

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
jennethuddyeva@jennethuddyeva:~$ cd /tmp
jennethuddyeva@jennethuddyeva:/tmp$ ls
dbus-k0rEgU58
dbus-Re4mhwW4
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-chrond.service-1bouAj
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-colord.service-8fsdM0
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-dbus-broker.service-Cuf5bt
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-fwupd.service-DirPla
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-low-memory-monitor.service-pFiFCw
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-ModemManager.service-mgRoz8
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-polkit.service-V8AGzk
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-power-profiles-daemon.service-L9vxBM
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-rtkit-daemon.service-yrjFuR
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-switcheroo-control.service-HtEcVH
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-systemd-hostnamed.service-Zf3Iox
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-systemd-logind.service-zEBW1S
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-systemd-oomd.service-27cKoT
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-systemd-resolved.service-8uBC2Z
systemd-private-ed6ba1ae27ee474a816af7a855ffb8d-upower.service-groLY5
vmware-root_931-3988621659
jennethuddyeva@jennethuddyeva:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
jennethuddyeva@jennethuddyeva: /tmp$ ls -la
..
..
dbus-k0rEgU58
dbus-Re4mhwW4
.font-unix
.ICE-unix
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-chronyd.service-1bouAj
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-colord.service-8fsdmD
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-dbus-broker.service-Cuf5bt
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-fwupd.service-D1rPla
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-low-memory-monitor.service-pFiFCw
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-ModemManager.service-mgRoz8
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-polkit.service-V8AGzk
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-power-profiles-daemon.service-L9vxBM
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-rtkit-daemon.service-yrjFuR
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-switcheroo-control.service-HtEcVH
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-systemd-logind.service-zEBW1S
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-systemd-oomd.service-27cKoT
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-systemd-resolved.service-8uBC2Z
systemd-private-ed6b1ae27ee474a816af7a855ffb8d-upower.service-groLYS
vmware-root_931-3988621659
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
jennethuddyeva@jennethuddyeva: /tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
jennethuddyeva@jennethuddyeva: /tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 wap 11 13:27 dbus-k0rEgU58
srw-rw-rw-. 1 root root 0 wap 11 13:27 dbus-RednhuW4
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-chronyd.service-lhouAJ
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-cold.service-8fsd8D
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-dbus-broker.service-Cuf5bt
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-fuopd.service-0irP1a
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-low-memory-monitor.service-pfIfCw
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-ModemManager.service-mgRozi
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-pelkit.service-V88Gzk
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-power-profiles-daemon.service-L3vx8H
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-rtkit-daemon.service-yrjFu8
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-switcheroo-control.service-HTECVH
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-systemd-logind.service-zEBn15
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-systemd-oomd.service-27cKoI
drwx----- 3 root root 60 wap 11 13:27 systemd-private-ed8h1ae27ee474a816af7a855ffb8d-systemd-resolved.service-8uBC2Z
drwx----- 2 root root 40 wap 11 13:27 vmware-root_931-3588621659
jennethuddyeva@jennethuddyeva: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
jennethuddyeva@jennethuddyeva:~$ cd /tmp
jennethuddyeva@jennethuddyeva:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-systemd-oond.service-27cKoT
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-systemd-resolved.service-8uBC2Z
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-dbus-broker.service-Cuf5bt
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-chronyd.service-1bouAj
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-low-memory-monitor.service-pFiFcW
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-polkit.service-V8AGzk
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-power-profiles-daemon.service-L9vxBM
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-rtkit-daemon.service-yrjFuR
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-switcheroo-control.service-HtEcVH
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-systemd-logind.service-zEBW1S
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-upower.service-groLY5
vmware-root_931-3988621659
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-ModemManager.service-mgRoz8
dbus-k0rEgU58
dbus-Re4mhwW4
.X1024-lock
.X1025-lock
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-colord.service-8fsdmD
.X0-lock
.X1-lock
systemd-private-ed6ba1ae27ee474a816af7a855ffbf8d-fwupd.service-D1rPla
jennethuddyeva@jennethuddyeva:/tmp$
```

Рис. 5: Команда ls -f

Каталог /var/spool

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

Рис. 6: Каталог /var/spool

Домашний каталог

