

# Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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# Цели и задачи работы

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## Цель лабораторной работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

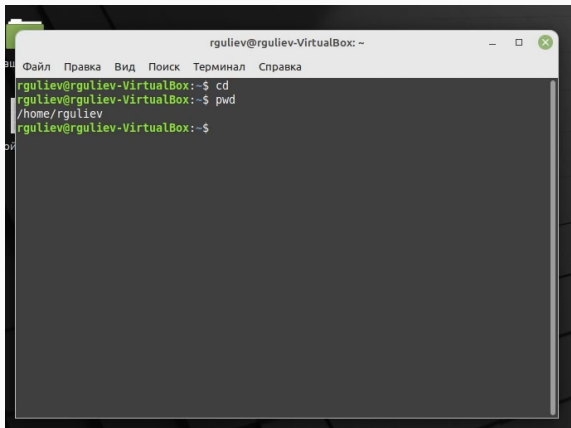
# Задачи лабораторной работы

- 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**

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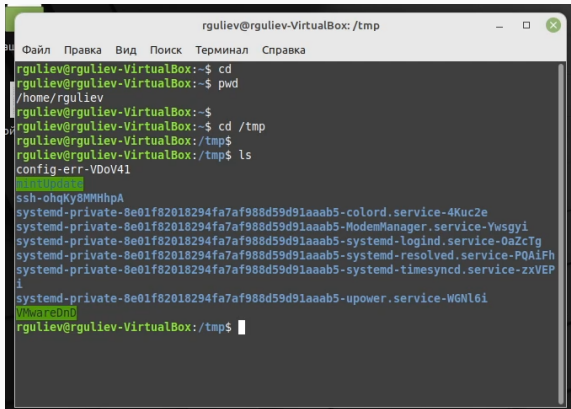
# Имя и путь к домашнему каталогу

A screenshot of a terminal window titled 'rguliev@rguliev-VirtualBox: ~'. The window has a menu bar with 'Файл', 'Правка', 'Вид', 'Поиск', 'Терминал', and 'Справка'. The terminal shows the following commands and output:

```
rguliev@rguliev-VirtualBox:~$ cd
rguliev@rguliev-VirtualBox:~$ pwd
/home/rguliev
rguliev@rguliev-VirtualBox:~$
```

**Figure 1:** Путь к домашнему каталогу

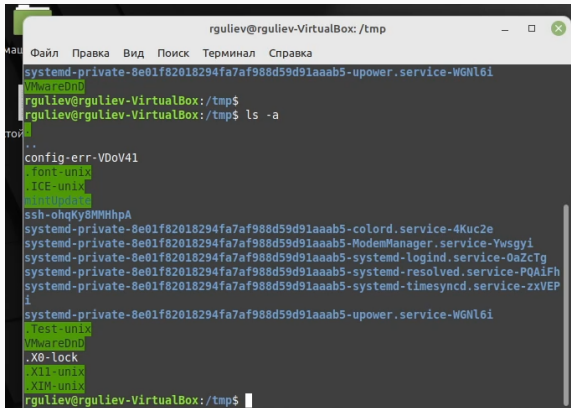
# Опции команды ls



```
rguliev@rguliev-VirtualBox: /tmp
Файл  Правка  Вид  Поиск  Терминал  Справка
rguliev@rguliev-VirtualBox:~$ cd
rguliev@rguliev-VirtualBox:~$ pwd
/home/rguliev
rguliev@rguliev-VirtualBox:~$ 
rguliev@rguliev-VirtualBox:~$ cd /tmp
rguliev@rguliev-VirtualBox:/tmp$ 
rguliev@rguliev-VirtualBox:/tmp$ ls
config-err-VDoV41
lib32udev
ssh-ohqKy8MMHhpA
systemd-private-8e01f82018294fa7af988d59d91aaab5-colord.service-4Kuc2e
systemd-private-8e01f82018294fa7af988d59d91aaab5-ModemManager.service-Ywsgyi
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-logind.service-0aZcTg
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-resolved.service-PQA1Fh
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-timesyncd.service-zxVEP
i
systemd-private-8e01f82018294fa7af988d59d91aaab5-upower.service-WGNl6i
VMwareDnD
rguliev@rguliev-VirtualBox:/tmp$
```

