

# 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.

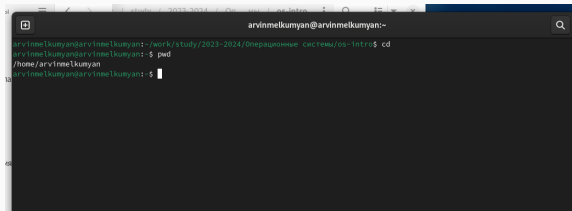
# Задачи лабораторной работы

- 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



```
arvinmelkumyan@arvinmelkumyan:~  
arvinmelkumyan@arvinmelkumyan:~/work/study/2023-2024/Операционные системы/os-intro$ cd  
arvinmelkumyan@arvinmelkumyan:~$ pwd  
/home/arvinmelkumyan  
arvinmelkumyan@arvinmelkumyan:~$
```

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
arvinmelkumyan@arvinmelkumyan:~$  
arvinmelkumyan@arvinmelkumyan:~$ cd /tmp  
arvinmelkumyan@arvinmelkumyan:/tmp$ ls  
dbus-EwnTBa6B  
dbus-Qejtt6Sr  
hsperfdata_arvinmelkumyan  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-chronyd.service-0g0PsL  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-colord.service-LyMtrl  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-dbus-broker.service-83700s  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-low-memory-monitor.service-xWkHuw  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-ModemManager.service-55hBT8  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-polkit.service-mRP04r  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-power-profiles-daemon.service-9Uv35S  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-rtkit-daemon.service-ifOdWI  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-switcheroo-control.service-ByIyrH  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-logind.service-QVF98o  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-oomd.service-DFQ8qd  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-resolved.service-qRByzn  
systemd-private-a423cbdee14d4e3692b3771b76e43aac-upower.service-qisX5x  
tex2pdf.-3c830f7bd4c03563  
VMwareDnD  
vmware-root_925-3988621690  
arvinmelkumyan@arvinmelkumyan:/tmp$
```

Рис. 2: Команда ls

## Опции команды ls

```

arvinmelkumyan@arvinmelkumyan:/tmp$ ls -la
total 12
drwxr-xr-x 3 root root 4096 Nov 14 12:00 .
drwxr-xr-x 1 root root 4096 Nov 14 12:00 ..
-rw-r--r-- 1 root root  176 Nov 14 12:00 dbus-EwnTBa6B
-rw-r--r-- 1 root root  176 Nov 14 12:00 dbus-Qejtt6Sr
-rw-r--r-- 1 root root  176 Nov 14 12:00 .font-unix
-rw-r--r-- 1 root root  176 Nov 14 12:00 .hsperfdata_arvinmelkumyan
-rw-r--r-- 1 root root  176 Nov 14 12:00 .ICE-unix
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-chronyd.service-Og0P5L
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-colord.service-LyMtrL
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-dbus-broker.service-83700s
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-low-memory-monitor.service-xWkHwU
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-ModemManager.service-5Sh8TB
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-polkit.service-MRP04r
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-power-profiles-daemon.service-9Uv35S
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-rtkit-daemon.service-if0dWl
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-switcheroo-control.service-ByiyrH
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-logind.service-QVF98o
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-oomd.service-DFQ0qd
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-systemd-resolved.service-qRByZH
-rw-r--r-- 1 root root  176 Nov 14 12:00 systemd-private-a423cbdee14d4e3692b3771b76e43aac-upower.service-qisX5x
-rw-r--r-- 1 root root  176 Nov 14 12:00 tex2pdf,-3c830f7bd4c03563
-rw-r--r-- 1 root root  176 Nov 14 12:00 VMwareDnD
-rw-r--r-- 1 root root  176 Nov 14 12:00 vmware-root_925-3988621690
-rw-r--r-- 1 root root  176 Nov 14 12:00 .X0-lock
-rw-r--r-- 1 root root  176 Nov 14 12:00 .X1024-lock
-rw-r--r-- 1 root root  176 Nov 14 12:00 .X1025-lock
-rw-r--r-- 1 root root  176 Nov 14 12:00 .X11-unix
-rw-r--r-- 1 root root  176 Nov 14 12:00 .X1-lock
-rw-r--r-- 1 root root  176 Nov 14 12:00 .XIM-unix
arvinmelkumyan@arvinmelkumyan:/tmp$

```

### Рис. 3: Команда ls -a



# Опции команды ls

