

# 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.

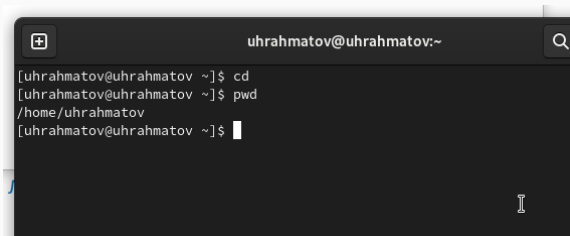
# Задачи лабораторной работы

- 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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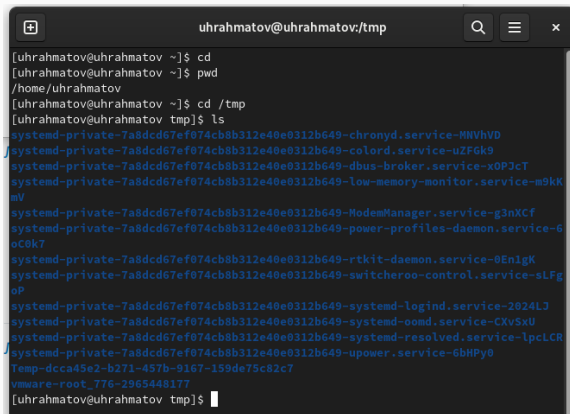
# Имя и путь к домашнему каталогу



```
uhrahmatov@uhrahmatov:~  
[uhrahmatov@uhrahmatov ~]$ cd  
[uhrahmatov@uhrahmatov ~]$ pwd  
/home/uhrahmatov  
[uhrahmatov@uhrahmatov ~]$
```

Рис. 1: Путь к домашнему каталогу

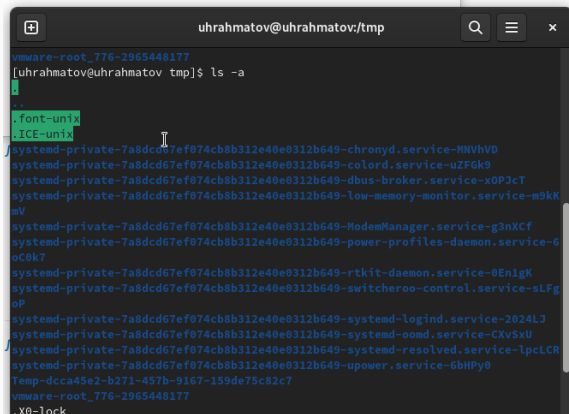
# Опции команды ls



```
uhrahmatov@uhrahmatov/tmp
[uhrahmatov@uhrahmatov ~]$ cd
[uhrahmatov@uhrahmatov ~]$ pwd
/home/uhrahmatov
[uhrahmatov@uhrahmatov ~]$ cd /tmp
[uhrahmatov@uhrahmatov tmp]$ ls
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-chronyd.service-MNVhVD
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-colord.service-uZFGk9
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-dbus-broker.service-x0PJcT
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-low-memory-monitor.service-m9kk
mV
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-ModemManager.service-g3nXCf
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-power-profiles-daemon.service-6
oC0k7
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-rtkit-daemon.service-0En1gK
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-switcheroo-control.service-sLFg
oP
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-logind.service-2024LJ
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-oomd.service-CXvSxU
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-resolved.service-lpcLCR
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-upower.service-6bHPy0
Temp-dcca45e2-b271-457b-9167-159de75c82c7
vmware-root_776-2965448177
[uhrahmatov@uhrahmatov tmp]$
```

