

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

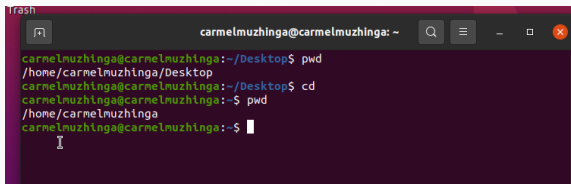
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

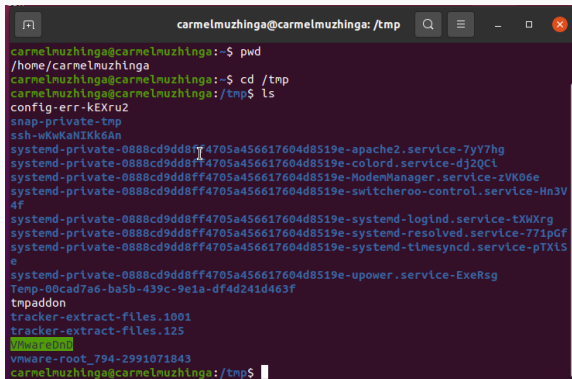
Имя и путь к домашнему каталогу



```
trash
carmelmuzhinga@carmelmuzhinga: ~
carmelmuzhinga@carmelmuzhinga:~/Desktop$ pwd
/home/carmelmuzhinga/Desktop
carmelmuzhinga@carmelmuzhinga:~/Desktop$ cd
carmelmuzhinga@carmelmuzhinga:~$ pwd
/home/carmelmuzhinga
carmelmuzhinga@carmelmuzhinga:~$
```

Рис. 1: Путь к домашнему каталогу

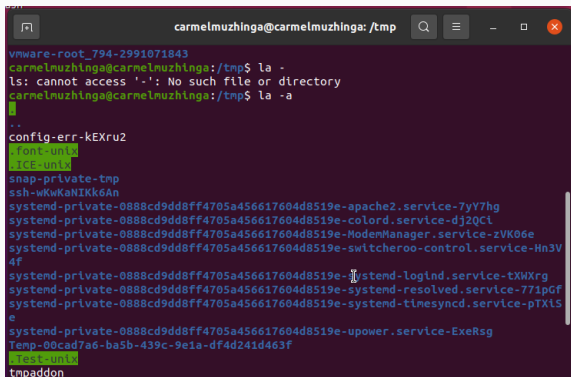
Опции команды ls



```
carmelmuzhinga@carmelmuzhinga: /tmp
carmelmuzhinga@carmelmuzhinga:~$ pwd
/home/carmelmuzhinga
carmelmuzhinga@carmelmuzhinga:~$ cd /tmp
carmelmuzhinga@carmelmuzhinga:/tmp$ ls
config-err-kEXru2
snap-private-tnp
ssh-wKwKaNIKk6An
systemd-private-0888cd9dd8ff4705a456617604d8519e-apache2.service-7yY7hg
systemd-private-0888cd9dd8ff4705a456617604d8519e-color.service-dj2QCi
systemd-private-0888cd9dd8ff4705a456617604d8519e-ModemManager.service-zVK06e
systemd-private-0888cd9dd8ff4705a456617604d8519e-switcheroo-control.service-Hn3V4f
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-logind.service-tXWXrg
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-resolved.service-771pGf
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-timesyncd.service-PTXiSe
systemd-private-0888cd9dd8ff4705a456617604d8519e-upower.service-ExeRsg
Temp-00cad7a6-ba5b-439c-9e1a-df4d241d463f
tmpaddon
tracker-extract-files.1001
tracker-extract-files.125
VMwareDnD
vmware-root_794-2991071843
carmelmuzhinga@carmelmuzhinga:/tmp$
```