Figure 2: Команда ls

# Опции команды ls



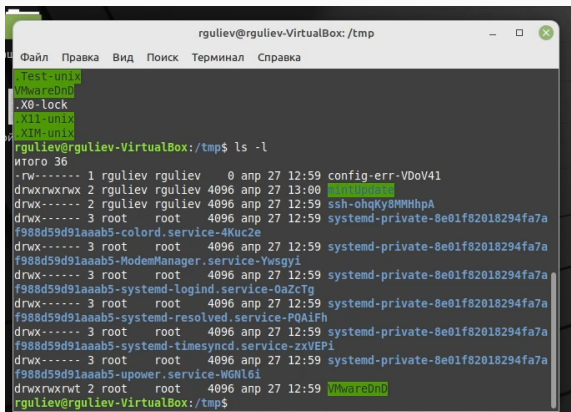
The image shows a terminal window titled 'rguliev@rguliev-VirtualBox: /tmp'. The window has a menu bar with 'Файл', 'Правка', 'Вид', 'Поиск', 'Терминал', and 'Справка'. The terminal displays the output of the 'ls -a' command, listing hidden files and directories. The output is as follows:

```
rguliev@rguliev-VirtualBox: /tmp$ ls -a
..
config-err-VDoV41
.font-unix
.ICE-unix
mintUpdate
ssh-ohqKy8MMHhpA
systemd-private-8e01f82018294fa7af988d59d91aaab5-color.service-4Kuc2e
systemd-private-8e01f82018294fa7af988d59d91aaab5-ModemManager.service-Ywsgyi
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-logind.service-0aZcTg
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-resolved.service-PQAIh
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-timesyncd.service-zxVEP
i
systemd-private-8e01f82018294fa7af988d59d91aaab5-upower.service-WGNl6i
.Test-unix
VMwareDnD
.X0-lock
.X11-unix
.XIM-unix
rguliev@rguliev-VirtualBox: /tmp$
```

Figure 3: Команда ls -a



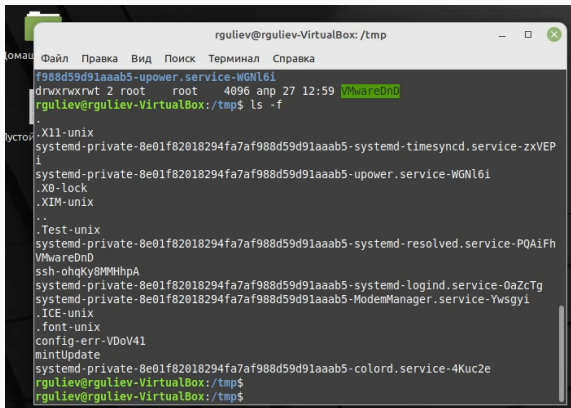
# Опции команды ls



```
rguliev@rguliev-VirtualBox: /tmp
Файл Правка Вид Поиск Терминал Справка
Test-unix
VMwareDnD
.X0-lock
.X11-unix
.XIM-unix
rguliev@rguliev-VirtualBox:/tmp$ ls -l
итого 36
-rw-r----- 1 rguliev rguliev  0 anp 27 12:59 config-err-VDoV41
drwxrwxrwx 2 rguliev rguliev 4096 anp 27 12:59 VMwareDnD
drwx----- 2 rguliev rguliev 4096 anp 27 12:59 ssh-ohqKy8MMHhPa
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-colord.service-4Kuc2e
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-ModemManager.service-Ywsgyi
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-systemd-logind.service-0aZcTg
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-systemd-resolved.service-PQAiFh
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-systemd-timesyncd.service-zxVEPi
drwx----- 3 root    root    4096 anp 27 12:59 systemd-private-8e01f82018294fa7a
f988d59d91aaab5-upower.service-WGNL6i
drwxrwxrwt 2 root    root    4096 anp 27 12:59 VMwareDnD
rguliev@rguliev-VirtualBox:/tmp$
```