Рис. 2: Команда ls

# Опции команды ls



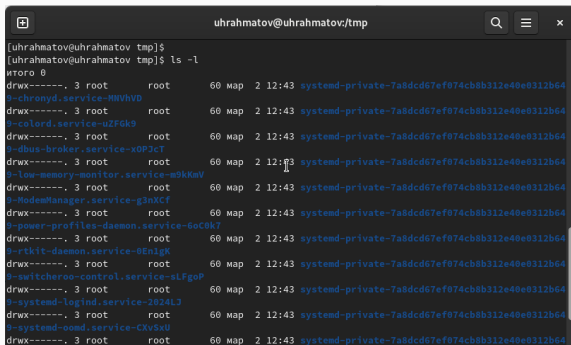
A terminal window titled 'uhrahmatov@uhrahmatov/tmp' with search, menu, and close icons in the title bar. The terminal shows the command '[uhrahmatov@uhrahmatov tmp]\$ ls -a' and its output. The output lists hidden files and system services. The files '.font-unix' and '.ICE-unix' are highlighted in green. The cursor is positioned on the line containing '.ICE-unix'. The output ends with 'vmware-root\_776-2965448177' and '.X0-lock'.

```
vmware-root_776-2965448177
[uhrahmatov@uhrahmatov tmp]$ ls -a
.
..
.font-unix
.ICE-unix
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-chronyd.service-MNVhVD
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-colord.service-uZFGk9
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-dbus-broker.service-x0PJcT
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-low-memory-monitor.service-m9kK
mV
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-ModemManager.service-g3nXCf
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-power-profiles-daemon.service-6
oC0k7
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-rtkit-daemon.service-0EnlK
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-switcheroo-control.service-sLFg
oP
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-logind.service-2024LJ
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-oomd.service-CXvSxU
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-resolved.service-lpcLCR
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-upower.service-6bHPy0
Temp-dcca45e2-b271-457b-9167-159de75c82c7
vmware-root_776-2965448177
.X0-lock
```

Рис. 3: Команда ls -a



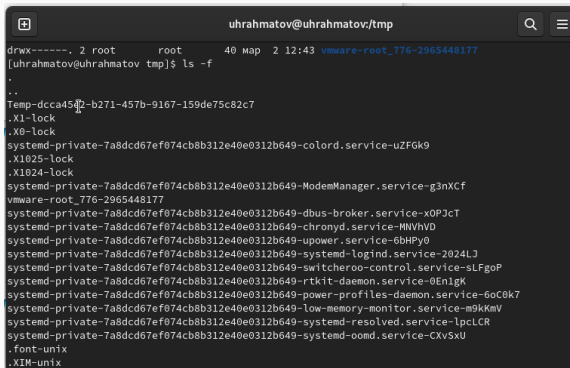
# Опции команды ls



```
uhrahmatov@uhrahmatov/tmp
[uhrahmatov@uhrahmatov tmp]$
[uhrahmatov@uhrahmatov tmp]$ ls -l
иторо 0
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-chrond.service-MWVhVD
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-colord.service-uZF6k9
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-dbus-broker.service-x0PJcY
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-low-memory-monitor.service-m9kKwV
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-ModemManager.service-g3nXCf
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-power-profiles-daemon.service-6oC0k7
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-rtkit-daemon.service-0EnigK
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-switcheroo-control.service-slFgoP
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-systemd-logind.service-2824LJ
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
9-systemd-oomd.service-Ckv5xU
drwx-----, 3 root      root      60 map  2 12:43 systemd-private-7a8dcd67ef074cb8b312e40e0312b64
```

Рис. 4: Команда ls -l

# Опции команды ls



A terminal window titled 'uhrahmatov@uhrahmatov/tmp' showing the output of the 'ls -f' command. The output lists various files and directories, including systemd-private units, vmware-root, and systemd-resolved. The terminal has a dark background with light-colored text. The window title bar includes a search icon and a menu icon.

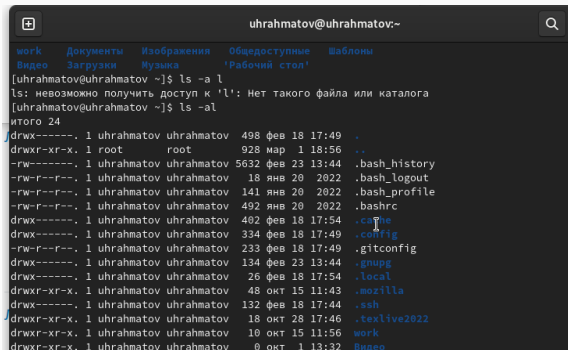
```
uhrahmatov@uhrahmatov/tmp
drwx----- 2 root    root    40 map  2 12:43 vmware-root.776-2965448177
[uhrahmatov@uhrahmatov tmp]$ ls -f
.
..
Temp-dcca45d2-b271-457b-9167-159de75c82c7
.X1-lock
.X0-lock
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-colord.service-uZFGk9
.X1025-lock
.X1024-lock
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-ModemManager.service-g3nXCf
vmware-root.776-2965448177
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-dbus-broker.service-x0PJcT
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-chronyd.service-MNVhVD
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-upower.service-6bHPy0
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-logind.service-2024LJ
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-switcheroo-control.service-sLFgoP
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-rtkit-daemon.service-0EnlgK
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-power-profiles-daemon.service-6oC0k7
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-low-memory-monitor.service-m9kKmV
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-resolved.service-lpCLCR
systemd-private-7a8dcd67ef074cb8b312e40e0312b649-systemd-oomd.service-CXvSXU
.font-unix
.XIM-unix
```