Рис. 2: Команда ls

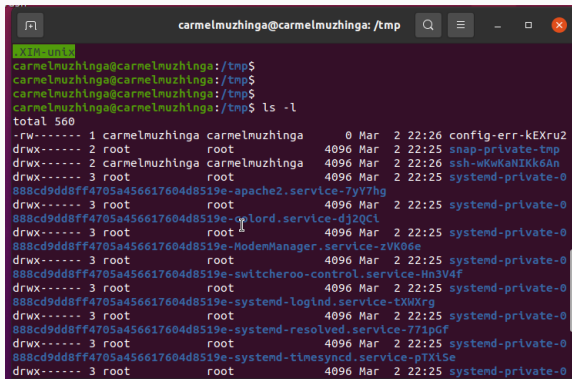
Опции команды ls



```
carmelmuzhinga@carmelmuzhinga: /tmp
vmware-root_794-2991071843
carmelmuzhinga@carmelmuzhinga:/tmp$ ls -
ls: cannot access '-': No such file or directory
carmelmuzhinga@carmelmuzhinga:/tmp$ ls -a
.
..
config-err-kEXru2
.font-unix
.ICE-unix
snap-private-tmp
ssh-wKwKaNIKk6An
systemd-private-0888cd9dd8ff4705a456617604d8519e-apache2.service-7yY7hg
systemd-private-0888cd9dd8ff4705a456617604d8519e-colord.service-dj2QCl
systemd-private-0888cd9dd8ff4705a456617604d8519e-ModemManager.service-zVK06e
systemd-private-0888cd9dd8ff4705a456617604d8519e-switcheroo-control.service-Hn3V
4f
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-logind.service-tXWXrg
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-resolved.service-771pGF
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-timesyncd.service-pTXLS
e
systemd-private-0888cd9dd8ff4705a456617604d8519e-upower.service-ExeRsg
Temp-00cad7a6-ba5b-439c-9e1a-df4d241d463f
Test-unix
tmpaddon
```

Рис. 3: Команда ls -a

Опции команды ls



```
carmelmuzhinga@carmelmuzhinga: /tmp
carmelmuzhinga@carmelmuzhinga: /tmp$
carmelmuzhinga@carmelmuzhinga: /tmp$
carmelmuzhinga@carmelmuzhinga: /tmp$ ls -l
total 560
-rw----- 1 carmelmuzhinga carmelmuzhinga  0 Mar 2 22:26 config-err-kEXru2
drwx----- 2 root          root          4096 Mar 2 22:25 snap-private-tnp
drwx----- 2 carmelmuzhinga carmelmuzhinga  4096 Mar 2 22:26 ssh-wKwKaNIkk6An
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-apache2.service-7yY7hg
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-galord.service-dj2QCi
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-ModemManager.service-zVK06e
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-switcheroo-control.service-Hn3V4f
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-systemd-logind.service-tXWXrg
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-systemd-resolved.service-771pGf
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
888cd9dd8ff4705a456617604d8519e-systemd-timesyncd.service-pTXlSe
drwx----- 3 root          root          4096 Mar 2 22:25 systemd-private-0
```

Рис. 4: Команда ls -l

Опции команды ls

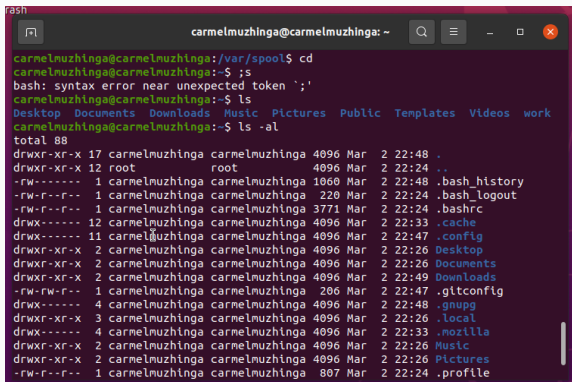
```
991071843
carmelmuzhinga@carmelmuzhinga:/tmp$ ls -f
VMwareDnD
snap-private-tmp
systemd-private-0888cd9dd8ff4705a456617604d8519e-upower.service-ExeRsg
.Test-unix
..
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-resolved.service-771pGf
ssh-wKwKaNIKk6An
Temp-00cad7a6-ba5b-439c-9e1a-df4d241d463f
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-logind.service-tXWxrg
systemd-private-0888cd9dd8ff4705a456617604d8519e-systemd-timesyncd.service-pTXIS
e
config-err-kEXru2
systemd-private-0888cd9dd8ff4705a456617604d8519e-ModemManager.service-zVK06e
.
.X11-unix
.X1025-lock
tracker-extract-files.1001
systemd-private-0888cd9dd8ff4705a456617604d8519e-colord.service-dj2Qci
tmpaddon
.font-unix
```