Figure 4: Команда ls -l

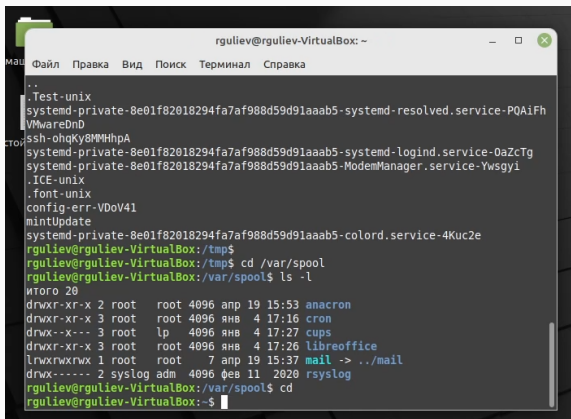
# Опции команды ls



The image shows a terminal window titled 'rguliev@rguliev-VirtualBox: /tmp'. The window has a menu bar with 'Файл', 'Правка', 'Вид', 'Поиск', 'Терминал', and 'Справка'. The terminal output shows the command 'ls -f' and its results, which include various system files and directories. The output is as follows:

```
rguliev@rguliev-VirtualBox: /tmp$ ls -f
.
.X11-unix
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-timesyncd.service-zxVEP
i
systemd-private-8e01f82018294fa7af988d59d91aaab5-upower.service-WGNl6i
.X0-lock
.XIM-unix
..
.Test-unix
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-resolved.service-PQAiFh
VMwareDnD
ssh-ohqKy8MMHhpA
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-logind.service-0aZcTg
systemd-private-8e01f82018294fa7af988d59d91aaab5-ModemManager.service-Ywsgyi
.ICE-unix
.font-unix
config-err-VDoV4l
mintUpdate
systemd-private-8e01f82018294fa7af988d59d91aaab5-color.service-4Kuc2e
rguliev@rguliev-VirtualBox: /tmp$
rguliev@rguliev-VirtualBox: /tmp$
```

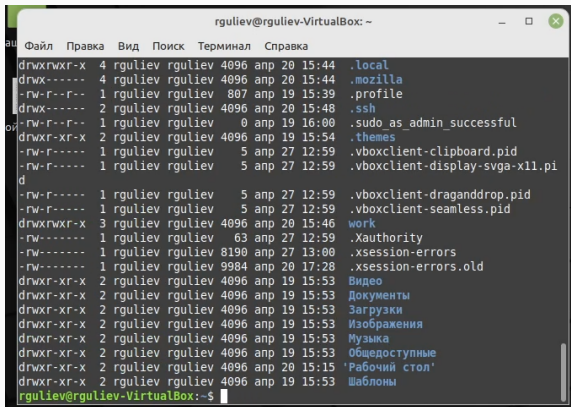
Figure 5: Команда ls -f



```
..
,Test-unix
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-resolved.service-PQaIFh
VMwareDnD
ssh-ohqKy8MMHhpa
systemd-private-8e01f82018294fa7af988d59d91aaab5-systemd-logind.service-0aZcTg
systemd-private-8e01f82018294fa7af988d59d91aaab5-ModemManager.service-Ywsgyi
.ICE-unix
.font-unix
config-err-VDoV4l
mintUpdate
systemd-private-8e01f82018294fa7af988d59d91aaab5-colord.service-4Kuc2e
rguliev@rguliev-VirtualBox:/tmp$
rguliev@rguliev-VirtualBox:/tmp$ cd /var/spool
rguliev@rguliev-VirtualBox:/var/spool$ ls -l
итого 20
drwxr-xr-x 2 root    root 4096 апр 19 15:53 anacron
drwxr-xr-x 3 root    root 4096 янв  4 17:16 cron
drwx--x-- 3 root    lp   4096 янв  4 17:27 cups
drwxr-xr-x 3 root    root 4096 янв  4 17:26 libreoffice
lrwxrwxrwx 1 root    root   7 апр 19 15:37 mail -> ../mail
drwx----- 2 syslog adm  4096 фев 11 2020 rsyslog
rguliev@rguliev-VirtualBox:/var/spool$ cd
rguliev@rguliev-VirtualBox:~$
```

