

# **Операционные системы**

Основы интерфейса взаимодействия пользователя с системой Unix на  
уровне командной строки

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2. Процесс выполнения лабораторной работы
3. Выводы по проделанной работе

## **1. Цели и задачи работы**

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## 1.1 Цель лабораторной работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

## 1.2 Задачи лабораторной работы

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- 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.

## **2. Процесс выполнения лабораторной работы**

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## 2.1 Имя и путь к домашнему каталогу

```
frhalolova@frhalilova:~/work/study/2025-2026/Операционные системы/os-intro$ cd  
frhalolova@frhalilova:~$ pwd  
/home/frhalolova  
frhalolova@frhalilova:~$ █
```

**Рисунок 1:** Путь к домашнему каталогу

## 2.2 Опции команды ls

```
frhalolova@frhalolova: ~ $ ls
node-compile-cache
par-667268616c6f6c6f7661
systemd-private-d7e9b30b07614956a02d83ada711211f-abrtd.service-Q8wlXx
systemd-private-d7e9b30b07614956a02d83ada711211f-chronyd.service-LzgHco
systemd-private-d7e9b30b07614956a02d83ada711211f-colord.service-AfvRe2
systemd-private-d7e9b30b07614956a02d83ada711211f-dbus-broker.service-W1KsL4
systemd-private-d7e9b30b07614956a02d83ada711211f-fwupd.service-24PwEM
systemd-private-d7e9b30b07614956a02d83ada711211f-irqbalance.service-eRtq7x
systemd-private-d7e9b30b07614956a02d83ada711211f-low-memory-monitor.service-Bgie0N
systemd-private-d7e9b30b07614956a02d83ada711211f-ModemManager.service-v3DEMl
systemd-private-d7e9b30b07614956a02d83ada711211f-polkit.service-02g6vn
systemd-private-d7e9b30b07614956a02d83ada711211f-rtkit-daemon.service-8CG9V2
systemd-private-d7e9b30b07614956a02d83ada711211f-switcheroo-control.service-wjbWhP
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-logind.service-Ez89Ti
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-oomd.service-YiniyC
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-resolved.service-3A7F7e
systemd-private-d7e9b30b07614956a02d83ada711211f-upower.service-Ec7L79
```

Рисунок 2: Команда ls

## 2.3 Опции команды ls

```
frhalolova@frhalilova:/tmp$ ls -a
.
..
.font-unix
.ICE-unix
node-compile-cache
par-667268616c6f6c6f7661
systemd-private-d7e9b30b07614956a02d83ada711211f-abrtd.service-Q8wlXx
systemd-private-d7e9b30b07614956a02d83ada711211f-chronyd.service-LzgHco
systemd-private-d7e9b30b07614956a02d83ada711211f-colord.service-AfvRe2
systemd-private-d7e9b30b07614956a02d83ada711211f-dbus-broker.service-W1KsL4
systemd-private-d7e9b30b07614956a02d83ada711211f-fwupd.service-24PwEM
systemd-private-d7e9b30b07614956a02d83ada711211f-irqbalance.service-eRtq7x
systemd-private-d7e9b30b07614956a02d83ada711211f-low-memory-monitor.service-BgieON
systemd-private-d7e9b30b07614956a02d83ada711211f-ModemManager.service-v3DEMl
systemd-private-d7e9b30b07614956a02d83ada711211f-polkit.service-02g6vn
systemd-private-d7e9b30b07614956a02d83ada711211f-rtkit-daemon.service-8CG9V2
systemd-private-d7e9b30b07614956a02d83ada711211f-switcheroo-control.service-wjbWhP
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-logind.service-Ez89Ti
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-oomd.service-YiniyC
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-resolved.service-3A7F7e
systemd-private-d7e9b30b07614956a02d83ada711211f-upower.service-Ec7L79
```

Рисунок 3: Команда ls -a

## 2.4 Опции команды ls

```
frhalolova@frhalolova:/tmp$ ls -l
total 0
drwxr-xr-x. 3 frhalolova frhalolova 60 Nov 12 18:18 node-compile-cache
drwx-----. 3 frhalolova frhalolova 60 Nov 12 18:45 par-667268616c6f6c6f7661
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-abrtd.service-Q8w1Xx
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-chronyd.service-LzgHco
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-colord.service-AfvRe2
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-dbus-broker.service-WIKsL4
drwx-----. 3 root      root     60 Nov 12 18:16 systemd-private-d7e9b30b07614956a02d83ad
a711211f-fwupd.service-24PwEM
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-irqbalance.service-eRtq7x
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-low-memory-monitor.service-Bgie0N
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-ModemManager.service-v3DEM1
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-polkit.service-02g6vn
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-rtkit-daemon.service-8CG9V2
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-switcheroo-control.service-wjbWhP
drwx-----. 3 root      root     60 Nov 12 18:15 systemd-private-d7e9b30b07614956a02d83ad
a711211f-systemd-logind.service-Ez88Ti
```

