

# 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.

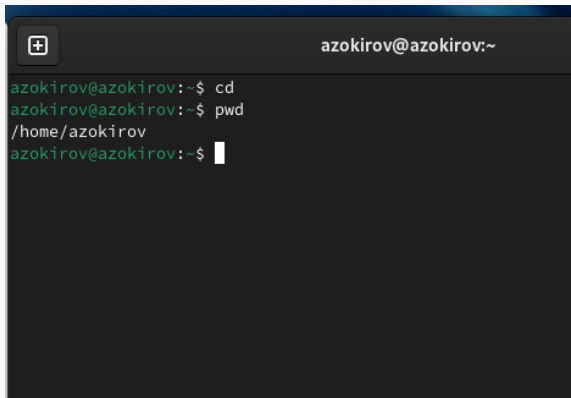
# Задачи лабораторной работы

- 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



```
azokirov@azokirov:~$ cd
azokirov@azokirov:~$ pwd
/home/azokirov
azokirov@azokirov:~$
```

A terminal window with a dark background. The title bar shows a plus icon and the text 'azokirov@azokirov:~'. The terminal content shows a sequence of commands: 'cd', 'pwd', and the output '/home/azokirov'. The prompt 'azokirov@azokirov:~\$' is followed by a white cursor bar.

**Рис. 1:** Путь к домашнему каталогу

# Опции команды ls

```
azokirov@azokirov:~$ cd
azokirov@azokirov:~$ pwd
/home/azokirov
azokirov@azokirov:~$ cd /tmp
azokirov@azokirov:/tmp$ ls
dbus-lyTpPP40
dbus-8KLUGfUW
systemd-private-fe43942414674789979db5269566fe65-chronyd.service-iS46jV
systemd-private-fe43942414674789979db5269566fe65-colord.service-JblVhx
systemd-private-fe43942414674789979db5269566fe65-dbus-broker.service-S6fLPC
systemd-private-fe43942414674789979db5269566fe65-fwupd.service-ZgzAan
systemd-private-fe43942414674789979db5269566fe65-low-memory-monitor.service-E8C9vX
systemd-private-fe43942414674789979db5269566fe65-ModemManager.service-sc2aFH
systemd-private-fe43942414674789979db5269566fe65-polkit.service-eZZI09
systemd-private-fe43942414674789979db5269566fe65-power-profiles-daemon.service-mjpJpe
systemd-private-fe43942414674789979db5269566fe65-rtkit-daemon.service-HIAPtv
systemd-private-fe43942414674789979db5269566fe65-switcheroo-control.service-Uc4h0U
systemd-private-fe43942414674789979db5269566fe65-systemd-logind.service-c3iHqv
systemd-private-fe43942414674789979db5269566fe65-systemd-oom.service-7VcMWS
systemd-private-fe43942414674789979db5269566fe65-systemd-resolved.service-8i7xHK
systemd-private-fe43942414674789979db5269566fe65-upower.service-xqjjfi
vmware-root_921-3980298495
azokirov@azokirov:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
azokirov@azokirov:/tmp$ ls -la
..
dbus-1yTpPP40
dbus-8KLugfWU
.font-unix
.ICE-unix
systemd-private-fe43942414674789979db5269566fe65-chronyd.service-is46jY
systemd-private-fe43942414674789979db5269566fe65-colord.service-JblVhx
systemd-private-fe43942414674789979db5269566fe65-dbus-broker.service-S6fLPC
systemd-private-fe43942414674789979db5269566fe65-fwupd.service-ZgzAan
systemd-private-fe43942414674789979db5269566fe65-low-memory-monitor.service-E8C9vX
systemd-private-fe43942414674789979db5269566fe65-ModemManager.service-sc2aFH
systemd-private-fe43942414674789979db5269566fe65-polkit.service-eZZI09
systemd-private-fe43942414674789979db5269566fe65-power-profiles-daemon.service-mjpJpe
systemd-private-fe43942414674789979db5269566fe65-rtkit-daemon.service-H1APtv
systemd-private-fe43942414674789979db5269566fe65-switcheroo-control.service-Uc4hOU
systemd-private-fe43942414674789979db5269566fe65-systemd-logind.service-c3iHqv
systemd-private-fe43942414674789979db5269566fe65-systemd-oomd.service-7VcMWS
systemd-private-fe43942414674789979db5269566fe65-systemd-resolved.service-8i7xMK
systemd-private-fe43942414674789979db5269566fe65-upower.service-xqjffi
vmware-root_921-3980298495
.X0-Lock
```

