

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Валиева Марина Русланбековна¹

4 марта, 2023, Москва, Россия

¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

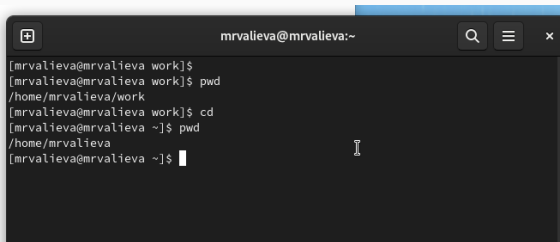
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

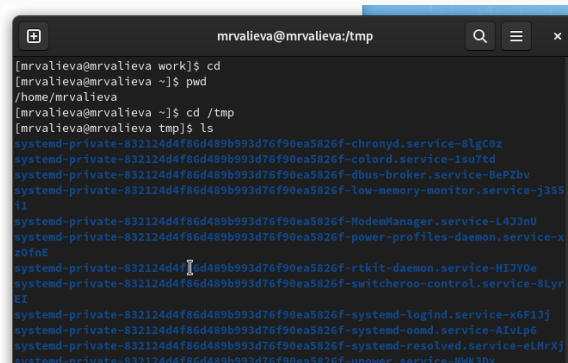
Имя и путь к домашнему каталогу



```
mrvalieva@mrvalieva:~  
[mrvalieva@mrvalieva work]$  
[mrvalieva@mrvalieva work]$ pwd  
/home/mrvalieva/work  
[mrvalieva@mrvalieva work]$ cd  
[mrvalieva@mrvalieva ~]$ pwd  
/home/mrvalieva  
[mrvalieva@mrvalieva ~]$
```

Рис. 1: Путь к домашнему каталогу

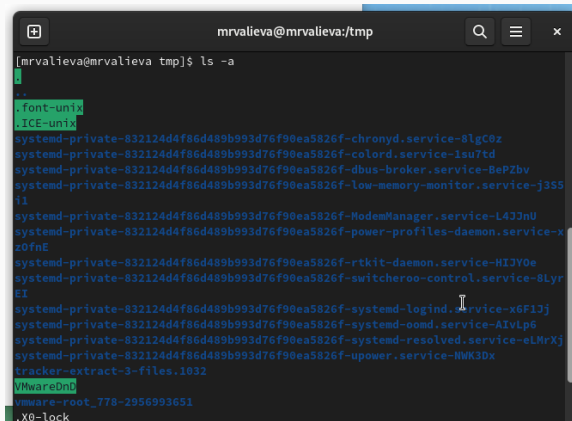
Опции команды ls



```
mrvalieva@mrvalieva:tmp
[mrvalieva@mrvalieva work]$ cd
[mrvalieva@mrvalieva ~]$ pwd
/home/mrvalieva
[mrvalieva@mrvalieva ~]$ cd /tmp
[mrvalieva@mrvalieva tmp]$ ls
systemd-private-832124d4f86d489b993d76f90ea5826f-chronyd.service-8lgC0z
systemd-private-832124d4f86d489b993d76f90ea5826f-colord.service-lsu7td
systemd-private-832124d4f86d489b993d76f90ea5826f-dbus-broker.service-BePZbv
systemd-private-832124d4f86d489b993d76f90ea5826f-low-memory-monitor.service-j3S5
i1
systemd-private-832124d4f86d489b993d76f90ea5826f-ModemManager.service-L4JJNl
systemd-private-832124d4f86d489b993d76f90ea5826f-power-profiles-daemon.service-x
z0fnE
systemd-private-832124d4f86d489b993d76f90ea5826f-rtkit-daemon.service-HI3Y0e
systemd-private-832124d4f86d489b993d76f90ea5826f-switcheroo-control.service-8Lyr
EI
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-logind.service-x6F1Jj
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-oomd.service-AIvLp6
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-resolved.service-eLMrXj
systemd-private-832124d4f86d489b993d76f90ea5826f-upower.service-NWK3Dx
```