Рис. 5: Команда ls -f

```
[uhrahmatov@uhrahmatov tmp]$  
[uhrahmatov@uhrahmatov tmp]$ cd /var/spool/  
[uhrahmatov@uhrahmatov spool]$ ls  
abrt abrt-upload cups lpd mail plymouth  
[uhrahmatov@uhrahmatov 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 фев 21 15:05 abrt  
drwx-----, 1 abrt abrt 0 мар 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 мар 1 18:56 mail  
drwxr-xr-x. 1 root root 0 мар 7 2022 plymouth  
[uhrahmatov@uhrahmatov spool]$
```

запущенных процессов

**Рис. 6:** Каталог /var/spool



A terminal window titled 'uhtahmatov@uhtahmatov:~' showing the output of the 'ls -al' command. The window has a dark background with a top bar containing a home icon, the title, and a search icon. Below the title bar, there are tabs for 'work', 'Документы', 'Изображения', 'Общедоступные', and 'Шаблоны'. The terminal output shows the current directory listing with permissions, owner, group, size, date, and filename. The files listed are: '.', '..', '.bash\_history', '.bash\_logout', '.bash\_profile', '.bashrc', '.cache', '.config', '.gitconfig', '.gnupg', '.local', '.mozilla', '.ssh', '.texlive2022', 'work', and 'video'.

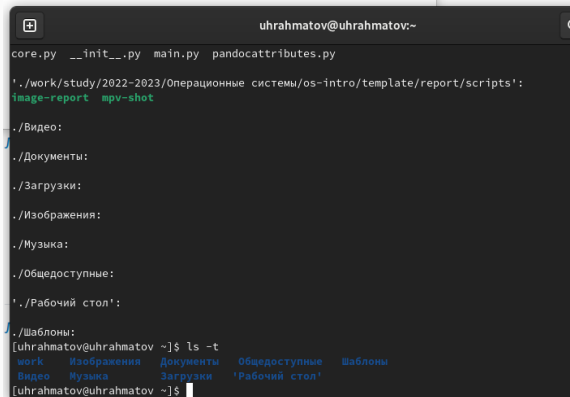
```
uhtahmatov@uhtahmatov:~  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка  'Рабочий стол'  
[uhtahmatov@uhtahmatov ~]$ ls -a l  
ls: невозможно получить доступ к 'l': Нет такого файла или каталога  
[uhtahmatov@uhtahmatov ~]$ ls -al  
итого 24  
drwx----- 1 uhtahmatov uhtahmatov 498 фев 18 17:49 .  
drwxr-xr-x 1 root root 928 мар 1 18:56 ..  
-rw----- 1 uhtahmatov uhtahmatov 5632 фев 23 13:44 .bash_history  
-rw-r--r-- 1 uhtahmatov uhtahmatov 18 янв 20 2022 .bash_logout  
-rw-r--r-- 1 uhtahmatov uhtahmatov 141 янв 20 2022 .bash_profile  
-rw-r--r-- 1 uhtahmatov uhtahmatov 492 янв 20 2022 .bashrc  
drwx----- 1 uhtahmatov uhtahmatov 402 фев 18 17:54 .cache  
drwx----- 1 uhtahmatov uhtahmatov 334 фев 18 17:49 .config  
-rw-r--r-- 1 uhtahmatov uhtahmatov 233 фев 18 17:49 .gitconfig  
drwx----- 1 uhtahmatov uhtahmatov 134 фев 23 13:44 .gnupg  
drwx----- 1 uhtahmatov uhtahmatov 26 фев 18 17:54 .local  
drwxr-xr-x 1 uhtahmatov uhtahmatov 48 окт 15 11:43 .mozilla  
drwx----- 1 uhtahmatov uhtahmatov 132 фев 18 17:44 .ssh  
drwxr-xr-x 1 uhtahmatov uhtahmatov 18 окт 28 17:46 .texlive2022  
drwxr-xr-x 1 uhtahmatov uhtahmatov 10 окт 15 11:56 work  
drwxr-xr-x 1 uhtahmatov uhtahmatov 0 окт 1 13:32 video
```