Рис. 5: Команда ls -f

```
carmelmuzhinga@carmelmuzhinga:/tmp$  
carmelmuzhinga@carmelmuzhinga:/tmp$ cd /var/spool/  
carmelmuzhinga@carmelmuzhinga:/var/spool$ ls  
anacron cron cups libreoffice mail rsyslog  
carmelmuzhinga@carmelmuzhinga:/var/spool$ ls -l  
total 20  
drwxr-xr-x 2 root root 4096 Nov 29 2021 anacron  
drwxr-xr-x 3 root root 4096 Aug 19 2021 cron  
drwx--x--- 3 root lp 4096 Aug 19 2021 cups  
drwxr-xr-x 3 root root 4096 Aug 19 2021 libreoffice  
lrwxrwxrwx 1 root root 7 Nov 29 2021 mail -> ../mail  
drwx----- 2 syslog adm 4096 Feb 11 2020 rsyslog  
carmelmuzhinga@carmelmuzhinga:/var/spool$
```

Рис. 6: Каталог /var/spool

Домашний каталог



The screenshot shows a terminal window titled 'carmelmuzhinga@carmelmuzhinga: ~'. The user has navigated to the directory `/var/spool` and executed the command `ls -al`. The output displays a list of files and directories with their permissions, owner, group, size, and modification date. The files listed include `.`, `..`, `.bash_history`, `.bash_logout`, `.bashrc`, `.cache`, `.config`, `Desktop`, `Documents`, `Downloads`, `.gitconfig`, `.gnupg`, `.local`, `.mozilla`, `Music`, `Pictures`, and `.profile`.

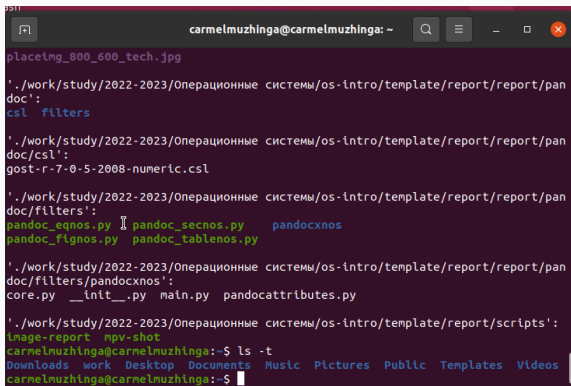
```
carmelmuzhinga@carmelmuzhinga:~/var/spool$ cd
carmelmuzhinga@carmelmuzhinga:~$ ;s
bash: syntax error near unexpected token `;'
carmelmuzhinga@carmelmuzhinga:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos  work
carmelmuzhinga@carmelmuzhinga:~$ ls -al
total 88
drwxr-xr-x 17 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:48 .
drwxr-xr-x 12 root            root            4096 Mar  2 22:24 ..
-rw-r--r--  1 carmelmuzhinga carmelmuzhinga 1060 Mar  2 22:48 .bash_history
-rw-r--r--  1 carmelmuzhinga carmelmuzhinga  220 Mar  2 22:24 .bash_logout
-rw-r--r--  1 carmelmuzhinga carmelmuzhinga 3771 Mar  2 22:24 .bashrc
drwxr-xr-x 12 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:33 .cache
drwxr-xr-x 11 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:47 .config
drwxr-xr-x  2 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:26 Desktop
drwxr-xr-x  2 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:26 Documents
drwxr-xr-x  2 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:49 Downloads
-rw-rw-r--  1 carmelmuzhinga carmelmuzhinga  206 Mar  2 22:47 .gitconfig
drwxr-xr-x  4 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:48 .gnupg
drwxr-xr-x  3 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:26 .local
drwxr-xr-x  4 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:33 .mozilla
drwxr-xr-x  2 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:26 Music
drwxr-xr-x  2 carmelmuzhinga carmelmuzhinga 4096 Mar  2 22:26 Pictures
-rw-r--r--  1 carmelmuzhinga carmelmuzhinga  807 Mar  2 22:24 .profile
```

Рис. 7: Файлы в домашнем каталоге

```
carnelmuzhinga@carnelmuzhinga:~$  
carnelmuzhinga@carnelmuzhinga:~$ mkdir newdir  
carnelmuzhinga@carnelmuzhinga:~$ mkdir newdir/morefun  
carnelmuzhinga@carnelmuzhinga:~$ mkdir letters memos misk  
carnelmuzhinga@carnelmuzhinga:~$ ls  
Desktop  Downloads  memos  Music  Pictures  Templates  work  
Documents  letters  misk  newdir  Public  Videos  
carnelmuzhinga@carnelmuzhinga:~$ rm letters/ memos/ misk/  
rm: cannot remove 'letters/': Is a directory  
rm: cannot remove 'memos/': Is a directory  
rm: cannot remove 'misk/': Is a directory  
carnelmuzhinga@carnelmuzhinga:~$ rm -r letters/ memos/ misk/  
carnelmuzhinga@carnelmuzhinga:~$ rm -r newdir/  
carnelmuzhinga@carnelmuzhinga:~$ ls  
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos  work  
carnelmuzhinga@carnelmuzhinga:~$
```