Рис. 2: Команда ls

Опции команды ls

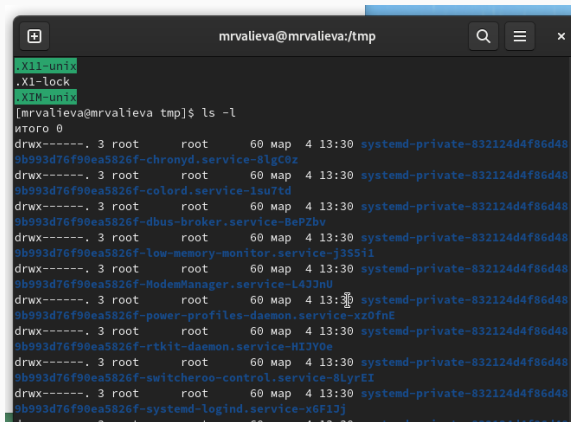


A terminal window titled 'mrvalieva@mrvalieva:/tmp' with search, menu, and close icons in the title bar. The prompt is '[mrvalieva@mrvalieva tmp]\$' and the command entered is 'ls -a'. The output lists hidden files and system services. Some files are highlighted in green: '.font-unix', '.ICE-unix', 'VMwareDnD', and 'vmware-root_778-2956993651'. The output ends with '.X0-lock'.

```
[mrvalieva@mrvalieva tmp]$ ls -a
.
..
.font-unix
.ICE-unix
systemd-private-832124d4f86d489b993d76f90ea5826f-chrond.service-8lgC0z
systemd-private-832124d4f86d489b993d76f90ea5826f-colord.service-1su7td
systemd-private-832124d4f86d489b993d76f90ea5826f-dbus-broker.service-BePZbv
systemd-private-832124d4f86d489b993d76f90ea5826f-low-memory-monitor.service-j3S5
i1
systemd-private-832124d4f86d489b993d76f90ea5826f-ModemManager.service-L4JJnU
systemd-private-832124d4f86d489b993d76f90ea5826f-power-profiles-daemon.service-x
z0fnE
systemd-private-832124d4f86d489b993d76f90ea5826f-rtkit-daemon.service-HIJY0e
systemd-private-832124d4f86d489b993d76f90ea5826f-switcheroo-control.service-8Lyr
EI
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-logind.service-x6F1Jj
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-oomd.service-AivLp6
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-resolved.service-eLMrXj
systemd-private-832124d4f86d489b993d76f90ea5826f-upower.service-NWK3Dx
tracker-extract-3-files.1032
VMwareDnD
vmware-root_778-2956993651
.X0-lock
```

Рис. 3: Команда ls -a

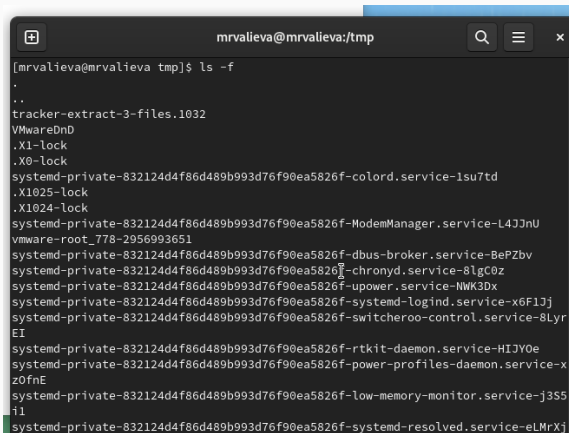
Опции команды ls



```
mrvalieva@mrvalieva:/tmp
.X11-unix
.X11-lock
.XIM-unix
[mrvalieva@mrvalieva tmp]$ ls -l
итого 0
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-chronyd.service-8lgC8z
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-color.service-1su7td
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-dbus-broker.service-BePZbv
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-low-memory-monitor.service-j355il
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-ModemManager.service-L4JJnU
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-power-profiles-daemon.service-xz0fnE
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-rtkit-daemon.service-HIJY0e
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-switcheroo-control.service-8LyrEI
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
9b993d76f90ea5826f-systemd-logind.service-x6F1Jj
drwx-----, 3 root    root      60 map  4 13:30 systemd-private-832124d4f86d48
```

