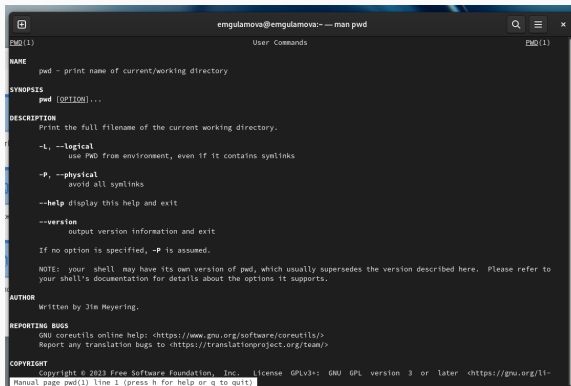
: [arguments]
    No effect; the command does nothing beyond expanding arguments and performing any specified redirections. The return status is zero.

. 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 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 exited 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 output. 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
```

Рис. 10: Справка по команде cd

Справка по командам



```
emgulamova@emgulamova:~$ 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.

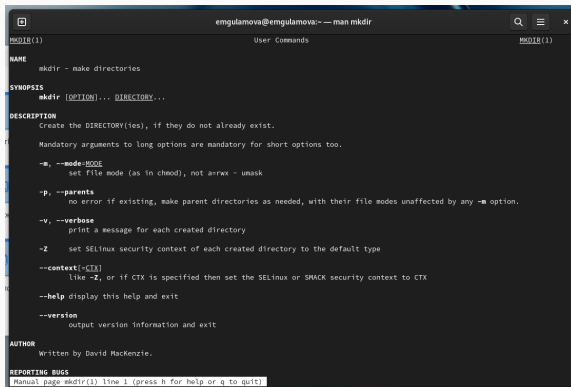
    NOTE: your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to
    your shell's documentation for details about the options it supports.

AUTHOR
    Written by Jim Meyering.

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

COPYRIGHT
    Copyright © 2023 Free Software Foundation, Inc. License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>
    Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd



```
emgulamova@emgulamova:~ -- 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

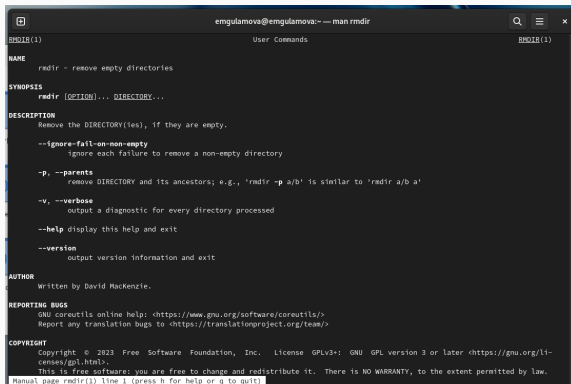
  --help
      display this help and exit

  --version
      output version information and exit

AUTHOR
  Written by David MacKenzie.

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

Рис. 12: Справка по команде mkdir



```
emgulamova@emgulamova:~ -- 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

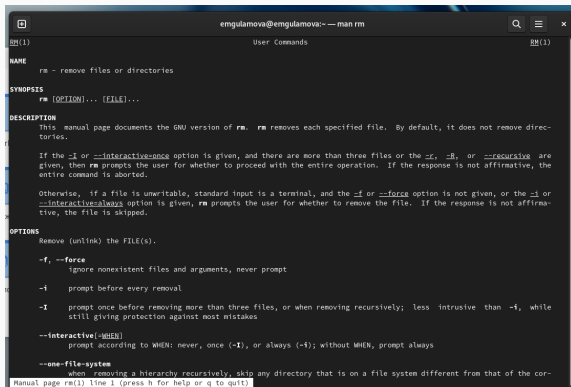
AUTHOR
  Written by David MacKenzie.

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

COPYRIGHT
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  This is free software; you are free to change and redistribute it. There is NO WARRANTY, to the extent permitted by law.
  Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir

Справка по командам



```
emgulamova@emgulamova:~$ 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

--one-file-system
    when removing a hierarchy recursively, skip any directory that is on a file system different from that of the current directory

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

Рис. 14: Справка по команде rm

История командной строки

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

Рис. 15: Команда history

Выводы по проделанной работе

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