Рис. 8: Действия с каталогами

Опции команды ls



```
placeimg_800_600_tech.jpg

'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan
doc':
csl filters

'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan
doc/csl':
gost-r-7-0-5-2008-numeric.csl

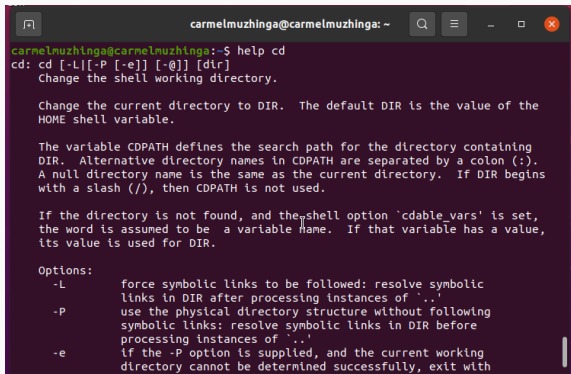
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan
doc/filters':
pandoc_eqnos.py pandoc_secnos.py pandocxnos
pandoc_fignos.py pandoc_tablenos.py

'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan
doc/filters/pandocxnos':
core.py __init__.py main.py pandocattributes.py

'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':
lnage-report mpv-shot
carmelmuzhinga@carmelmuzhinga:~$ ls -t
Downloads work Desktop Documents Music Pictures Public Templates Videos
carmelmuzhinga@carmelmuzhinga:~$
```

Рис. 9: Команда ls -R и ls -t

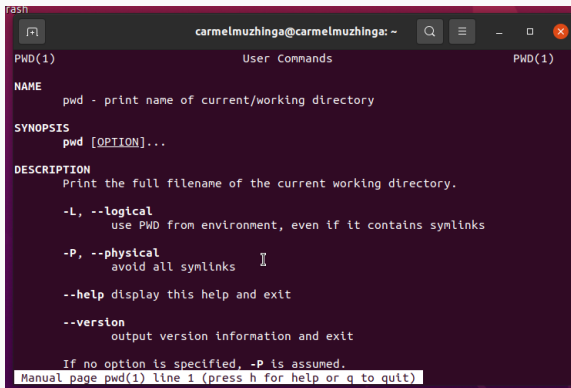
Справка по командам



```
carmelmuzhinga@carmelmuzhinga: ~  
carmelmuzhinga@carmelmuzhinga:~$ help cd  
cd: cd [-L|[-P [-e]] [-@]] [dir]  
    Change the shell working directory.  
  
    Change the current directory to DIR.  The default DIR is the value of the  
    HOME shell variable.  
  
    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
```

Рис. 10: Справка по команде cd

Справка по командам



```
bash
carmelmuzhinga@carmelmuzhinga: ~
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

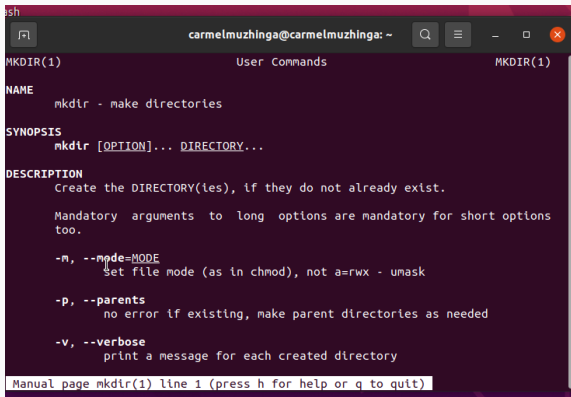
    --help
        display this help and exit

    --version
        output version information and exit

    If no option is specified, -P is assumed.
    Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd

Справка по командам



```
bash
carmelmuzhinga@carmelmuzhinga: ~
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