Рис. 4: Команда ls -l

Опции команды ls

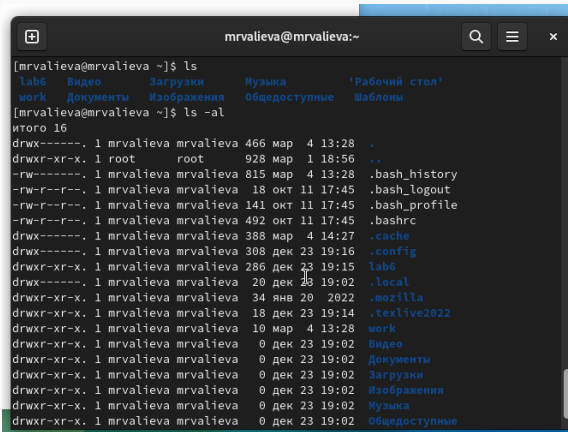
A terminal window with a dark background and light text. The title bar shows 'mrvalieva@mrvalieva:tmp'. The command prompt is '[mrvalieva@mrvalieva tmp]\$ ls -f'. The output lists various files and directories, including '..' (current directory), '.' (parent directory), 'tracker-extract-3-files.1032', 'VMwareDnD', '.X1-lock', '.X0-lock', and several systemd service files with long names like 'systemd-private-832124d4f86d489b993d76f90ea5826f-colord.service-lsu7td'. The list continues with more systemd service files and ends with 'i1' and 'systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-resolved.service-eLMrXj'.

```
[mrvalieva@mrvalieva tmp]$ ls -f
..
.
tracker-extract-3-files.1032
VMwareDnD
.X1-lock
.X0-lock
systemd-private-832124d4f86d489b993d76f90ea5826f-colord.service-lsu7td
.X1025-lock
.X1024-lock
systemd-private-832124d4f86d489b993d76f90ea5826f-ModemManager.service-L4JJnU
vmware-root_778-2956993651
systemd-private-832124d4f86d489b993d76f90ea5826f-dbus-broker.service-BePZbv
systemd-private-832124d4f86d489b993d76f90ea5826f-chrond.service-8lgC0z
systemd-private-832124d4f86d489b993d76f90ea5826f-upower.service-NWK3Dx
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-logind.service-x6F1Jj
systemd-private-832124d4f86d489b993d76f90ea5826f-switcheroo-control.service-8Lyr
EI
systemd-private-832124d4f86d489b993d76f90ea5826f-rtkit-daemon.service-HIJY0e
systemd-private-832124d4f86d489b993d76f90ea5826f-power-profiles-daemon.service-x
zOfnE
systemd-private-832124d4f86d489b993d76f90ea5826f-low-memory-monitor.service-j3S5
i1
systemd-private-832124d4f86d489b993d76f90ea5826f-systemd-resolved.service-eLMrXj
```

Рис. 5: Команда ls -f

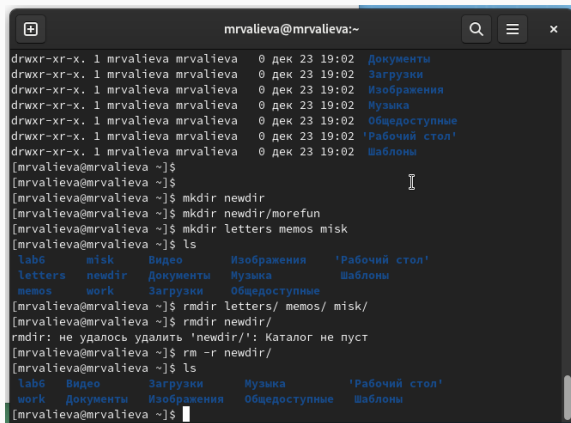
```
[mrvalieva@mrvalieva tmp]$  
[mrvalieva@mrvalieva tmp]$  
[mrvalieva@mrvalieva tmp]$ cd /var/spool/  
[mrvalieva@mrvalieva spool]$ ls  
abrt abrt-upload cups lpd mail plymouth  
[mrvalieva@mrvalieva spool]$ ls -al  
итого 0  
drwxr-xr-x. 1 root root 68 авг 9 2022 .  
drwxr-xr-x. 1 root root 200 окт 1 11:36 ..  
drwxr-x--x. 1 root abrt 578 map 4 14:27 abrt  
drwx-----. 1 abrt abrt 0 map 11 2022 abrt-upload  
drwx--x---. 1 root lp 6 окт 3 11:46 cups  
drwxr-xr-x. 1 root root 0 авг 9 2022 lpd  
drwxrwxr-x. 1 root mail 934 map 1 18:56 mail  
drwxr-xr-x. 1 root root 0 map 7 2022 plymouth  
[mrvalieva@mrvalieva spool]$
```