Рис. 3: Команда ls -a



# Опции команды ls

```
azokirov@azokirov:~$ ls -l
итого 0
srwx-rw-rw-. 1 root root 0 anp 4 17:51 dbus-lyTpPP40
srwx-rw-rw-. 1 root root 0 anp 4 17:51 dbus-BKLUGfUW
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-chromyd.service-1646jY
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-color.service-3blybX
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-dbus-broker.service-56fLPC
drwx----- 3 root root 60 anp 4 17:57 systemd-private-fe43942414674789979db5269566fe65-fwupd.service-ZgzAan
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-low-memory-monitor.service-EBChvX
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-ModemManager.service-sc2aF8
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-polkit.service-eZZT09
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-power-profiles-daemon.service-mjp3pe
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-rtkit-daemon.service-H1APtv
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-switcheroo-control.service-4u4hou
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-systemd-logind.service-c3lnq
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-systemd-sdmd.service-TVCMMS
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-systemd-resolved.service-817xRK
drwx----- 3 root root 60 anp 4 17:51 systemd-private-fe43942414674789979db5269566fe65-upower.service-xqjffj
drwx----- 2 root root 40 anp 4 17:51 vmware-root_521-3988298495
azokirov@azokirov:~$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
azokirov@azokirov:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-fe43942414674789979db5269566fe65-systemd-oond.service-7VcMWS
systemd-private-fe43942414674789979db5269566fe65-systemd-resolved.service-8i7xMK
systemd-private-fe43942414674789979db5269566fe65-dbus-broker.service-S6fLPC
systemd-private-fe43942414674789979db5269566fe65-chronyd.service-iS46jY
systemd-private-fe43942414674789979db5269566fe65-low-memory-monitor.service-E8C9vX
systemd-private-fe43942414674789979db5269566fe65-polkit.service-eZZI09
systemd-private-fe43942414674789979db5269566fe65-power-profiles-daemon.service-mjpJpe
systemd-private-fe43942414674789979db5269566fe65-rtkit-daemon.service-H1APtv
systemd-private-fe43942414674789979db5269566fe65-switcheroo-control.service-Uc4h0U
systemd-private-fe43942414674789979db5269566fe65-systemd-logind.service-c3iHqv
systemd-private-fe43942414674789979db5269566fe65-upower.service-xqjffi
vmware-root_921-3988298495
systemd-private-fe43942414674789979db5269566fe65-ModemManager.service-sc2aFh
dbus-8KLUGfUW
dbus-lyTpPP40
.X1024-lock
.X1025-lock
systemd-private-fe43942414674789979db5269566fe65-colord.service-JblVhx
.X0-lock
.X1-lock
systemd-private-fe43942414674789979db5269566fe65-fwupd.service-ZgzAan
azokirov@azokirov:/tmp$
```

Рис. 5: Команда ls -f

# Каталог /var/spool

```
azokirov@azokirov:/tmp$  
azokirov@azokirov:/tmp$ cd /var/spool/  
azokirov@azokirov:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1438 мар 24 12:13 abrt  
drwx-----. 1 abrt abrt  0 июл 19 2023 abrt-upload  
drwx--x---. 1 root lp    6 фев 16 03:00 cups  
drwxr-xr-x. 1 root root  0 июл 21 2023 lpd  
drwxrwxr-x. 1 root mail 1450 мар 23 21:36 mail  
drwxr-xr-x. 1 root root  0 июл 21 2023 plymouth  
azokirov@azokirov:/var/spool$
```

