

Лабораторная работа №6

Операционные системы

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Вводная часть

Цель данной работы — приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

- Работать с директориями через командную строку;
- Получать информацию о командах;
- Создавать и удалять директории.

Выполнение лабораторной работы

```
akbashiyanc@akbashiyanc:~$ cd
akbashiyanc@akbashiyanc:~$ pwd
/home/akbashiyanc
akbashiyanc@akbashiyanc:~$ ls
bin          LICENSE      README.md    work         Загрузки     Общедоступные
Desktop      package.json sqlite-autoconf-3250200  Видео        Изображения  'Рабочий стол'
Downloads    Pictures     sqlite-autoconf-3250200.tar.gz  Документы    Музыка        Шаблоны
akbashiyanc@akbashiyanc:~$ cd ../../
akbashiyanc@akbashiyanc:/$ ls
afs  boot  etc  lib  lost+found  mnt  proc  run  srv  tmp  var
bin  dev  home  lib64  media      opt  root /sbin  sys  usr
akbashiyanc@akbashiyanc:/$ pwd
/
```

```
akbashiyanc@akbashiyanc:/$ cd tmp
akbashiyanc@akbashiyanc:/tmp$ ls
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-abrtd.service-z9RGvV
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-chrond.service-ymb6sB
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-colord.service-j8IkSl
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-dbus-broker.service-d2V4LK
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-geoclue.service-h4PyN9
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-low-memory-monitor.service-tAFyvw
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-ModemManager.service-4BjH7p
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-passim.service-jhPsmn
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-polkit.service-RKBmPv
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-rtkit-daemon.service-dCb3LK
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-switcheroo-control.service-s8ofqT
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-systemd-logind.service-lbsanh
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-systemd-oomd.service-VSnd4B
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-systemd-resolved.service-VdqFvg
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-upower.service-mPELSh
```

Рис. 1: ls

```
akbashiyanc@akbashiyanc:/tmp$ ls -l
итого 0
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-abrt.d.s
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-chrond
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-color.d.
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-dbus-br
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-geoclue
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-low-mem
AFyvw
drwx-----, 3 root root 60 map 22 09:58 systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-ModemMa
```

Рис. 2: ls -l

```
akbashiyanc@akbashiyanc:/tmp$ ls -a
.
..
.font-unix
.ICE-unix
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-abrted.service-z9RGvV
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-chronyd.service-ymb6sB
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-colord.service-jBIkSl
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-dbus-broker.service-d2V4LK
systemd-private-09e7de15c2fd46c49713a4e9f5bed0be-gnupg.service-h4PvN9
```

Рис. 3: ls -a

Определим, есть ли в каталоге /var/spool подкаталог с именем cron.

```
akbashiyanc@akbashiyanc:/tmp$ ls -l ../var/spool/
итого 0
drwxr-x--x. 1 root abrt 140 мар  1 10:01 abrt
drwx-----. 1 abrt abrt   0 сен 11 2024 abrt-upload
drwx--x---. 1 root lp    6 окт 24 17:54 cups
drwxr-xr-x. 1 root root   0 июл 17 2024 lpd
drwxrwxr-x. 1 root mail 28 фев 25 20:13 mail
drwxr-xr-x. 1 root root   0 сен 21 03:00 plymouth
```

Рис. 4: /var/spool

```
akbashiyanc@akbashiyanc:~$ ls -l
```

```
итого 2728
```

drwxr-xr-x. 1 akbashiyanc akbashiyanc	22 мар 10 17:15	bin
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 мар 21 17:05	Desktop
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 мар 21 16:34	Downloads
-rw-r--r--. 1 akbashiyanc akbashiyanc	18657 мар 10 17:19	LICENSE
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 мар 22 10:22	newdir
-rw-r--r--. 1 akbashiyanc akbashiyanc	403 мар 6 10:00	package.json
drwxr-xr-x. 1 akbashiyanc akbashiyanc	50 мар 21 16:23	Pictures
-rw-r--r--. 1 akbashiyanc akbashiyanc	15 мар 6 09:55	README.md
drwxr-xr-x. 1 akbashiyanc akbashiyanc	744 мар 6 09:39	sqlite-autoconf-329
-rw-r--r--. 1 akbashiyanc akbashiyanc	2763876 ноя 6 2018	sqlite-autoconf-329
drwxr-xr-x. 1 akbashiyanc akbashiyanc	150 мар 6 10:26	work
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 фев 25 20:13	Видео
drwxr-xr-x. 1 akbashiyanc akbashiyanc	10 мар 6 10:34	Документы
drwxr-xr-x. 1 akbashiyanc akbashiyanc	146 мар 1 10:11	Загрузки
drwxr-xr-x. 1 akbashiyanc akbashiyanc	50 фев 25 21:54	Изображения
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 фев 25 20:13	Музыка
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 фев 25 20:13	Общедоступные
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 фев 25 20:13	'Рабочий стол'
drwxr-xr-x. 1 akbashiyanc akbashiyanc	0 фев 25 20:13	Шаблоны

```
akbashiyanc@akbashiyanc:~$ pwd
/home/akbashiyanc
akbashiyanc@akbashiyanc:~$ ls
bin          LICENSE      README.md    work         Загрузки     Общедоступные
Desktop      package.json sqlite-autoconf-3250200  Видео        Изображения  'Рабочий стол'
Downloads   Pictures     sqlite-autoconf-3250200.tar.gz  Документы    Музыка       Шаблоны
akbashiyanc@akbashiyanc:~$ mkdir newdir
akbashiyanc@akbashiyanc:~$ cd newdir
akbashiyanc@akbashiyanc:~/newdir$ mkdir morefun
```