```
arvin@kali:~/arvin$ ls -l
итого 8
-rw-rw-rw-. 1 root      root      0 сен  1 10:49 dbus-1wnTadB
-rw-rw-rw-. 1 root      root      0 сен  1 10:49 dbus-9eJtt65r
drwx-xr-x. 2 arvin@kali arvin@kali 40 сен  1 11:12 superdata.arvin@kali
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-chrond.service-0p0sl
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-cjard.service-1pHtrI
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-dbus-broker.service-83790q
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-lvm-memory-monitor.service-AM0hw
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-ModemManager.service-55M8tB
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-pulse.service-4P04r
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-pwmt-profiles-daemon.service-9Uc35s
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-rkit-daemon.service-1F0DQI
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-switcheroo-control.service-8ylyh
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-systemd-logind.service-Q0F9ke
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-systemd-sshd.service-0Pqnd
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-systemd-resolved.service-qR8yJl
drwx----- 3 root      root      60 сен  1 10:49 systemd-private-a231bdee1d4e352b3771b76e43ac-upower.service-q1c5X
drwx----- 3 arvin@kali arvin@kali 100 сен  1 11:21 superdata.1c32077bd4c03503
drwxr-xr-x. 2 arvin@kali arvin@kali 200 сен  1 11:48 superdata
drwx----- 2 root      root      40 сен  1 10:49 superdata_925-398821298
arvin@kali:~/arvin$ ls -l
```

Рис. 4: Команда ls -l

# Опции команды ls

```
root@kali:~/kali# cd /etc/passwd/
root@kali:~/kali# ls -f
.
..
.X11-units
.XICE-units
.XIM-units
.font-units
systemd-private-a423cbdee1464e3692b3771b76e43aac-systemd-oomd.service-SFO0qd
systemd-private-a423cbdee1464e3692b3771b76e43aac-systemd-resolved.service-qR8y2N
systemd-private-a423cbdee1464e3692b3771b76e43aac-dbus-broker.service-83780s
systemd-private-a423cbdee1464e3692b3771b76e43aac-chromyid.service-SQDFsL
systemd-private-a423cbdee1464e3692b3771b76e43aac-low-memory-monitor.service-x66kww
systemd-private-a423cbdee1464e3692b3771b76e43aac-polkitt.service-w894dr
systemd-private-a423cbdee1464e3692b3771b76e43aac-power-profiles-daemon.service-8Uv355
systemd-private-a423cbdee1464e3692b3771b76e43aac-rtkit-daemon.service-1f0d6t
systemd-private-a423cbdee1464e3692b3771b76e43aac-switcheroo-control.service-Bylyrh
systemd-private-a423cbdee1464e3692b3771b76e43aac-systemd-logind.service-QUf98o
systemd-private-a423cbdee1464e3692b3771b76e43aac-upower.service-q1x35x
uucpr-root_x25-396921600
systemd-private-a423cbdee1464e3692b3771b76e43aac-ModemManager.service-S5H8TB
dbus-Gsmfb98
dbus-0e11566r
.X1024-lock
.X1025-lock
systemd-private-a423cbdee1464e3692b3771b76e43aac-colord.service-LyHTRL
3a-lock
.X1-lock
haperfdots_arvineaikunyan
libreoffice
tex2pdf_-3c830f7bd4c83583
```

Рис. 5: Команда ls -f

```
arvinmelkumyan@arvinmelkumyan:/tmp$  
arvinmelkumyan@arvinmelkumyan:/tmp$ cd /var/spool/  
arvinmelkumyan@arvinmelkumyan:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1580 авг 28 18:09 abrt  
drwx-----. 1 abrt abrt  0 июл 19 2023 abrt-upload  
drwx--x---. 1 root lp  6 фев 16 2024 cups  
drwxr-xr-x. 1 root root  0 июл 21 2023 lpd  
drwxrwxr-x. 1 root mail 652 сен  1 10:49 mail  
drwxr-xr-x. 1 root root  0 июл 21 2023 plymouth  
arvinmelkumyan@arvinmelkumyan:/var/spool$
```

**Рис. 6:** Каталог /var/spool