Рисунок 4: Команда ls -l

## 2.5 Опции команды ls

```
frhalolova@frhalolova:/tmp$ ls -f
.
..
par-667268616c6f6c6f7661
VMwareDnD
.wget-hpkp_lck_1007
.wget-hsts_lck_1007
node-compile-cache
systemd-private-d7e9b30b07614956a02d83ada711211f-fwupd.service-24PwEM
.X1-lock
.X0-lock
systemd-private-d7e9b30b07614956a02d83ada711211f-colord.service-AfvRe2
.X1025-lock
.X1024-lock
systemd-private-d7e9b30b07614956a02d83ada711211f-ModemManager.service-v3DEmI
vmware-root_922-2722632355
systemd-private-d7e9b30b07614956a02d83ada711211f-upower.service-Ec7L79
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-logind.service-Ez89Ti
systemd-private-d7e9b30b07614956a02d83ada711211f-switcheroo-control.service-wjbWhP
systemd-private-d7e9b30b07614956a02d83ada711211f-rtkit-daemon.service-8CG9V2
systemd-private-d7e9b30b07614956a02d83ada711211f-polkit.service-02g6vn
systemd-private-d7e9b30b07614956a02d83ada711211f-low-memory-monitor.service-BgieON
systemd-private-d7e9b30b07614956a02d83ada711211f-chronyd.service-LzghCo
systemd-private-d7e9b30b07614956a02d83ada711211f-irqbalance.service-eRtq7x
systemd-private-d7e9b30b07614956a02d83ada711211f-abrtd.service-Q8wlXx
systemd-private-d7e9b30b07614956a02d83ada711211f-dbus-broker.service-W1KsL4
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-resolved.service-3A7F7e
systemd-private-d7e9b30b07614956a02d83ada711211f-systemd-oomd.service-YiniyC
```

Рисунок 5: Команда ls -f

## 2.6 Каталог /var/spool

```
frhalolova@frhalilova:/tmp$ cd /var/spool/
frhalolova@frhalilova:/var/spool$ ls -l
total 0
drwxr-x--x. 1 root abrt    0 Jan 16  2025 abrt
drwx----- 1 abrt abrt    0 Jan 16  2025 abrt-upload
drwxr-xr-x. 1 root root   66 Apr  9  2025 anacron
drwx----- 1 root root   18 Apr  9  2025 at
drwx----- 1 root root    0 Jan 27  2025 cron
drwx---x--- 1 root lp     6 Apr  9  2025 cups
drwxr-xr-x. 1 root root    0 Jan 16  2025 lpd
drwxrwxr-x. 1 root mail  156 Nov 12 16:13 mail
drwxr-xr-x. 1 root root    0 Mar  6  2025 plymouth
frhalolova@frhalilova:/var/spool$
```

Рисунок 6: Каталог /var/spool

## 2.7 Домашний каталог

```
frhalolova@frhalilova:/var/spool$ cd
frhalolova@frhalilova:~$ ls
Desktop    Downloads    Music      Public      Videos
Documents  git-extended Pictures  Templates   work
frhalolova@frhalilova:~$ ls -al
total 20
drwx----- 1 frhalolova frhalolova 334 Nov 12 18:43 .
drwxr-xr-x  1 root      root      156 Nov 12 16:13 ..
-rw------- 1 frhalolova frhalolova 1611 Nov 12 18:45 .bash_history
-rw-r--r--. 1 frhalolova frhalolova   18 Nov  8 2024 .bash_logout
-rw-r--r--. 1 frhalolova frhalolova  144 Nov  8 2024 .bash_profile
-rw-r--r--. 1 frhalolova frhalolova  680 Nov 12 18:18 .bashrc
drwx----- 1 frhalolova frhalolova  512 Nov 12 18:24 .cache
drwx----- 1 frhalolova frhalolova  372 Nov 12 18:24 .config
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Desktop
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Documents
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Downloads
-rw-r--r--. 1 frhalolova frhalolova 232 Nov 12 18:43 .gitconfig
drwxr-xr-x  1 frhalolova frhalolova 128 Nov 12 18:37 git-extended
drwx----- 1 frhalolova frhalolova 136 Nov 12 16:43 .gnupg
drwx----- 1 frhalolova frhalolova  20 Nov 12 16:28 .local
drwxr-xr-x  1 frhalolova frhalolova  48 Nov 12 16:29 .mozilla
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Music
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Pictures
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Public
drwx----- 1 frhalolova frhalolova 132 Nov 12 16:48 .ssh
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Templates
drwxr-xr-x  1 frhalolova frhalolova   0 Nov 12 16:28 Videos
drwxr-xr-x  1 frhalolova frhalolova  10 Nov 12 16:47 work
frhalolova@frhalilova:~$ █
```