Figure 6: Каталог cron

# Домашний каталог



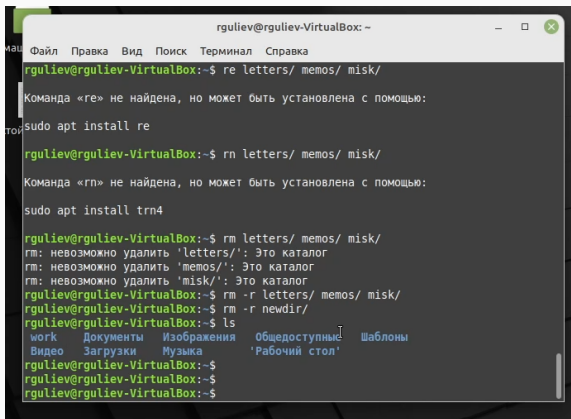
The screenshot shows a terminal window titled "rguliev@rguliev-VirtualBox: ~". The terminal displays the output of a command that lists files and directories in the home directory. The output is as follows:

```
File  Permissions  Owner  Group  Size  Date  Name
-----
drwxrwxr-x  4  rguliev  rguliev  4096  apr 20 15:44  .local
drwx-----  4  rguliev  rguliev  4096  apr 20 15:44  .mozilla
-rw-r--r--   1  rguliev  rguliev   807  apr 19 15:39  .profile
drwx-----  2  rguliev  rguliev  4096  apr 20 15:48  .ssh
-rw-r--r--   1  rguliev  rguliev    0  apr 19 16:00  .sudo_as_admin_successful
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:54  .themes
-rw-r-----  1  rguliev  rguliev    5  apr 27 12:59  .vboxclient-clipboard.pid
-rw-r-----  1  rguliev  rguliev    5  apr 27 12:59  .vboxclient-display-svga-x11.pid
d
-rw-r-----  1  rguliev  rguliev    5  apr 27 12:59  .vboxclient-draganddrop.pid
-rw-r-----  1  rguliev  rguliev    5  apr 27 12:59  .vboxclient-seamless.pid
drwxrwxr-x  3  rguliev  rguliev  4096  apr 20 15:46  work
-rw-----  1  rguliev  rguliev   63  apr 27 12:59  .Xauthority
-rw-----  1  rguliev  rguliev  8190  apr 27 13:00  .xsession-errors
-rw-----  1  rguliev  rguliev  9984  apr 20 17:28  .xsession-errors.old
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Видео
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Документы
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Загрузки
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Изображения
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Музыка
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Общедоступные
drwxr-xr-x  2  rguliev  rguliev  4096  apr 20 15:15  'Рабочий стол'
drwxr-xr-x  2  rguliev  rguliev  4096  apr 19 15:53  Шаблоны
```

The prompt at the bottom of the terminal is "rguliev@rguliev-VirtualBox:~\$".

