

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

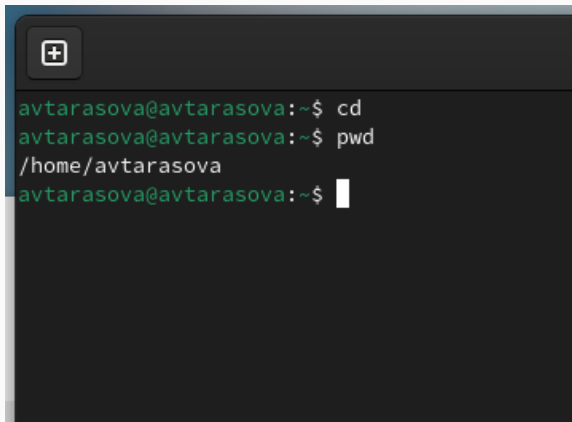
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

A terminal window with a dark background and a light gray title bar. The title bar contains a square icon with a plus sign. The terminal text shows a user named 'avtarasova' at a prompt '~\$' entering the command 'cd', followed by another prompt '~\$' where 'pwd' is entered, resulting in the output '/home/avtarasova'. A third prompt '~\$' is shown with a white cursor block.

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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
avtarasova@avtarasova:~$ cd /tmp
avtarasova@avtarasova:/tmp$ ls
dbus-3paWVV5L
dbus-1oNad1GY
systemd-private-e5c98cdab28549ec8017ebc96a806417-chronyd.service-pE0hAH
systemd-private-e5c98cdab28549ec8017ebc96a806417-colord.service-c5GHsg
systemd-private-e5c98cdab28549ec8017ebc96a806417-dbus-broker.service-B2HzNI
systemd-private-e5c98cdab28549ec8017ebc96a806417-fwupd.service-UNmY7q
systemd-private-e5c98cdab28549ec8017ebc96a806417-low-memory-monitor.service-m1DhVE
systemd-private-e5c98cdab28549ec8017ebc96a806417-ModemManager.service-xyMID
systemd-private-e5c98cdab28549ec8017ebc96a806417-polkit.service-h9Qwlo
systemd-private-e5c98cdab28549ec8017ebc96a806417-power-profiles-daemon.service-38pNU7
systemd-private-e5c98cdab28549ec8017ebc96a806417-rtkit-daemon.service-I2DlIC
systemd-private-e5c98cdab28549ec8017ebc96a806417-switcheroo-control.service-Ua56Gp
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-logind.service-MaWp6P
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-oomd.service-RADY7c
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-resolved.service-3WzUw7
systemd-private-e5c98cdab28549ec8017ebc96a806417-upower.service-GcKEro
vmware-root_907-4021784429
avtarasova@avtarasova:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
avatarsova@avatarsova:/tmp$ ls -la
.  
..  
dbus-3paWVV5l  
dbus-IoNadiGY  
.font-unix  
.ICE-unix  
systemd-private-e5c98cdab28549ec8017ebc96a806417-chrond.service-pE0hAH  
systemd-private-e5c98cdab28549ec8017ebc96a806417-colord.service-c5Ghsg  
systemd-private-e5c98cdab28549ec8017ebc96a806417-dbus-broker.service-B2HzNI  
systemd-private-e5c98cdab28549ec8017ebc96a806417-fwupd.service-UNmY7q  
systemd-private-e5c98cdab28549ec8017ebc96a806417-low-memory-monitor.service-m1DhVE  
systemd-private-e5c98cdab28549ec8017ebc96a806417-ModemManager.service-exyMID  
systemd-private-e5c98cdab28549ec8017ebc96a806417-polkit.service-h9Qwlo  
systemd-private-e5c98cdab28549ec8017ebc96a806417-power-profiles-daemon.service-38pNU7  
systemd-private-e5c98cdab28549ec8017ebc96a806417-rtkit-daemon.service-I2DlIC  
systemd-private-e5c98cdab28549ec8017ebc96a806417-switcheroo-control.service-Ua56Gp  
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-logind.service-MaWp6P  
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-oomd.service-RADY7c  
systemd-private-e5c98cdab28549ec8017ebc96a806417-systemd-resolved.service-3WzUw7  
systemd-private-e5c98cdab28549ec8017ebc96a806417-upower.service-GcKEro  