```
arvinmelkumyan@arvinmelkumyan: /var/spool$ cd
arvinmelkumyan@arvinmelkumyan: $ ls
git-extended work Вареж Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны
arvinmelkumyan@arvinmelkumyan: $ ls -al
итого 24
drwx-----, 1 arvinmelkumyan arvinmelkumyan 534 сен 1 11:36 .
drwxr-xr-x, 1 root root 646 сен 1 10:49 ..
-rw-----, 1 arvinmelkumyan arvinmelkumyan 2647 сен 1 11:52 .bash_history
-rw-r--r--, 1 arvinmelkumyan arvinmelkumyan 18 янв 22 2024 .bash_logout
-rw-r--r--, 1 arvinmelkumyan arvinmelkumyan 144 янв 22 2024 .bash_profile
-rw-r--r--, 1 arvinmelkumyan arvinmelkumyan 684 сен 1 11:34 .bashrc
drwx-----, 1 arvinmelkumyan arvinmelkumyan 452 сен 1 11:38 .cache
drwx-----, 1 arvinmelkumyan arvinmelkumyan 398 сен 1 11:38 .config
-rw-r--r--, 1 arvinmelkumyan arvinmelkumyan 334 мар 25 03:00 .emacs
-rw-r--r--, 1 arvinmelkumyan arvinmelkumyan 237 сен 1 11:06 .gitconfig
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 74 сен 1 11:43 git-extended
drwx-----, 1 arvinmelkumyan arvinmelkumyan 136 сен 1 11:03 .gnupg
drwx-----, 1 arvinmelkumyan arvinmelkumyan 20 сен 1 10:50 .local
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 48 сен 1 10:54 .mozilla
drwx-----, 1 arvinmelkumyan arvinmelkumyan 132 сен 1 11:08 .ssh
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 18 сен 1 11:11 .texlive2023
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 10 сен 1 11:07 work
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Вареж
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Документы
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Загрузки
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Изображения
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Музыка
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Общедоступные
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 'Рабочий стол'
drwxr-xr-x, 1 arvinmelkumyan arvinmelkumyan 0 сен 1 10:50 Шаблоны
arvinmelkumyan@arvinmelkumyan: $
```

Рис. 7: Файлы в домашнем каталоге

```
arvin@kali:~/arvin$ pwd
arvin@kali:~/arvin$ ls
arvin@kali:~/arvin$ mkdir newdir
arvin@kali:~/arvin$ mkdir newdir/norefun
arvin@kali:~/arvin$ mkdir letters memos msk
arvin@kali:~/arvin$ ls
git-extended letters memos msk newdir work
arvin@kali:~/arvin$ rm letters memos msk/
rm: невозможно удалить 'letters': это каталог
rm: невозможно удалить 'memos': это каталог
rm: невозможно удалить 'msk/': это каталог
arvin@kali:~/arvin$ rm -r letters memos/ msk/
arvin@kali:~/arvin$ rm -r newdir/
arvin@kali:~/arvin$ ls
git-extended work
arvin@kali:~/arvin$
```

Рис. 8: Действия с каталогами

# Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол':  
./Шаблоны:  
arvismelkmyangarvismelkmyang:~$ ls -t  
git-extended work Видео Изображения Музыка Документы Загрузки Общедоступные 'Рабочий стол' Шаблоны  
arvismelkmyangarvismelkmyang:~$
```

Рис. 9: Команда ls -R и ls -t

```
arvinmelkumyan@arvinmelkumyan:~$ help cd
cd: cd [-L][-P [-e]] [-@] [karanor]
    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.

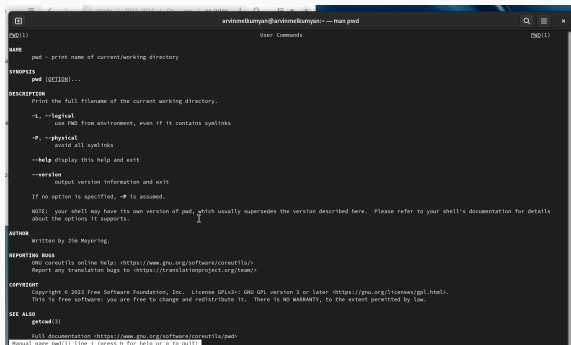
    Options:
    -L      force symbolic links to be followed: resolve symbolic
            links in DIR after processing instances of '..'
    -P      use the physical directory structure without following
            symbolic links: resolve symbolic links in DIR before
            processing instances of '..'
    -e      if the -P option is supplied, and the current working
            directory cannot be determined successfully, exit with
            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 $PWD is set successfully when
    -P is used; non-zero otherwise.
arvinmelkumyan@arvinmelkumyan:~$
```

