

# 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.

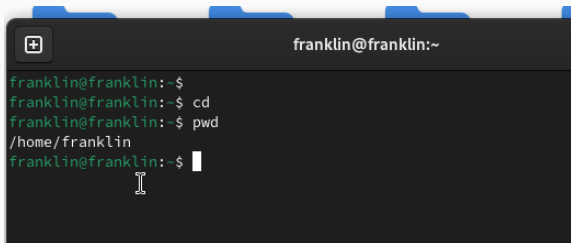
# Задачи лабораторной работы

- 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 terminal window with a dark background and a title bar that reads "franklin@franklin:~". The terminal shows a sequence of commands and their outputs: the prompt "franklin@franklin:~\$" is followed by "cd", then "pwd", which outputs "/home/franklin". The prompt "franklin@franklin:~\$" appears again with a cursor. The window has a standard macOS-style title bar with a red, yellow, and green button on the left and three blue tabs above it.

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

**Рис. 1:** Путь к домашнему каталогу

# Опции команды ls

```
franklin@franklin:~$  
franklin@franklin:~$ cd /tmp ls  
bash: cd: слишком много аргументов  
franklin@franklin:~$ cd /tmp  
franklin@franklin:/tmp$ ls  
dbus-C21FdGdq  
dbus-PEEXb3gR  
systemd-private-5b806a15176544b880315dc6c6e6fbca-chronyd.service-0XNCH9  
systemd-private-5b806a15176544b880315dc6c6e6fbca-colord.service-NyGUGw  
systemd-private-5b806a15176544b880315dc6c6e6fbca-dbus-broker.service-ce4DKD  
systemd-private-5b806a15176544b880315dc6c6e6fbca-fwupd.service-nRZCQi  
systemd-private-5b806a15176544b880315dc6c6e6fbca-low-memory-monitor.service-75Jh1j  
systemd-private-5b806a15176544b880315dc6c6e6fbca-ModemManager.service-Fs58Ct  
systemd-private-5b806a15176544b880315dc6c6e6fbca-polkit.service-XR0Uue  
systemd-private-5b806a15176544b880315dc6c6e6fbca-power-profiles-daemon.service-7PDjKQ  
systemd-private-5b806a15176544b880315dc6c6e6fbca-rtkit-daemon.service-CColou  
systemd-private-5b806a15176544b880315dc6c6e6fbca-switcheroo-control.service-TULbD4  
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-logind.service-mnYI8m  
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-oomd.service-p70Dv9  
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-resolved.service-pX34Xx  
systemd-private-5b806a15176544b880315dc6c6e6fbca-upower.service-t3ruIy  
Temp-216646f1-9265-480e-afdf-2af7f5040b10  
vmware-root_915-4022177651  
franklin@franklin:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
franklin@franklin:~$ cd /tmp
franklin@franklin:/tmp$ ls -la
.
..
dbus-C21FdGdq
dbus-PEEXb3gR
.font-unix
.ICE-unix
systemd-private-5b806a15176544b880315dc6c6e6fbca-chrond.service-0XmCH9
systemd-private-5b806a15176544b880315dc6c6e6fbca-colord.service-NyGUGW
systemd-private-5b806a15176544b880315dc6c6e6fbca-dbus-broker.service-ce4DKD
systemd-private-5b806a15176544b880315dc6c6e6fbca-fwupd.service-nRZCQi
systemd-private-5b806a15176544b880315dc6c6e6fbca-low-memory-monitor.service-75Jh1j
systemd-private-5b806a15176544b880315dc6c6e6fbca-ModemManager.service-Fs58Ct
systemd-private-5b806a15176544b880315dc6c6e6fbca-polkit.service-XR0UUE
systemd-private-5b806a15176544b880315dc6c6e6fbca-power-profiles-daemon.service-7PDjK
systemd-private-5b806a15176544b880315dc6c6e6fbca-rtkit-daemon.service-CColou
systemd-private-5b806a15176544b880315dc6c6e6fbca-switcheroo-control.service-TULbD4
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-logind.service-mnYI8m
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-oomd.service-p70Dv9
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-resolved.service-pX34xX
systemd-private-5b806a15176544b880315dc6c6e6fbca-upower.service-t3ruIy
Temp-216646f1-9265-480e-afdf-2af7f5040b10
vmware-root_915-4022177651
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
```