vmware-root_907-4021784429  
.X0-lock  
.X1024-lock  
.X1025-lock  
.X11-unix  
.X1-lock  
.XIM-unix  
avatarsova@avatarsova:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
avtarasova@avtarasova: /tmp$ ls -l
итого 0
srwx-rw-rw-. 1 root root 0 map 0 13:33 dbus-3paWV5l
srwx-rw-rw-. 1 root root 0 map 0 13:33 dbus-10kadiGV
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-chrond.service-pE8hAH
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-colord.service-c5G8g
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-dbus-broker.service-B2MzNI
drwx----- 3 root root 60 map 0 13:54 systemd-private-e5c90cdab28549ec8817ebc96a886417-fwupd.service-UmMYTq
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-low-memory-monitor.service-n1DHVE
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-ModemManager.service-xytND
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-polkit.service-B9Qwlo
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-power-profiles-daemon.service-38pNU7
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-rtkit-daemon.service-12D11C
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-switcheroo-control.service-Ha566p
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-systemd-logind.service-NuMp8P
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-systemd-oomd.service-RADV7c
drwx----- 3 root root 60 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-systemd-resolved.service-3WZuW7
drwx----- 3 root root 40 map 0 13:33 systemd-private-e5c90cdab28549ec8817ebc96a886417-upower.service-6cK8ro
drwx----- 2 root root 40 map 0 13:33 vmware-root_907-4021784429
avtarasova@avtarasova: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
avtarasova@avtarasova:~$ cd /tmp
avtarasova@avtarasova:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-e5c90cdab28549ec8017ebc96a806417-systemd-oomd.service-RADY7c
systemd-private-e5c90cdab28549ec8017ebc96a806417-systemd-resolved.service-3WzUw7
systemd-private-e5c90cdab28549ec8017ebc96a806417-dbus-broker.service-B2HzNI
systemd-private-e5c90cdab28549ec8017ebc96a806417-chrond.service-pE0hAH
systemd-private-e5c90cdab28549ec8017ebc96a806417-low-memory-monitor.service-m1DhVE
systemd-private-e5c90cdab28549ec8017ebc96a806417-polkit.service-h9Qwlo
systemd-private-e5c90cdab28549ec8017ebc96a806417-power-profiles-daemon.service-38ph
systemd-private-e5c90cdab28549ec8017ebc96a806417-rtkit-daemon.service-I2DlIC
systemd-private-e5c90cdab28549ec8017ebc96a806417-switcheroo-control.service-Ua56Gp
systemd-private-e5c90cdab28549ec8017ebc96a806417-systemd-logind.service-MaWp6P
systemd-private-e5c90cdab28549ec8017ebc96a806417-upower.service-GcKEro
vmware-root_907-4021784429
systemd-private-e5c90cdab28549ec8017ebc96a806417-ModemManager.service-exyMID
dbus-3paWV5l
dbus-IoNadiGY
.X1024-lock
.X1025-lock
systemd-private-e5c90cdab28549ec8017ebc96a806417-colord.service-c5GHsg
.X0-lock
.X1-lock
systemd-private-e5c90cdab28549ec8017ebc96a806417-fwupd.service-UNmY7q
avtarasova@avtarasova:/tmp$
```

Рис. 5: Команда ls -f

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

Рис. 6: Каталог /var/spool