Создание каталогов одной командой

```
akbashiyc@akbashiyc:~/newdir$ mkdir letters, memos, misk  
akbashiyc@akbashiyc:~/newdir$ ls  
letters, memos, misk morefun
```

Удаление каталогов одной командой

```
akbashiyanc@akbashiyanc:~/newdir$ rmdir letters, memos, misk
akbashiyanc@akbashiyanc:~/newdir$ ls
morefun
```

Попытка удаления

```
akbashiyanc@akbashiyanc:~$ rm newdir
rm: невозможно удалить 'newdir': Это каталог
akbashiyanc@akbashiyanc:~$ rmdir ./newdir/morefun
akbashiyanc@akbashiyanc:~$ ls
bin          newdir      sqlite-autoconf-3250200  Документы  Общедоступные
Desktop     package.json  sqlite-autoconf-3250200.tar.gz  Загрузки  'Рабочий стол'
Downloads  Pictures      work                    Изображения  Шаблоны
LICENSE    README.md    Видео                     Музыка
```

akbashiyanc@akbashiyanc:~\$ ls newdir



akbashiyanc@akbashiyanc:/home/akbashiyanc — man ls

NAME

`ls` - list directory contents

SYNOPSIS

`ls` [OPTION]... [FILE]...

DESCRIPTION

List information about the FILES (the current directory by default). Sort entries alphabetically if `-cftuvSUX` nor `--sort` is specified.

Mandatory arguments to long options are mandatory for short options too.

`-a`, `--all`

do not ignore entries starting with `.`

С помощью команды `man` определим, какую опцию команды `ls` нужно использовать для просмотра содержимое не только указанного каталога, но и подкаталогов, входящих в него. Для этого нужно дописать `-R`.

```
akbashiyan@akbashiyan:~$ ls -R
.:
bin          newdir      sqlite-autoconf-3250200  Документы  Общедоступные
Desktop     package.json  sqlite-autoconf-3250200.tar.gz  Загрузки  'Рабочий стол'
Downloads   Pictures     work                   Изображения  Шаблоны
LICENSE     README.md    Видео                  Музыка

./bin:
chezmoi hugo

./Desktop:

./Downloads:

./newdir:

./Pictures:
'Снимки экрана'

'./Pictures/Снимки экрана':
'Снимок экрана от 2025-03-22 10-10-19.png' 'Снимок экрана от 2025-03-22 10-13-16.png'
'Снимок экрана от 2025-03-22 10-10-29.png' 'Снимок экрана от 2025-03-22 10-16-13.png'
'Снимок экрана от 2025-03-22 10-10-37.png' 'Снимок экрана от 2025-03-22 10-16-29.png'
```