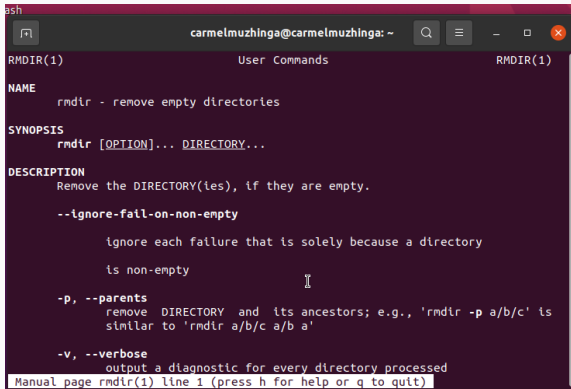
  -p, --parents
        no error if existing, make parent directories as needed

  -v, --verbose
        print a message for each created directory

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

Рис. 12: Справка по команде mkdir

Справка по командам



```
bash
carmelmuzhinga@carmelmuzhinga: ~
RMDIR(1)                                User Commands                                RMDIR(1)

NAME
    rmdir - remove empty directories

SYNOPSIS
    rmdir [OPTION]... DIRECTORY...

DESCRIPTION
    Remove the DIRECTORY(ies), if they are empty.

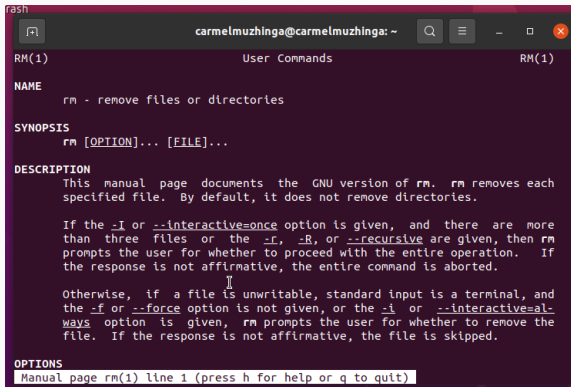
    --ignore-fail-on-non-empty
        ignore each failure that is solely because a directory
        is non-empty

    -p, --parents
        remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is
        similar to 'rmdir a/b/c a/b a'

    -v, --verbose
        output a diagnostic for every directory processed
    Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir

Справка по командам



```
rash
carmelmuzhinga@carmelmuzhinga: ~
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.

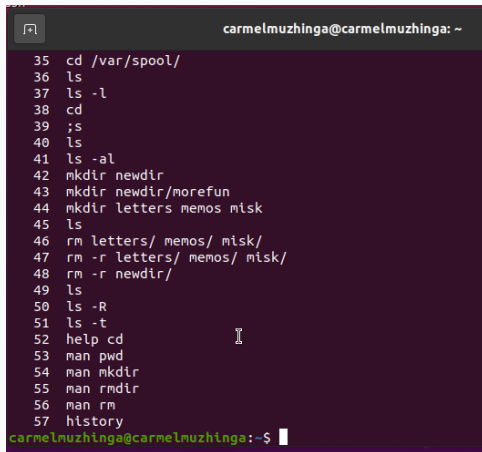
If the -I or --interactive=once option is given, and there are more
than three files or the -r, -R, or --recursive are given, then rm
prompts the user for whether to proceed with the entire operation. If
the response is not affirmative, the entire command is aborted.

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=al-
ways option is given, rm prompts the user for whether to remove the
file. If the response is not affirmative, the file is skipped.

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

Рис. 14: Справка по команде rm

История командной строки

A terminal window with a dark purple background and a title bar that reads 'carmelmuzhinga@carmelmuzhinga: ~'. The terminal displays a list of 23 commands, each preceded by a line number from 35 to 57. The commands are: 'cd /var/spool/', 'ls', 'ls -l', 'cd', ';s', 'ls', 'ls -al', 'mkdir newdir', 'mkdir newdir/morefun', 'mkdir letters memos msk', 'ls', 'rm letters/ memos/ msk/', 'rm -r letters/ memos/ msk/', 'rm -r newdir/', 'ls', 'ls -R', 'ls -t', 'help cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. The 'history' command is the last one entered, and the prompt 'carmelmuzhinga@carmelmuzhinga:~\$' is visible at the bottom. A cursor is positioned at the end of the prompt.

```
35 cd /var/spool/
36 ls
37 ls -l
38 cd
39 ;s
40 ls
41 ls -al
42 mkdir newdir
43 mkdir newdir/morefun
44 mkdir letters memos msk
45 ls
46 rm letters/ memos/ msk/
47 rm -r letters/ memos/ msk/
48 rm -r newdir/
49 ls
50 ls -R
51 ls -t
52 help cd
53 man pwd
54 man mkdir
55 man rmdir
56 man rm
57 history
carmelmuzhinga@carmelmuzhinga:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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