Рис. 6: Каталог /var/spool

```
azokirov@azokirov:/var/spool$  
azokirov@azokirov:/var/spool$ cd  
azokirov@azokirov:/var/spool$ ls  
work Видео Документы Загрузки Изображения Музыка Общедоступные 'Рабочий стол' Шаблоны  
azokirov@azokirov:/var/spool$ ls -la  
итого 20  
drwx-----, 1 azokirov azokirov 474 мар 22 18:49 .  
drwxr-xr-x, 1 root root 1444 мар 23 21:36 ..  
-rw-----, 1 azokirov azokirov 1171 мар 22 18:50 .bash_history  
-rw-r--r--, 1 azokirov azokirov 18 янв 22 03:00 .bash_logout  
-rw-r--r--, 1 azokirov azokirov 144 янв 22 03:00 .bash_profile  
-rw-r--r--, 1 azokirov azokirov 522 янв 22 03:00 .bashrc  
drwx-----, 1 azokirov azokirov 424 мар 22 18:40 .cache  
drwx-----, 1 azokirov azokirov 414 мар 22 18:50 .config  
-rw-r--r--, 1 azokirov azokirov 232 мар 22 18:49 .gitconfig  
drwx-----, 1 azokirov azokirov 136 мар 22 18:35 .gnupg  
drwx-----, 1 azokirov azokirov 20 мар 22 18:26 .local  
drwxr-xr-x, 1 azokirov azokirov 48 мар 22 18:28 .mozilla  
drwx-----, 1 azokirov azokirov 132 мар 22 18:37 .ssh  
drwxr-xr-x, 1 azokirov azokirov 10 мар 22 18:37 work  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Видео  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Документы  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Загрузки  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Изображения  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Музыка  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Общедоступные  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 'Рабочий стол'  
drwxr-xr-x, 1 azokirov azokirov 0 мар 22 18:26 Шаблоны  
azokirov@azokirov:/var/spool$
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

# Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters':
pandoc_eqnos.py  pandoc_fignos.py  pandoc_secnos.py  pandoc_tablenos.py  pandocxnos

./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':
core.py  __init__.py  main.py  pandocattributes.py

./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':
image-report  mpv-shot

./Видео:

./Документы:

./Загрузки:

./Изображения:

./Музыка:

./Общедоступные:

'./Рабочий стол':

./Шаблоны:
azok1rov@azok1rov:~$ ls -lt
work  Видео  Документы  Изображения  Музыка  Öffentlich  Шаблоны  Загрузки  'Рабочий стол'
azok1rov@azok1rov:~$
```

Рис. 9: Команда ls -R и ls -t

```
azokirov@azokirov:~$ help cd
cd: cd [-L|[-P [-e]] [-@]] [pathname]
    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.

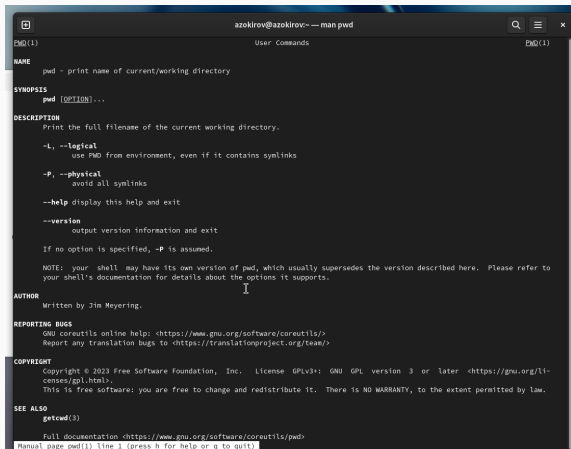
Options:
  -L      force symbolic links to be followed: resolve symbolic
          links in DIR after processing instances of '..'
  -P      use the physical directory structure without following
          symbolic links: resolve symbolic links in DIR before
          processing instances of '..'
  -e      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 $PWD is set successfully when
-P is used; non-zero otherwise.
azokirov@azokirov:~$
```