```
jennethuddyeva@jennethuddyeva: /var/spool$ cd
jennethuddyeva@jennethuddyeva: $ ls
git-extended work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
jennethuddyeva@jennethuddyeva: $ ls -al
итого 20
drwx----- 1 jennethuddyeva jennethuddyeva 498 мар 5 18:53 .
drwxr-xr-x. 1 root root 1216 мар 8 17:40 ..
-rw-r--r-- 1 jennethuddyeva jennethuddyeva 91 мар 5 18:53 .bash_history
-rw-r--r-- 1 jennethuddyeva jennethuddyeva 18 июл 19 2023 .bash_logout
-rw-r--r-- 1 jennethuddyeva jennethuddyeva 144 июл 19 2023 .bash_profile
-rw-r--r-- 1 jennethuddyeva jennethuddyeva 685 мар 5 18:31 .bashrc
drwx----- 1 jennethuddyeva jennethuddyeva 452 мар 11 13:34 .cache
drwx----- 1 jennethuddyeva jennethuddyeva 402 мар 5 18:53 .config
-rw-r--r-- 1 jennethuddyeva jennethuddyeva 177 мар 5 18:53 .gitconfig
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 74 мар 5 18:46 git-extended
drwx----- 1 jennethuddyeva jennethuddyeva 136 мар 5 18:26 .gnupg
drwx----- 1 jennethuddyeva jennethuddyeva 20 мар 5 17:44 .local
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 48 мар 5 17:44 .mozilla
drwx----- 1 jennethuddyeva jennethuddyeva 132 мар 5 18:28 .ssh
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 10 мар 5 18:28 work
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Видео
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Документы
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Загрузки
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Изображения
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Музыка
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Общедоступные
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 'Рабочий стол'
drwxr-xr-x. 1 jennethuddyeva jennethuddyeva 0 мар 5 17:44 Шаблоны
jennethuddyeva@jennethuddyeva: $
```

Рис. 7: Файлы в домашнем каталоге

Работа с каталогами

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

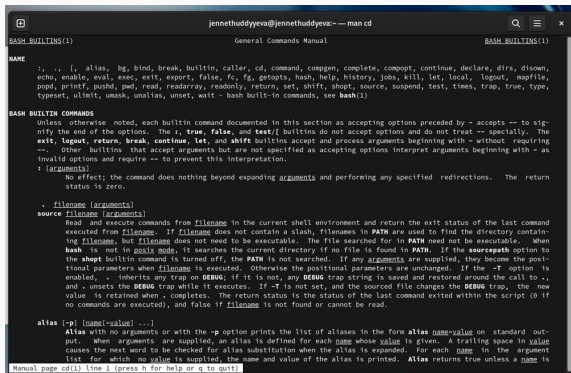
Рис. 8: Действия с каталогами

Опции команды ls

```
./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:  
jennethuddyyeva@jennethuddyyeva:~$ ls -lt  
git-extended work Pages Документы Загрузки Изображения Музыка Общедоступные Шаблоны 'Рабочий стол'  
jennethuddyyeva@jennethuddyyeva:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
jennethuddyyeva@jennethuddyyeva:~ — 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)