Рис. 7: Файлы в домашнем каталоге

```
[u@u]rahmatov@u[ra]hmatov ~]$  
[u@u]rahmatov@u[ra]hmatov ~]$ mkdir newdir  
[u@u]rahmatov@u[ra]hmatov ~]$ mkdir newdir/morefun  
[u@u]rahmatov@u[ra]hmatov ~]$ mkdir letters memos misk  
[u@u]rahmatov@u[ra]hmatov ~]$ ls  
letters  misk  work  Документы  Изображения  Общедоступные  Шаблоны  
memos    newdir  Видео  Загрузки  Музыка  'Рабочий стол'  
[u@u]rahmatov@u[ra]hmatov ~]$ rm letters/ memos/ misk/  
rm: невозможно удалить 'letters/': Это каталог  
rm: невозможно удалить 'memos/': Это каталог  
rm: невозможно удалить 'misk/': Это каталог  
[u@u]rahmatov@u[ra]hmatov ~]$ rm -r letters/ memos/ misk/  
[u@u]rahmatov@u[ra]hmatov ~]$ rm -r newdir/  
[u@u]rahmatov@u[ra]hmatov ~]$ ls  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка  'Рабочий стол'  
[u@u]rahmatov@u[ra]hmatov ~]$
```

Рис. 8: Действия с каталогами

# Опции команды ls

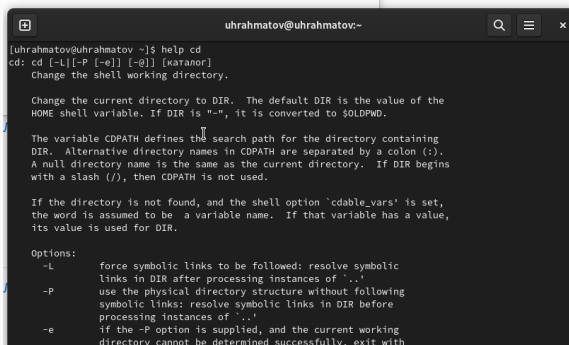


A terminal window titled 'uhtahmatov@uhtahmatov:~' showing the output of the 'ls -t' command. The output lists directories in descending order of modification time: work, Изображения, Документы, Общедоступные, Шаблоны, Видео, Музыка, Загрузки, and 'Рабочий стол'.

```
core.py __init__.py main.py pandocattributes.py
'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':
image-report mpv-shot
./Видео:
./Документы:
./Загрузки:
./Изображения:
./Музыка:
./Общедоступные:
'./Рабочий стол':
./Шаблоны:
[uhtahmatov@uhtahmatov ~]$ ls -t
work    Изображения  Документы  Общедоступные  Шаблоны
Видео   Музыка      Загрузки   'Рабочий стол'
[uhtahmatov@uhtahmatov ~]$
```

Рис. 9: Команда ls -R и ls -t

# Справка по командам



```
uhrahmatov@uhrahmatov:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [directory]
    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.

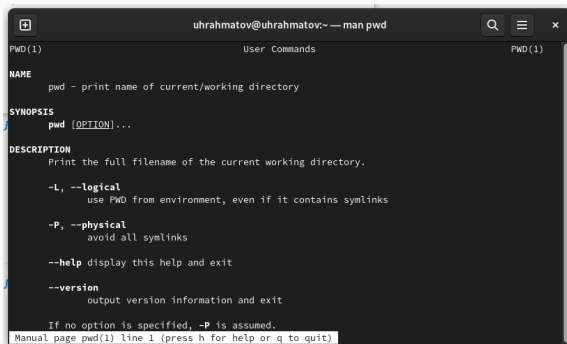
    The variable CDPATH defines the search path for the directory containing
    DIR.  Alternative directory names in CDPATH are separated by a colon (:).
    A null directory name is the same as the current directory.  If DIR begins
    with a slash (/), then CDPATH is not used.

    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



The screenshot shows a terminal window with the title bar "uhrahmatov@uhrahmatov:~ — man pwd". The window displays the manual page for the `pwd` command. The content 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

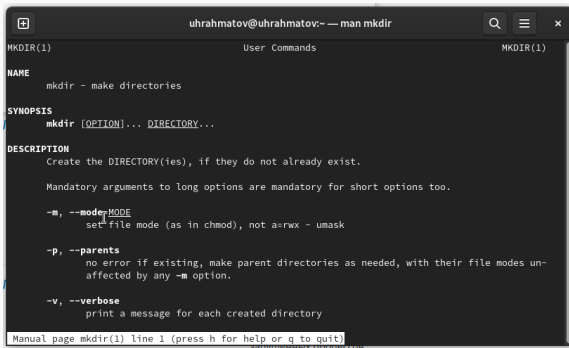
    --version
        output version information and exit

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

Рис. 11: Справка по команде `pwd`



# Справка по командам