Рис. 10: Справка по команде cd

# Справка по командам



```
azokirov@azokirov:~ -- 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.

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/>

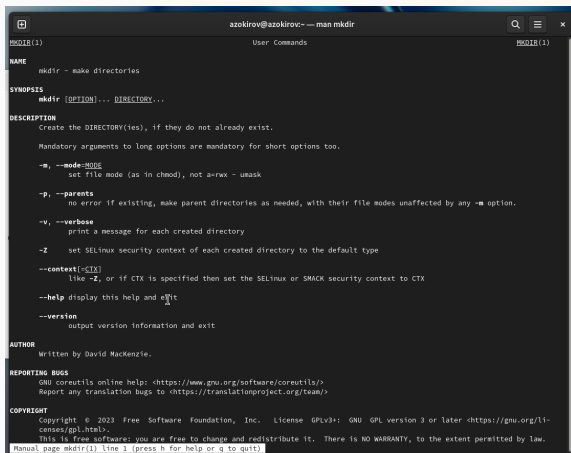
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SEE ALSO
  getcwd(3)

  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





```
azokirov@azokirov:~ — 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

  -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

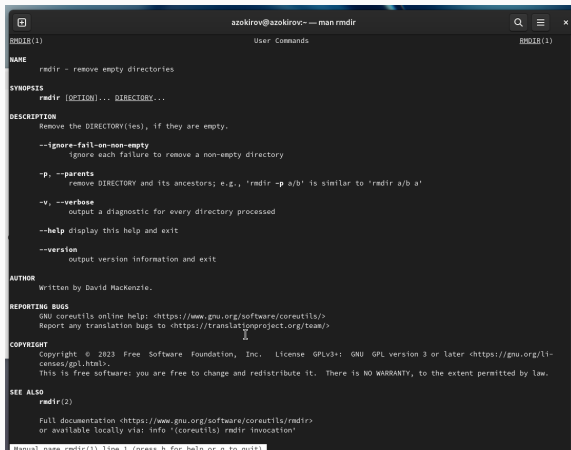
AUTHOR
  Written by David MacKenzie.

REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
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Manual page mkdir(1) line 1 [press h for help or q to quit]
```

Рис. 12: Справка по команде mkdir



```
azokirov@azokirov:~ — 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/>

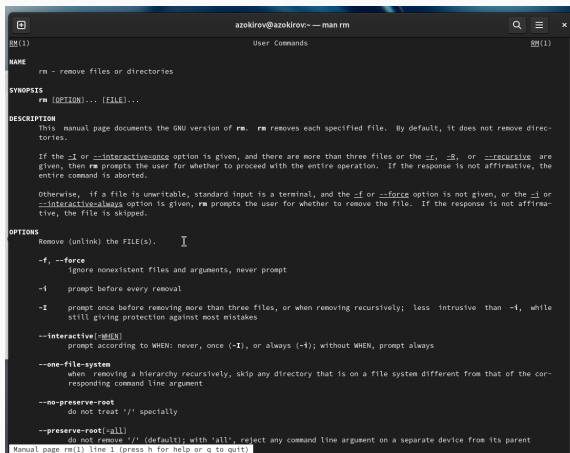
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SEE ALSO
rmdir(2)

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

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

Рис. 13: Справка по команде rmdir



```
azokirov@azokirov:~ — man rm
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 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 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 (unlink) 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 -i, while still giving protection against most mistakes

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

--one-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

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

Рис. 14: Справка по команде rm

# История командной строки

```
41 ls -l
42 ls -l
43 ls -f
44 cd /var/spool/
45 ls -l
46 cd
47 ls
48 ls -la
49 mkdir newdir
50 mkdir newdir/morefun
51 mkdir letters memos misk
52 ls
53 rm letters/ memos/ misk/
54 rm -r letters/ memos/ misk/
55 rm -r newdir/
56 ls
57 ls -R
58 ls -t
59 help cd
60 man pwd
61 man mkdir
62 man rmdir
63 man rm
64 history
azokirov@azokirov:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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