Figure 7: Файлы в домашнем каталоге

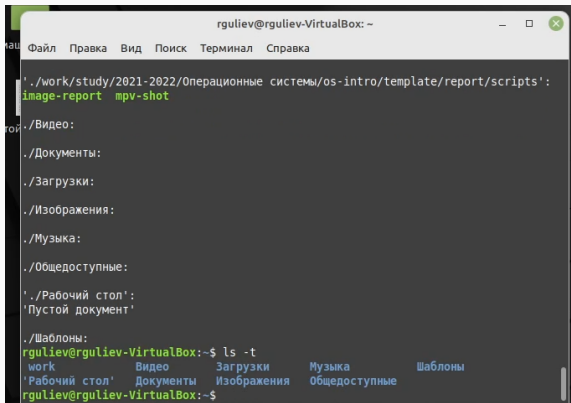
# Работа с каталогами



```
rguliev@rguliev-VirtualBox: ~  
Файл Правка Вид Поиск Терминал Справка  
rguliev@rguliev-VirtualBox:~$ re letters/ memos/ misk/  
Команда «re» не найдена, но может быть установлена с помощью:  
sudo apt install re  
rguliev@rguliev-VirtualBox:~$ rn letters/ memos/ misk/  
Команда «rn» не найдена, но может быть установлена с помощью:  
sudo apt install trn4  
rguliev@rguliev-VirtualBox:~$ rm letters/ memos/ misk/  
rm: невозможно удалить 'letters/': Это каталог  
rm: невозможно удалить 'memos/': Это каталог  
rm: невозможно удалить 'misk/': Это каталог  
rguliev@rguliev-VirtualBox:~$ rm -r letters/ memos/ misk/  
rguliev@rguliev-VirtualBox:~$ rm -r newdir/  
rguliev@rguliev-VirtualBox:~$ ls  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка  'Рабочий стол'  
rguliev@rguliev-VirtualBox:~$  
rguliev@rguliev-VirtualBox:~$  
rguliev@rguliev-VirtualBox:~$
```

Figure 8: Действия с каталогами

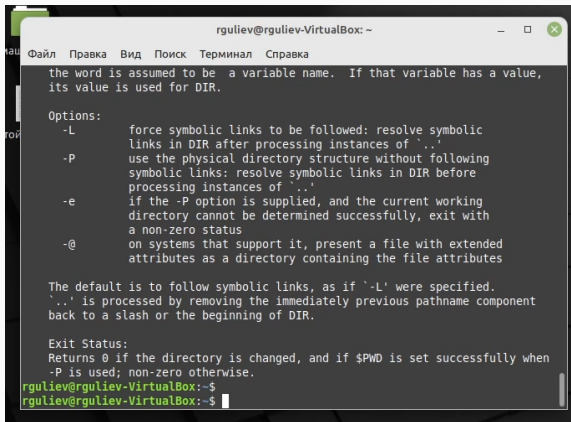
# Опции команды ls



```
rguliev@rguliev-VirtualBox: ~  
Файл Правка Вид Поиск Терминал Справка  
'./work/study/2021-2022/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол:  
Пустой документ  
./Шаблоны:  
rguliev@rguliev-VirtualBox:~$ ls -t  
work          Видео          Загрузки       Музыка         Шаблоны  
'Рабочий стол' Документы     Изображения   Общедоступные  
rguliev@rguliev-VirtualBox:~$
```

Figure 9: Команда ls -R и ls -t

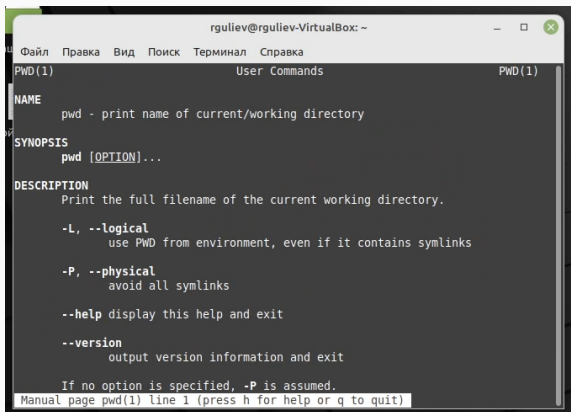
# Справка по командам



```
rguliev@rguliev-VirtualBox: ~  
Файл Правка Вид Поиск Терминал Справка  
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  
        a non-zero status  
-@      on systems that support it, present a file with extended  
        attributes as a directory containing the file attributes  
  
The default is to follow symbolic links, as if '-L' were specified.  
'..' is processed by removing the immediately previous pathname component  
back to a slash or the beginning of DIR.  
  
Exit Status:  
Returns 0 if the directory is changed, and if $PWD is set successfully when  
-P is used; non-zero otherwise.  
rguliev@rguliev-VirtualBox:~$  
rguliev@rguliev-VirtualBox:~$
```