```
uhrahmatov@uhrahmatov:~ — 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

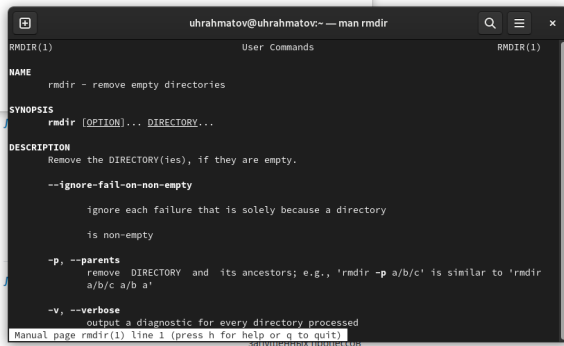
    -p, --parents
        no error if existing, make parent directories as needed, with their file modes un-
        affected by any -m option.

    -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

# Справка по командам



```
uhrahmatov@uhrahmatov:~ -- 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.

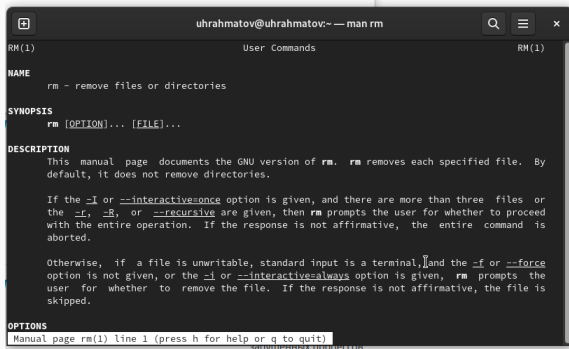
    --ignore-fail-on-non-empty
        ignore each failure that is solely because a directory
        is non-empty

    -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



```
uhrahmatov@uhrahmatov:~ -- 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.

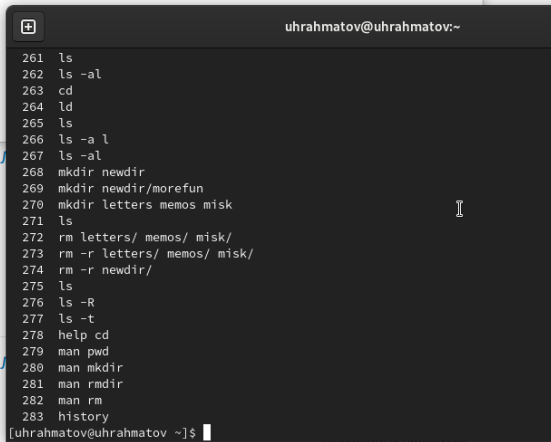
  If the -I or --interactive=once option is given, and there are more than three files or
  the -r, -R, or --recursive are given, then rm prompts the user for whether to proceed
  with the entire operation. If the response is not affirmative, the entire command is
  aborted.

  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=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
  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 background and light text. The title bar shows a window icon and the text 'uhtahmatov@uhtahmatov:~'. The terminal displays a list of 28 commands, each preceded by a line number from 261 to 283. The commands are: 'ls', 'ls -al', 'cd', 'ld', 'ls', 'ls -a l', 'ls -al', 'mkdir newdir', 'mkdir newdir/morefun', 'mkdir letters memos misk', 'ls', 'rm letters/ memos/ misk/', 'rm -r letters/ memos/ misk/', 'rm -r newdir/', 'ls', 'ls -R', 'ls -t', 'help cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. The prompt '[uhtahmatov@uhtahmatov ~]\$' is visible at the bottom, followed by a cursor.

```
uhtahmatov@uhtahmatov:~  
261 ls  
262 ls -al  
263 cd  
264 ld  
265 ls  
266 ls -a l  
267 ls -al  
268 mkdir newdir  
269 mkdir newdir/morefun  
270 mkdir letters memos misk  
271 ls  
272 rm letters/ memos/ misk/  
273 rm -r letters/ memos/ misk/  
274 rm -r newdir/  
275 ls  
276 ls -R  
277 ls -t  
278 help cd  
279 man pwd  
280 man mkdir  
281 man rmdir  
282 man rm  
283 history  
[uhtahmatov@uhtahmatov ~]$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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