Рис. 3: Команда ls -la



# Опции команды ls

```
Franklin@franklin:/tmp$ ls -l
иторо B
srwxrwxrwx. 1 root    root    0 map 15 13:13 dbus-C21fd6dq
srwxrwxrwx. 1 root    root    0 map 15 13:13 dbus-PEEKbigr
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-chromyd.service-0XNCH9
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-cold.service-Ny0uGW
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-cos-broker.service-ce40KO
drwx----- 3 root    root   60 map 15 13:14 systemd-private-Sb086a15176544b880315dc6ce6f8ca-mpd.service-nRZCQI
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-low-memory-monitor.service-753h1j
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-hodemanager.service-F45act
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-polkit.service-XR00u6
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-power-profiles-daemon.service-TPDjK8
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-rtkit-daemon.service-Cc0eou
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-swftcheros-control.service-TUL8D4
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-systemd-logind.service-mvI8e
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-systemd-oomd.service-p70D99
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-systemd-resolved.service-pX34xL
drwx----- 3 root    root   60 map 15 13:13 systemd-private-Sb086a15176544b880315dc6ce6f8ca-upower.service-t3ruly
drwx----- 2 franklin franklin 40 map 15 13:15 Temp-216646f1-9265-480e-afdf-2af775049b10
drwx----- 2 root    root    40 map 15 13:13 vmware-root_915-4022177651
Franklin@franklin:/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
franklin@franklin:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-oomd.service-p70Dv9
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-resolved.service-p3X4xX
systemd-private-5b806a15176544b880315dc6c6e6fbca-dbus-broker.service-ce4DKD
systemd-private-5b806a15176544b880315dc6c6e6fbca-chronyd.service-0XMCH9
systemd-private-5b806a15176544b880315dc6c6e6fbca-low-memory-monitor.service-75Jh1j
systemd-private-5b806a15176544b880315dc6c6e6fbca-polkit.service-XR0Uue
systemd-private-5b806a15176544b880315dc6c6e6fbca-power-profiles-daemon.service-7PDjK0
systemd-private-5b806a15176544b880315dc6c6e6fbca-rtkit-daemon.service-CColou
systemd-private-5b806a15176544b880315dc6c6e6fbca-switcheroo-control.service-TULbD4
systemd-private-5b806a15176544b880315dc6c6e6fbca-systemd-logind.service-mnYI8m
systemd-private-5b806a15176544b880315dc6c6e6fbca-upower.service-t3ruIy
vmware-root_915-4022177651
systemd-private-5b806a15176544b880315dc6c6e6fbca-ModemManager.service-Fs58Ct
dbus-C21FdGdq
dbus-PEEXb3gR
.X1024-lock
.X1025-lock
systemd-private-5b806a15176544b880315dc6c6e6fbca-colord.service-NyGUGW
.X0-lock
.X1-lock
systemd-private-5b806a15176544b880315dc6c6e6fbca-fwupd.service-nRZCqi
Temp-216646f1-9265-480e-afdf-2af7f5040b10
franklin@franklin:/tmp$
```

Рис. 5: Команда ls -f

# Каталог /var/spool

```
franklin@franklin:~$ cd /var/spool/
franklin@franklin:/var/spool$ ls -l
итого 0
drwxr-x--x. 1 root abrt 1510 мар 11 12:08 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 1274 мар 15 13:12 mail
drwxr-xr-x. 1 root root   0 июл 21 2023 plymouth
franklin@franklin:/var/spool$
```

Рис. 6: Каталог /var/spool

```
franklin@franklin:~/var/spool$ cd
franklin@franklin:~$ ls
work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
franklin@franklin:~$ ls -al
итого 16
drwx-----, 1 franklin franklin 462 мар 15 13:17 .
drwxr-xr-x, 1 root root 1268 мар 15 13:12 ..
-rw-----, 1 franklin franklin 0 мар 15 13:17 .bash_history
-rw-r--r--, 1 franklin franklin 18 янв 22 03:00 .bash_logout
-rw-r--r--, 1 franklin franklin 144 янв 22 03:00 .bash_profile
-rw-r--r--, 1 franklin franklin 522 янв 22 03:00 .bashrc
drwx-----, 1 franklin franklin 342 мар 15 13:15 .cache
drwx-----, 1 franklin franklin 352 мар 15 13:16 .config
-rw-r--r--, 1 franklin franklin 153 мар 15 13:14 .gitconfig
drwx-----, 1 franklin franklin 20 мар 15 13:13 .local
drwxr-xr-x, 1 franklin franklin 48 мар 15 13:15 .mozilla
drwx-----, 1 franklin franklin 132 мар 15 13:17 .ssh
drwxr-xr-x, 1 franklin franklin 10 мар 15 13:16 work
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Видео
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Документы
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Загрузки
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Изображения
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Музыка
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Общедоступные
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 'Рабочий стол'
drwxr-xr-x, 1 franklin franklin 0 мар 15 13:13 Шаблоны
franklin@franklin:~$
```

Рис. 7: Файлы в домашнем каталоге

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

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:  
franklinefranklin:~$ ls -t  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка      'Рабочий стол'  
franklinefranklin:~$
```

Рис. 9: Команда ls -R и ls -t

# Справка по командам

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.

Рис. 10: Справка по команде cd

```
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 op-
    tions it supports.

AUTHOR
    Written by Jim Meyering.

REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
```

Рис. 11: Справка по команде pwd



# Справка по командам



```

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

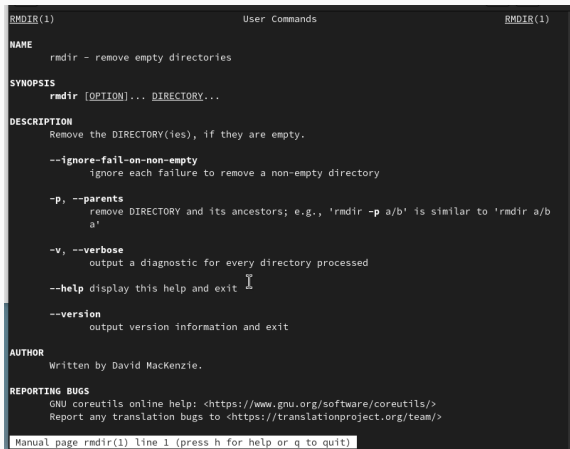
    --help
        display this help and exit

    --version
        output version information and exit

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

Рис. 12: Справка по команде mkdir

# Справка по командам



```
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/>

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

Рис. 13: Справка по команде rmdir

# Справка по командам

```
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.

    I

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

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

Рис. 14: Справка по команде rm

# История командной строки

```
18 rm -r newdir/  
19 ls  
20 ls -R  
21 ls -t  
22 help cd  
23 cd /tmp ls  
24 cd /tmp  
25 ls  
26 man pwd  
27 man mkdir  
28 man rmdir  
29 man rm  
30 history  
franklin@franklin:/tmp$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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