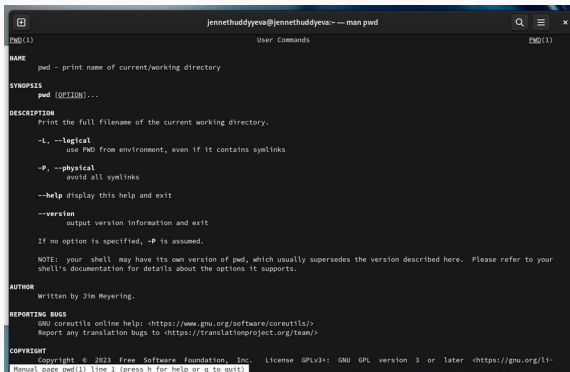
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by -- accepts -- to sig-
nify the end of the options. The :, true, false, and test/[ builtins do not accept options and do not treat -- specially. The
exit, logout, return, break, 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 contain-
    ing 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 posi-
    tional 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 out-
    put. 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 argument
    list for which no value is supplied, the name and value of the alias is printed. Alias returns true unless a name is
    Manual page cd(1) line 1 (press h for help or q to quit)
```

Рис. 10: Справка по команде cd

Справка по командам



```
jennethuddyeva@jennethuddyeva:~$ 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.

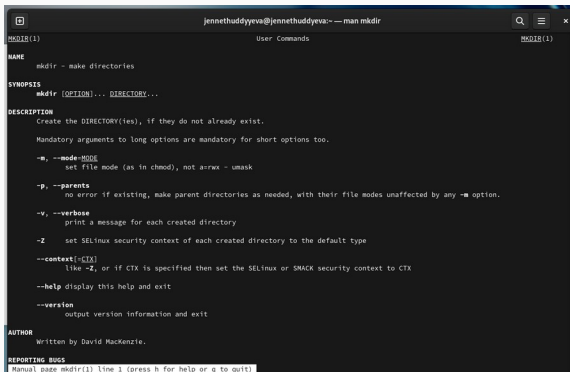
AUTHOR
  Written by Jim Meyering.

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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  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

Справка по командам



```
jennethuddyeva@jennethuddyeva:~$ 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

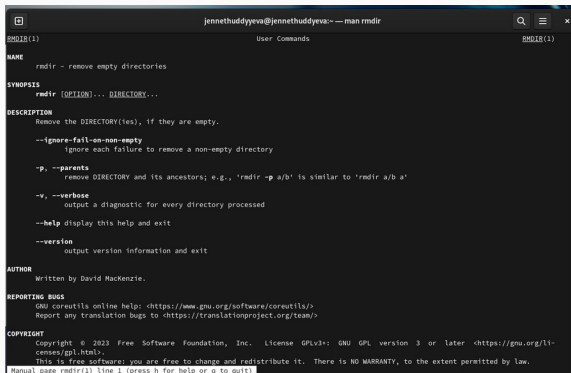
  --version
      output version information and exit

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

Справка по командам



```
jennethuddyyeva@jennethuddyyeva:~$ 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

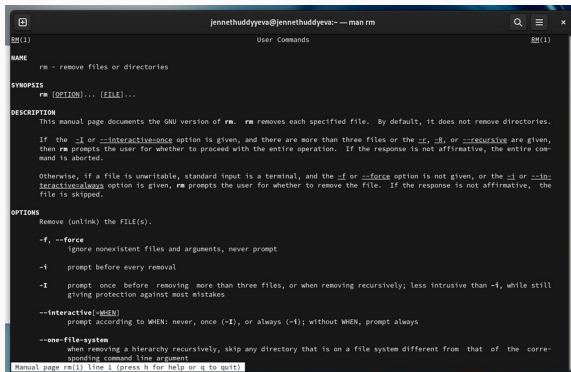
AUTHOR
  Written by David Mackenzie.

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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  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



```
jennethuddyeva@jennethuddyeva:~ — 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 -f, -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 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

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

Рис. 14: Справка по команде rm

История командной строки

```
20 mkdir newdir
21 mkdir newdir/morefun
22 mkdir letters memos misk
23 ls
24 rm letters/ memos/ misk/
25 rm -r letters/ memos/ misk/
26 rm -r newdir/
27 ls
28 ls -R
29 ls -t
30 man cd
31 man pwd
32 man mkdir
33 man rmdir
34 man rm
35 history
jennethuddyyeva@jennethuddyyeva:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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