Рис. 6: Каталог /var/spool

A terminal window titled 'mrvalieva@mrvalieva:~' with search, menu, and close icons in the title bar. The terminal shows the execution of 'ls' and 'ls -al' commands. The 'ls' command lists directories: lab6, Видео, Загрузки, Музыка, and 'Рабочий стол'. The 'ls -al' command shows a detailed listing of files and directories, including hidden files like .bash_history, .cache, .config, .local, .mozilla, .texlive2022, and .work. The files are listed with their permissions, owner, group, size, and modification date.

```
[mrvalieva@mrvalieva ~]$ ls
lab6  Видео  Загрузки  Музыка  'Рабочий стол'
work  Документы  Изображения  Общедоступные  Шаблоны
[mrvalieva@mrvalieva ~]$ ls -al
итого 16
drwx-----, 1 mrvalieva mrvalieva 466 мар  4 13:28 .
drwxr-xr-x, 1 root      root      928 мар  1 18:56 ..
-rw-----, 1 mrvalieva mrvalieva 815 мар  4 13:28 .bash_history
-rw-r--r--, 1 mrvalieva mrvalieva  18 окт 11 17:45 .bash_logout
-rw-r--r--, 1 mrvalieva mrvalieva 141 окт 11 17:45 .bash_profile
-rw-r--r--, 1 mrvalieva mrvalieva 492 окт 11 17:45 .bashrc
drwx-----, 1 mrvalieva mrvalieva 388 мар  4 14:27 .cache
drwx-----, 1 mrvalieva mrvalieva 308 дек 23 19:16 .config
drwxr-xr-x, 1 mrvalieva mrvalieva 286 дек 23 19:15 lab6
drwx-----, 1 mrvalieva mrvalieva  20 дек 23 19:02 .local
drwxr-xr-x, 1 mrvalieva mrvalieva  34 янв 20 2022 .mozilla
drwxr-xr-x, 1 mrvalieva mrvalieva  18 дек 23 19:14 .texlive2022
drwxr-xr-x, 1 mrvalieva mrvalieva  10 мар  4 13:28 work
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Видео
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Документы
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Загрузки
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Изображения
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Музыка
drwxr-xr-x, 1 mrvalieva mrvalieva   0 дек 23 19:02 Общедоступные
```

Рис. 7: Файлы в домашнем каталоге

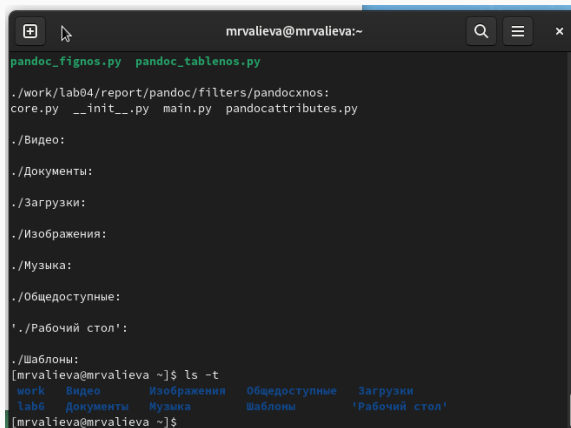


The screenshot shows a terminal window titled 'mrvalieva@mrvalieva:~'. The terminal output is as follows:

```
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Документы
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Загрузки
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Изображения
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Музыка
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Общедоступные
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 'Рабочий стол'
drwxr-xr-x. 1 mrvalieva mrvalieva 0 дек 23 19:02 Шаблоны
[mrvalieva@mrvalieva ~]$
[mrvalieva@mrvalieva ~]$
[mrvalieva@mrvalieva ~]$ mkdir newdir
[mrvalieva@mrvalieva ~]$ mkdir newdir/morefun
[mrvalieva@mrvalieva ~]$ mkdir letters memos misk
[mrvalieva@mrvalieva ~]$ ls
lab6      misk      Видео      Изображения  'Рабочий стол'
letters   newdir     Документы  Музыка      Шаблоны
memos     work      Загрузки   Общедоступные
[mrvalieva@mrvalieva ~]$ rmdir letters/ memos/ misk/
[mrvalieva@mrvalieva ~]$ rmdir newdir/
rmdir: не удалось удалить 'newdir/': Каталог не пуст
[mrvalieva@mrvalieva ~]$ rm -r newdir/
[mrvalieva@mrvalieva ~]$ ls
lab6      Видео      Загрузки   Музыка      'Рабочий стол'
work      Документы  Изображения  Общедоступные  Шаблоны
[mrvalieva@mrvalieva ~]$
```