```
avatarasova@avatarasova:~/var/spool$  
avatarasova@avatarasova:~/var/spool$ cd  
avatarasova@avatarasova:~$ ls  
ls: отсутствуют входные файлы  
avatarasova@avatarasova:~$ ls  
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны  
avatarasova@avatarasova:~$ ls -al  
итого 20  
drwxr-xr-x. 1 avatarasova avatarasova 498 мар 3 13:55 .  
drwxr-xr-x. 1 root root 1216 мар 8 17:40 ..  
-rw-r--r--. 1 avatarasova avatarasova 101 мар 3 14:04 .bash_history  
-rw-r--r--. 1 avatarasova avatarasova 18 июл 19 2023 .bash_logout  
-rw-r--r--. 1 avatarasova avatarasova 144 июл 19 2023 .bash_profile  
-rw-r--r--. 1 avatarasova avatarasova 680 мар 3 13:54 .bashrc  
drwxr-xr-x. 1 avatarasova avatarasova 452 мар 9 13:54 .cache  
drwxr-xr-x. 1 avatarasova avatarasova 424 мар 3 13:57 .config  
-rw-r--r--. 1 avatarasova avatarasova 176 мар 3 13:53 .gitconfig  
drwxr-xr-x. 1 avatarasova avatarasova 74 мар 3 13:59 git-extended  
drwxr-xr-x. 1 avatarasova avatarasova 136 фев 23 11:53 .gnupg  
drwxr-xr-x. 1 avatarasova avatarasova 20 фев 23 11:48 .local  
drwxr-xr-x. 1 avatarasova avatarasova 48 фев 23 11:49 .mozilla  
drwxr-xr-x. 1 avatarasova avatarasova 132 фев 23 11:57 .ssh  
drwxr-xr-x. 1 avatarasova avatarasova 10 фев 23 11:56 work  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Видео  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Документы  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Загрузки  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Изображения  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Музыка  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Общедоступные  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 'Рабочий стол'  
drwxr-xr-x. 1 avatarasova avatarasova 0 фев 23 11:48 Шаблоны  
avatarasova@avatarasova:~$
```

Рис. 7: Файлы в домашнем каталоге

```
avatarsova@avatarsova:~$  
avatarsova@avatarsova:~$  
avatarsova@avatarsova:~$ mkdir newdir  
avatarsova@avatarsova:~$ mkdir newdir/morefun  
avatarsova@avatarsova:~$ mkdir letters memos misk  
avatarsova@avatarsova:~$ rm -r letters/ memos/ misk/  
avatarsova@avatarsova:~$ rm -r newdir/  
avatarsova@avatarsova:~$ ls  
git-extended  work  Взаим  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны  
avatarsova@avatarsova:~$
```

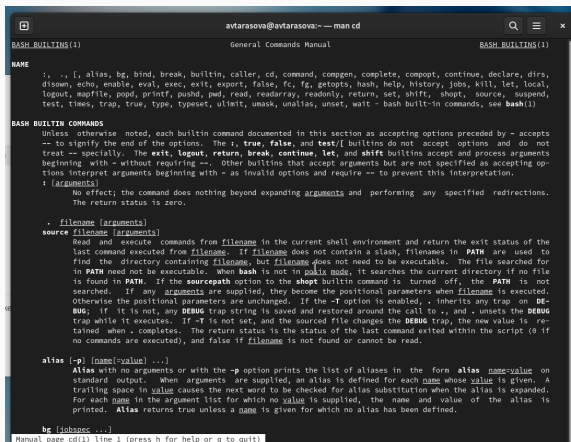
Рис. 8: Действия с каталогами

Опции команды ls

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

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
avtarasova@avtarasova:~ -- 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, eval, exec, exit, export, false, fg, 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 signify 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 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 -o option is enabled, . inherits any trap on DE-
    BUG, 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 re-
    tained 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.

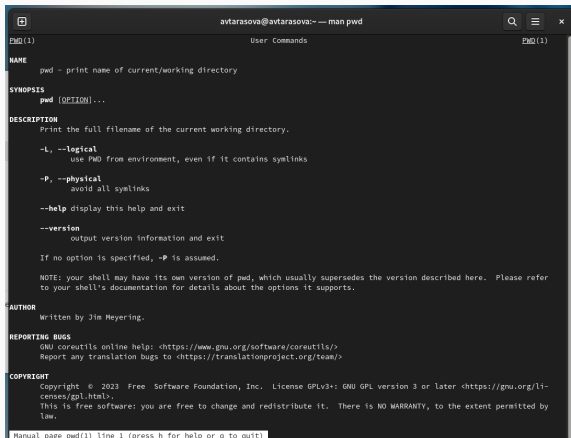
alias [-p] [name[=value] ...]
    Alias with no arguments or with the -p option prints the list of aliases in the form alias name=value on
    standard output. When arguments are supplied, an alias is defined for each name whose value is given. A
    trailing space in value causes the next word to be checked for alias substitution when the alias is expanded.
    For each name in the argument list for which no value is supplied, the name and value of the alias is
    printed. Alias returns true unless a name is given for which no alias has been defined.

bg [jobspec ...]

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

Рис. 10: Справка по команде cd

Справка по командам



```
avtarasova@avtarasova:~ — 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.