Рис. 10: Справка по команде cd

# Справка по командам



```
ardismelkumyan@ardismelkumyan:~$ 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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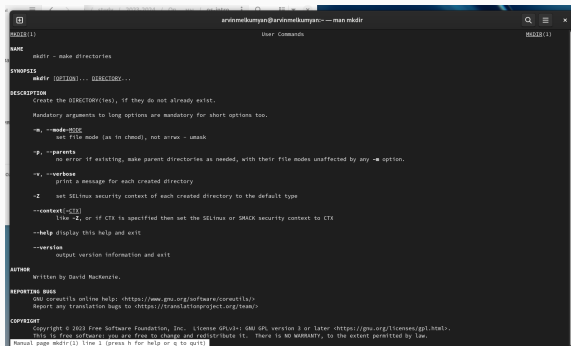
SEE ALSO
    getcwd(3)

    Full documentation <https://www.gnu.org/software/coreutils/pwd>
    Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd



# Справка по командам



```
arvinmekumyan@arvinmekumyan:~$ man mkdir
mkdir(1)                                User Commands
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.

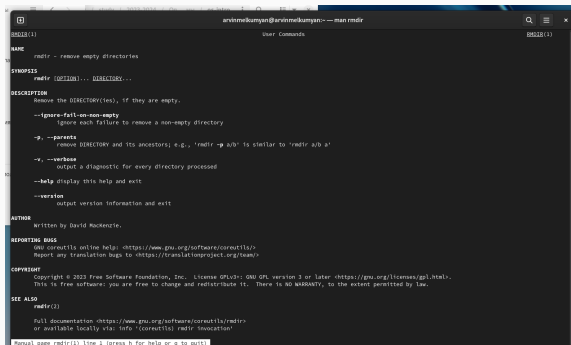
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  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
  Report any translation bugs to <https://translationproject.org/team/

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Manual page mkdir(1) line 4 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir

# Справка по командам



```
arvinmelkumyan@arvinmelkumyan:~ -- 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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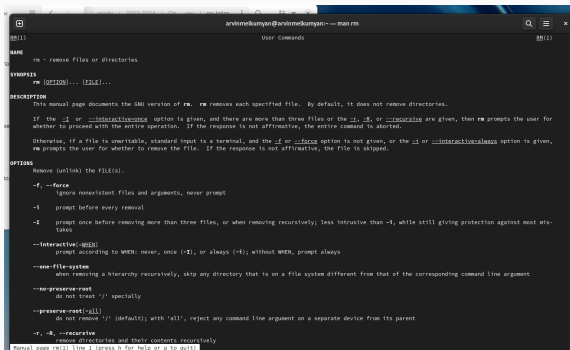
SEE ALSO
  rmdir(3)

  Full documentation <https://www.gnu.org/software/coreutils/rmdir>
  or available locally via: info '(coreutils) rmdir invocation'

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

Рис. 13: Справка по команде rmdir

# Справка по командам



```
arvindkumaran@arvindkumaran:~$ man rm
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, -I, 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 (un)link 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 -f, while still giving protection against most mistakes

--interactive[=WHEN]
    prompt according to WHEN: never, once (-I), or always (-f); without WHEN, prompt always

--no-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

--preserve-root[=all]
    do not remove '/' (default); with 'all', reject any command line argument on a separate device from its parent

-r, -R, --recursive
    remove directories and their contents recursively

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

Рис. 14: Справка по команде rm

# История командной строки

```
101 cd /tmp
102 ls
103 ls -a
104 ls -l
105 ls -f
106 cd /var/spool/
107 ls -l
108 cd
109 ls
110 ls -al
111 mkdir newdir
112 mkdir newdir/morefun
113 mkdir letters memos misk
114 ls
115 rm letters memos misk/
116 rm -r letters memos/ misk/
117 rm -r newdir/
118 ls
119 ls -R
120 ls -t
121 help cd
122 man pwd
123 man mkdir
124 man rmdir
125 man rm
126 history
arvinmelkumyan@arvinmelkumyan:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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