ls -l --time=ctime

С помощью команды `man` определим набор опций команды `ls`, позволяющий отсортировать по времени последнего изменения выводимый список содержимого каталога с развёрнутым описанием файлов. Для этого нужно дописать `--time=ctime`.

```
Downloads  bin          package.json  sqlite-autoconf-3250200.tar.gz  video          Рабочий стол
akbashiyanc@akbashiyanc:~$ ls -l --time=ctime
итого 2728
drwxr-xr-x. 1 akbashiyanc akbashiyanc      22 мар 10 17:15 bin
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 мар 21 17:05 Desktop
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 мар 21 16:34 Downloads
-rw-r--r--. 1 akbashiyanc akbashiyanc    18657 мар 10 17:19 LICENSE
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 мар 22 10:22 newdir
-rw-r--r--. 1 akbashiyanc akbashiyanc     403 мар  6 10:00 package.json
drwxr-xr-x. 1 akbashiyanc akbashiyanc       50 мар 21 16:23 Pictures
-rw-r--r--. 1 akbashiyanc akbashiyanc      15 мар  6 09:55 README.md
drwxr-xr-x. 1 akbashiyanc akbashiyanc     744 мар  6 09:39 sqlite-autoconf-3250200
-rw-r--r--. 1 akbashiyanc akbashiyanc  2763876 мар  6 09:36 sqlite-autoconf-3250200.tar.gz
drwxr-xr-x. 1 akbashiyanc akbashiyanc     150 мар  6 10:26 work
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 фев 25 20:13 Видео
drwxr-xr-x. 1 akbashiyanc akbashiyanc      10 мар  6 10:34 Документы
drwxr-xr-x. 1 akbashiyanc akbashiyanc     146 мар  1 10:11 Загрузки
drwxr-xr-x. 1 akbashiyanc akbashiyanc      50 фев 25 21:54 Изображения
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 фев 25 20:13 Музыка
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 фев 25 20:13 Общедоступные
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 фев 25 20:13 'Рабочий стол'
drwxr-xr-x. 1 akbashiyanc akbashiyanc       0 фев 25 20:13 Шаблоны
akbashiyanc@akbashiyanc:~$
```

akbashiyanc@akbashiyanc:/home/akbashiyanc — man cd

bind readline-command-line

Display current **readline** key and function bindings, bind a key sequence to a **readline** macro, or set a **readline** variable. Each non-option argument is a command as it would appear in a **readline** initialization file such as `.inputrc`, but each binding or command must be passed a rate argument; e.g., `""\C-x\C-r": re-read-init-file'`. Options, if supplied, have the following forms:

-m keymap

Use keymap as the keymap to be affected by the subsequent bindings. Acceptable keymaps are emacs, emacs-standard, emacs-meta, emacs-ctlx, vi, vi-move, vi-command, and vi-improved. vi-improved is equivalent to vi-command (vi-move is also a synonym); emacs is equivalent to emacs-standard.

-l List the names of all **readline** functions.**-p** Display **readline** function names and bindings in such a way that they can be re-read.**-P** List current **readline** function names and bindings.**-s** Display **readline** key sequences bound to macros and the strings they output in such a way that they can be re-read.**-S** Display **readline** key sequences bound to macros and the strings they output.**-v** Display **readline** variable names and values in such a way that they can be re-read.**-V** List current **readline** variable names and values.**-f** filename

Read key bindings from filename.

-q function

Query about which keys invoke the named function.

-u function

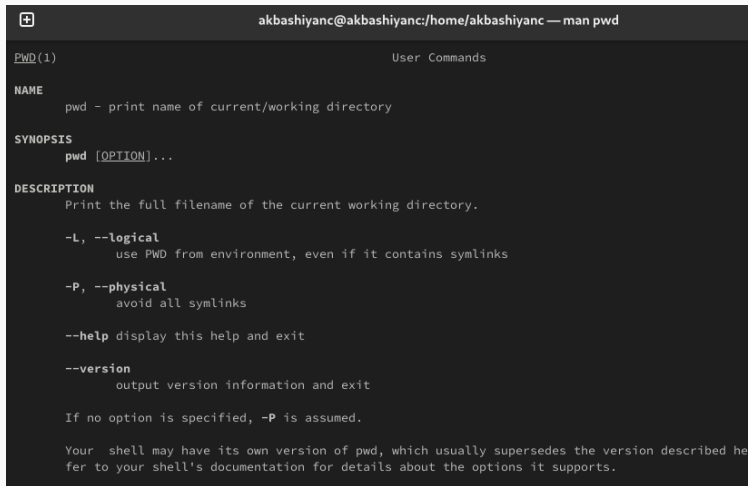
Unbind all keys bound to the named function.

-r keyseq

Remove any current binding for keyseq.

-x keyseq:shell-command

Рис. 5: man cd



```
akbashiyanc@akbashiyanc:/home/akbashiyanc — man pwd

PWD(1) User Commands

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.

    Your shell may have its own version of pwd, which usually supersedes the version described here.
    Refer to your shell's documentation for details about the options it supports.
```

Рис. 6: man pwd

```
akbashiyanc@akbashiyanc:/home/akbashiyanc — 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
      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
```

Рис. 7: man mkdir

```
akbashiyanc@akbashiyanc:/home/akbashiyanc — man rmdir

RMDIR(1) User Commands

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.
```

Рис. 8: man rm

```

+ akbashiyanc@akbashiyanc:/home/akbashiyanc — man rm

RM(1) User Commands

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, rm does not remove directories.

  If the -I or --interactive=once option is given, and there are more than three files or the -r or -R options 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 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 (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
    -i, while still giving protection against most mistakes

  --interactive[=WHEN]

```

Выводы

- В этой лабораторной работе мы изучили взаимодействие пользователя с системой посредством командной строки.