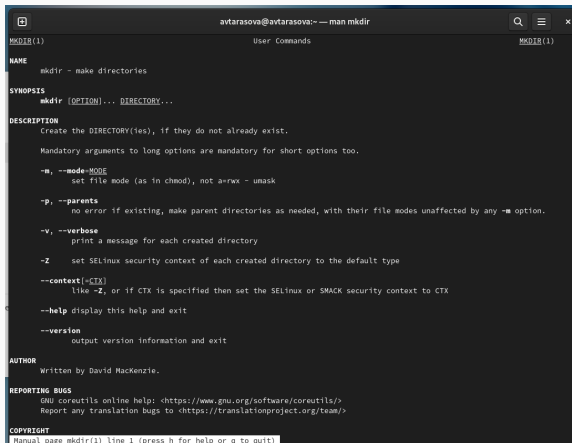
REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report any translation bugs to <https://translationproject.org/team/>

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    law.

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

Рис. 11: Справка по команде pwd

Справка по командам



```
avtarasova@avtarasova:~ — 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

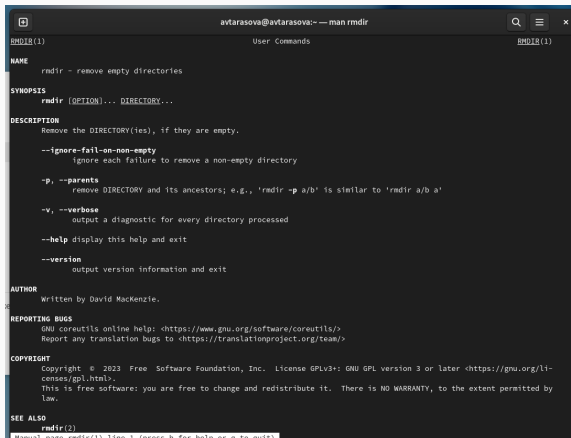
  --version
      output version information and exit

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/>

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

Рис. 12: Справка по команде mkdir



```
avtarasova@avtarasova:~ -- 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.

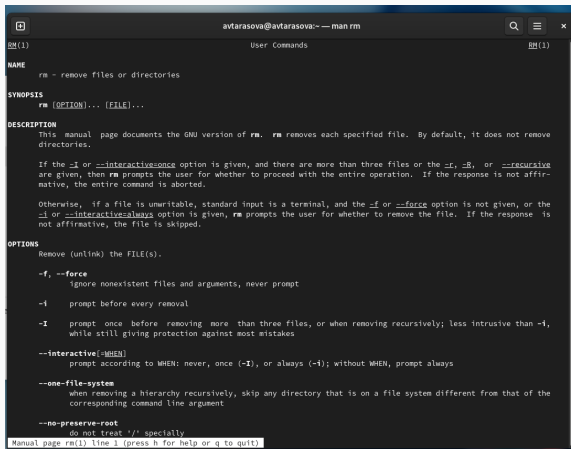
REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report any translation bugs to <https://translationproject.org/team/>

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SEE ALSO
    rmdir(2)

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

Рис. 13: Справка по команде rmdir



```
avtarasova@avtarasova:~ -- 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, -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

--no-preserve-root
    do not treat '/' specially

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

Рис. 14: Справка по команде rm

История командной строки

```
19  ld
20  ls
21  ls -al
22  mkdir newdir
23  mkdir newdir/morefun
24  mkdir 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 mkdir
32  man rmdir
33  man pwd
34  man rm
35  history
avtarasova@avtarasova:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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