Figure 10: Справка по команде cd

# Справка по командам



The screenshot shows a terminal window titled "rguliev@rguliev-VirtualBox: ~". The window has a menu bar with "Файл", "Правка", "Вид", "Поиск", "Терминал", and "Справка". The terminal content displays the help text for the "pwd" command, which is titled "PwD(1) User Commands PwD(1)". The text is as follows:

```
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

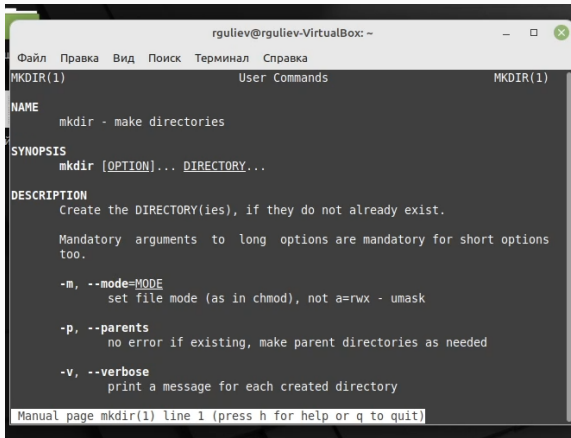
    --version
        output version information and exit

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

Figure 11: Справка по команде pwd



# Справка по командам



The screenshot shows a terminal window titled "rguliev@rguliev-VirtualBox: ~". The window has a menu bar with "Файл", "Правка", "Вид", "Поиск", "Терминал", and "Справка". Below the menu bar, the text "MKDIR(1)" is displayed on the left, "User Commands" in the center, and "MKDIR(1)" on the right. The main content area displays the manual page for the 'mkdir' command, including sections for NAME, SYNOPSIS, DESCRIPTION, and a list of options. At the bottom, a status bar reads "Manual page mkdir(1) line 1 (press h for help or q to quit)".

```
rguliev@rguliev-VirtualBox: ~
Файл  Правка  Вид  Поиск  Терминал  Справка
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

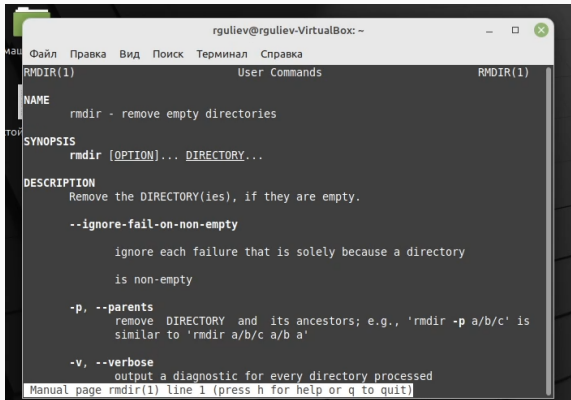
    -p, --parents
        no error if existing, make parent directories as needed