Рисунок 7: Файлы в домашнем каталоге

## 2.8 Работа с каталогами

```
frhalolova@frhalilova:~$  
frhalolova@frhalilova:~$ mkdir newdir  
frhalolova@frhalilova:~$ mkdir newdir/morefun  
frhalolova@frhalilova:~$ mkdir letters memos misk  
frhalolova@frhalilova:~$ ls  
Desktop Downloads letters misk newdir Public Videos  
Documents git-extended memos Music Pictures Templates work  
frhalolova@frhalilova:~$ rm letters/ memos/ misk/  
rm: cannot remove 'letters/': Is a directory  
rm: cannot remove 'memos/': Is a directory  
rm: cannot remove 'misk/': Is a directory  
frhalolova@frhalilova:~$ rm -r letters/ memos/ misk/  
frhalolova@frhalilova:~$ rm -r newdir/  
frhalolova@frhalilova:~$ ls  
Desktop Downloads Music Public Videos  
Documents git-extended Pictures Templates work  
frhalolova@frhalilova:~$ █
```

Рисунок 8: Действия с каталогами

## 2.9 Опции команды ls

```
'./work/study/2025-2026/Операционные системы/os-intro/template/report/report/bib':  
cite.bib  
  
'./work/study/2025-2026/Операционные системы/os-intro/template/report/report/image':  
solvay.jpg  
  
'./work/study/2025-2026/Операционные системы/os-intro/template/report/report/_resources':  
csl  
  
'./work/study/2025-2026/Операционные системы/os-intro/template/report/_resources/csl':  
:  
gost-r-7-0-5-2008-numeric.csl  
  
'./work/study/2025-2026/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
frhalilova@frhalilova:~$ ls -t  
git-extended Music Videos Documents Public  
work Pictures Desktop Downloads Templates  
frhalilova@frhalilova:~$ █
```

**Рисунок 9:** Команда ls -R и ls -t

## 2.10 Справка по командам

```
frhalolova@frhalolova:~$ frhalolova@frhalolova:~$ help cd
cd: cd [-L][-P [-e]] [-@] [dir]
      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.
```

Рисунок 10: Справка по команде cd

## 2.11 Справка по командам

```
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
        resolve all symlinks
    --help display this help and exit
    --version
        output version information and exit

    If no option is specified, -P is assumed.

    Your shell may have its own version of pwd, which usually supersedes the version de-
    scribed 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/>
    Report any translation bugs to <https://translationproject.org/team/>
Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рисунок 11: Справка по команде `pwd`

## 2.12 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 con-
        text 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)
```

Рисунок 12: Справка по команде mkdir

## 2.13 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/>

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

Рисунок 13: Справка по команде rmdir

## 2.14 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.  I

    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 affirm-
    ative, 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 recur-
        sively; 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)
```

Рисунок 14: Справка по команде rm

## 2.15 История командной строки

```
60  ls -f
61  cd /var/spool/
62  ls -l
63  cd
64  ls
65  ls -al
66  mkdir newdir
67  mkdir newdir/morefun
68  mkdir letters memos misk
69  ls
70  rm letters/ memos/ misk/
71  rm -r letters/ memos/ misk/
72  rm -r newdir/
73  ls
74  ls -R
75  ls -t
76  help cd
77  man pwd
78  man mkdir
79  man rmdir
80  man rm
81  history
frhalolova@frhalilova:~$
```

Рисунок 15: Команда history

### **3. Выводы по проделанной работе**

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### 3.1 Вывод

---

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