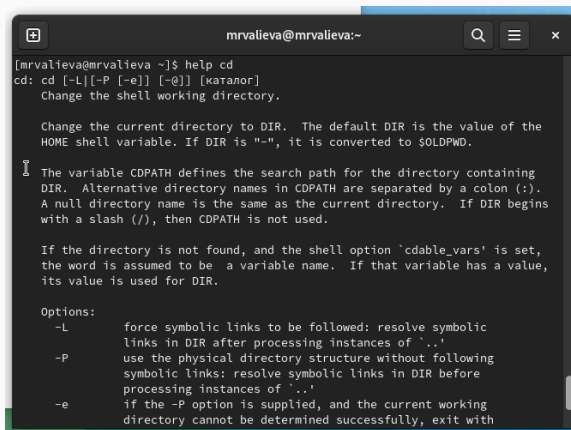
Рис. 8: Действия с каталогами

Опции команды ls



```
mrvalieva@mrvalieva:~  
pandoc_fignos.py pandoc_tablenos.py  
  
./work/lab04/report/pandoc/filters/pandocxnos:  
core.py __init__.py main.py pandocattributes.py  
  
./Видео:  
  
./Документы:  
  
./Загрузки:  
  
./Изображения:  
  
./Музыка:  
  
./Общедоступные:  
  
'./Рабочий стол':  
  
./Шаблоны:  
[mrvalieva@mrvalieva ~]$ ls -t  
work  Видео  Изображения  Общедоступные  Загрузки  
lab6  Документы  Музыка  Шаблоны  'Рабочий стол'  
[mrvalieva@mrvalieva ~]$
```

Рис. 9: Команда ls -R и ls -t



```
mrvalieva@mrvalieva:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [каталог]
    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.

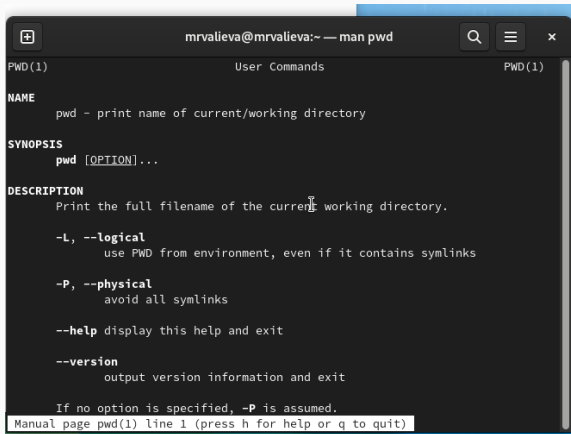
    The variable CDPATH defines the search path for the directory containing
    DIR.  Alternative directory names in CDPATH are separated by a colon (:).
    A null directory name is the same as the current directory.  If DIR begins
    with a slash (/), then CDPATH is not used.

    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
```

Рис. 10: Справка по команде cd

Справка по командам



```
mrvalieva@mrvalieva:~ — 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

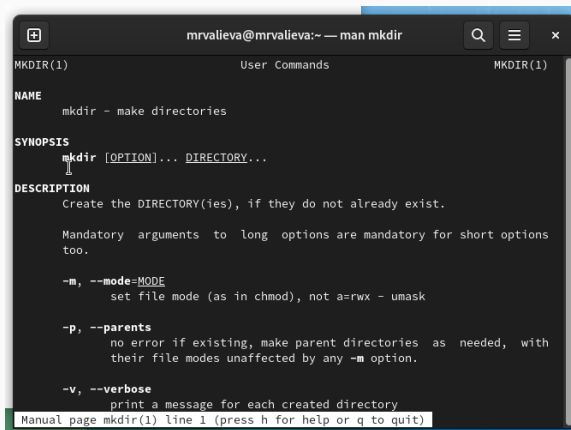
    --help display this help and exit

    --version
        output version information and exit

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

Рис. 11: Справка по команде pwd

Справка по командам



```
mrvalieva@mrvalieva:~ — 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.