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

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

Figure 12: Справка по команде mkdir

# Справка по командам



The screenshot shows a terminal window titled 'rguliev@rguliev-VirtualBox: ~'. The window has a menu bar with 'Файл', 'Правка', 'Вид', 'Поиск', 'Терминал', and 'Справка'. The terminal content displays the help text for the 'rmdir' command, which is organized into sections: NAME, SYNOPSIS, DESCRIPTION, and a list of options. The text is as follows:

```
rguliev@rguliev-VirtualBox: ~
Файл  Правка  Вид  Поиск  Терминал  Справка
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

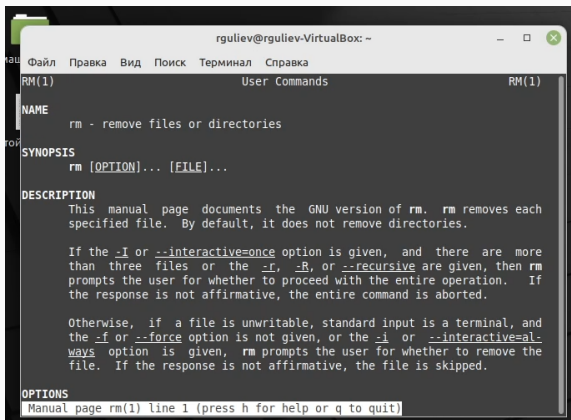
    -p, --parents
        remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is
        similar to 'rmdir a/b/c a/b a'

    -v, --verbose
        output a diagnostic for every directory processed

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

Figure 13: Справка по команде rmdir

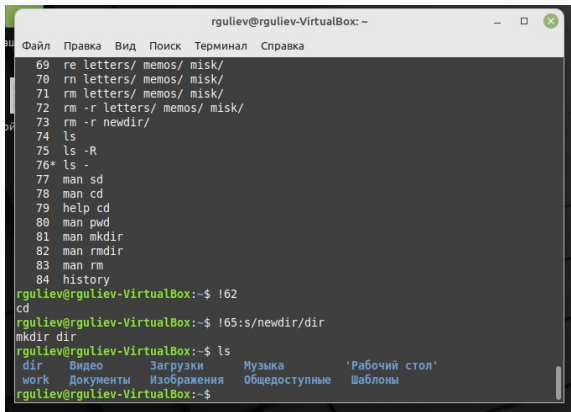
# Справка по командам



```
rguliev@rguliev-VirtualBox: ~  
Файл  Правка  Вид  Поиск  Терминал  Справка  
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)
```

Figure 14: Справка по команде rm

# История командной строки



The image shows a terminal window titled "rguliev@rguliev-VirtualBox: ~". The window has a menu bar with "Файл", "Правка", "Вид", "Поиск", "Терминал", and "Справка". The terminal content shows a list of commands numbered 69 to 84, followed by the command history being displayed. The commands are: 69 re letters/ memos/ misk/, 70 rn letters/ memos/ misk/, 71 rm letters/ memos/ misk/, 72 rm -r letters/ memos/ misk/, 73 rm -r newdir/, 74 ls, 75 ls -R, 76\* ls -, 77 man sd, 78 man cd, 79 help cd, 80 man pwd, 81 man mkdir, 82 man rmdir, 83 man rm, and 84 history. Below the list, the command history is shown: rguliev@rguliev-VirtualBox:~\$ !62, cd, rguliev@rguliev-VirtualBox:~\$ !65:s/newdir/dir, mkdir dir, and rguliev@rguliev-VirtualBox:~\$ ls. At the bottom, there is a file manager view showing "dir", "work", "Видео", "Документы", "Загрузки", "Изображения", "Музыка", "Общедоступные", and "'Рабочий стол'", "Шаблоны".

```
rguliev@rguliev-VirtualBox: ~
Файл  Правка  Вид  Поиск  Терминал  Справка
69 re letters/ memos/ misk/
70 rn letters/ memos/ misk/
71 rm letters/ memos/ misk/
72 rm -r letters/ memos/ misk/
73 rm -r newdir/
74 ls
75 ls -R
76* ls -
77 man sd
78 man cd
79 help cd
80 man pwd
81 man mkdir
82 man rmdir
83 man rm
84 history
rguliev@rguliev-VirtualBox:~$ !62
cd
rguliev@rguliev-VirtualBox:~$ !65:s/newdir/dir
mkdir dir
rguliev@rguliev-VirtualBox:~$ ls
dir  Видео  Загрузки  Музыка  'Рабочий стол'
work  Документы  Изображения  Общедоступные  Шаблоны
rguliev@rguliev-VirtualBox:~$
```

Figure 15: Команда history

## **Выводы по проделанной работе**

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