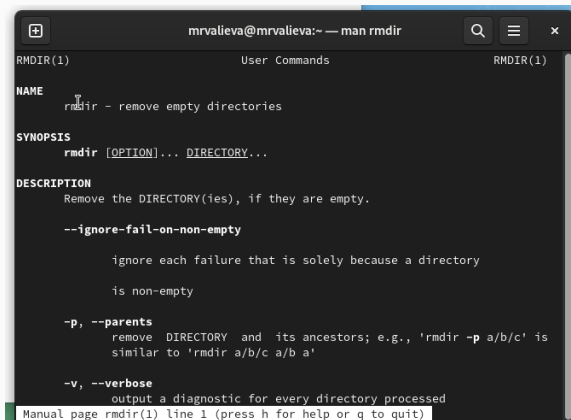
    -m, --mode=MODE
        set file mode (as in chmod), not a=rwx - umask

    -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

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

Рис. 12: Справка по команде mkdir



```
mrvalieva@mrvalieva:~ — 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.

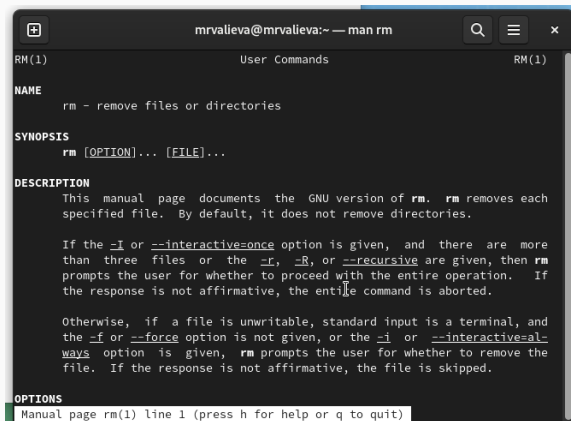
  --ignore-fail-on-non-empty
      ignore each failure that is solely because a directory
      is non-empty

  -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



```
mrvalieva@mrvalieva:~ — 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.

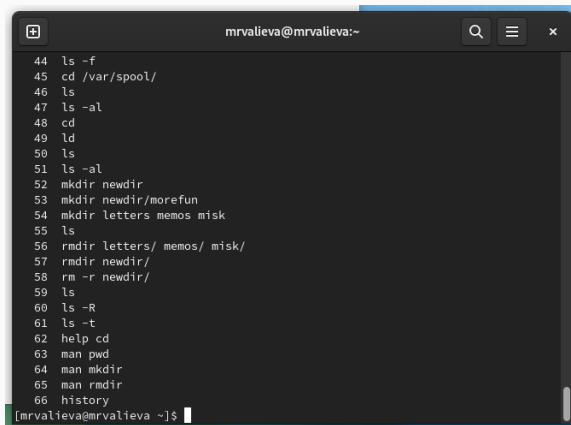
  If the -i or --interactive=once option is given, and there are more
  than three files or the -r, -R, or --recursive are given, then rm
  prompts the user for whether to proceed with the entire operation. If
  the response is not affirmative, the entire command is aborted.

  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=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 titled 'mrvalieva@mrvalieva:~' with search, menu, and close buttons in the title bar. The terminal displays a list of 22 commands numbered 44 to 66. The commands include file listing, directory navigation, directory creation, directory removal, and help/man commands. The prompt at the bottom is '[mrvalieva@mrvalieva ~]\$' with a cursor.

```
44 ls -f
45 cd /var/spool/
46 ls
47 ls -al
48 cd
49 ld
50 ls
51 ls -al
52 mkdir newdir
53 mkdir newdir/morefun
54 mkdir letters memos misk
55 ls
56 rmdir letters/ memos/ misk/
57 rmdir newdir/
58 rm -r newdir/
59 ls
60 ls -R
61 ls -t
62 help cd
63 man pwd
64 man mkdir
65 man rmdir
66 history
[mrvalieva@mrvalieva ~]$
```

Рис. 15: Команда history

Выводы по проделанной работе

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