

Лабораторная работа №6.

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Цели и задачи работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки

Процесс выполнения лабораторной работы

Определим полное имя вашего домашнего каталога.

```
mrkarapetyan@dk8n77 ~ $ cd  
mrkarapetyan@dk8n77 ~ $ pwd  
/afs/.dk.sci.pfu.edu.ru/home/m/r/mrkarapetyan  
mrkarapetyan@dk8n77 ~ $
```

Рис. 1: Имя домашнего каталога

Перейдём в каталог /tmp

```
mrkarapetyan@dk8n77 ~ $ cd /tmp
```

Рис. 2: Переход в каталог /tmp

Выведем на экран содержимое каталога /tmp с помощью команды ls

```
mrkarapetyan@dk8n77 /tmp $ ls
gnome-desktop-thumbnailer-HM4DJ2
gnome-desktop-thumbnailer-X8KPJ2
krb5cc_5453_fs8EjZ
krb5cc_5453_ie1Adv
mc-mrkarapetyan
mrkarapetyan
portage
pulse-PKdhtXMmr18n
root
screen
sddm-:0-TiWdm1
sddm-auth-e9d6e7c0-7d8a-4c49-bc75-f396cdc7ce45
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-color.service-X8Fpb
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-polkit.service-nNzpKX
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-power-profiles-daemon.service-jwS2KJ
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-logind.service-8gQFJT
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-resolved.service-E9ph1Y
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-timesyncd.service-mRLarH
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-upower.service-dgTH00
Temp-45c0762f-8e00-43a6-aa2f-3e317b50097a
tmux-0
xauth_kPOHFu
```

Рис. 3: ls

Сравним команды ls -a и ls -F

```
mrkarapetyan@dk8n77 /tmp $ ls -a
```

```
..
gnome-desktop-thumbnailer-HM4DJ2
gnome-desktop-thumbnailer-X8KPJ2
.lICE-unix
krb5cc_5453_fs8EjZ
krb5cc_5453_ie1Adv
mc-mrkarapetyan
mrkarapetyan
portage
pulse-PKdhtXMmr18n
root
screen
sddm-.0-TiWdm1
sddm-auth-e9d6e7c0-7d8a-4c49-bc75-f396cdc7ce45
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-color.service-X8Fpab
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-polkit.service-nNzpKX
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-power-profiles-daemon.service-jwS2KJ
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-logind.service-8gQFJT
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-resolved.service-E9ph1Y
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-timesyncd.service-mRLarH
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-upower.service-dgTH00
Temp-45c0762f-8e00-43a6-aa2f-3e317b50097a
tmux-0
.X11-unix
xauth_kPOHFu
```

```
mrkarapetyan@dk8n77 /tmp $ ls -F
```

```
gnome-desktop-thumbnailer-HM4DJ2/
gnome-desktop-thumbnailer-X8KPJ2/
krb5cc_5453_fs8EjZ
krb5cc_5453_ie1Adv
mc-mrkarapetyan/
mrkarapetyan/
portage/
pulse-PKdhtXMmr18n/
root/
screen/
sddm-.0-TiWdm1=
sddm-auth-e9d6e7c0-7d8a-4c49-bc75-f396cdc7ce45=
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-color.service-X8Fpab/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-polkit.service-nNzpKX/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-power-profiles-daemon.service-jwS2KJ/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-logind.service-8gQFJT/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-resolved.service-E9ph1Y/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-systemd-timesyncd.service-mRLarH/
systemd-private-5c26c3e903e94bc8865c03beba8cddc2-upower.service-dgTH00/
Temp-45c0762f-8e00-43a6-aa2f-3e317b50097a
tmux-0
.X11-unix
xauth_kPOHFu
```


Переходим в домашний каталог

```
mrkarapetyan@dk8n77 /tmp $ cd  
mrkarapetyan@dk8n77 - $ ls  
bin  GNUstep  public      tmp  Видео  Загрузки  Музыка  'Рабочий стол'  
bn   main.cpp  public_html work  Документы  Изображения  Общедоступные  Шаблоны  
mrkarapetyan@dk8n77 - $
```

Рис. 5: Домашний каталог

Определим, кто является владельцем файлов и подкаталогов с помощью команды `ls -l`

```
mrkarapetyan@dk8n77 - $ ls -l
итого 29
drwxr-xr-x 2 mrkarapetyan studsci 2048 фев 28 17:12 bin
-rw-r--r-- 1 mrkarapetyan studsci 5 сен 14 13:02 bn
drwxr-xr-x 3 mrkarapetyan studsci 2048 ноя 16 16:01 GNUstep
-rw-r--r-- 1 mrkarapetyan studsci 701 фев 8 14:34 main.cpp
drwxr-xr-x 3 mrkarapetyan root 2048 сен 5 17:41 public
lrwxr-xr-x 1 mrkarapetyan root 18 фев 16 03:42 public_html -> public/public_html
drwxr-xr-x 2 mrkarapetyan studsci 2048 фев 26 16:36 tmp
drwxr-xr-x 6 mrkarapetyan studsci 2048 фев 28 17:22 work
drwxr-xr-x 2 mrkarapetyan studsci 2048 сен 14 12:19 Видео
drwxr-xr-x 2 mrkarapetyan studsci 2048 фев 16 18:00 Документы
drwxr-xr-x 3 mrkarapetyan studsci 2048 фев 28 17:12 Загрузки
drwxr-xr-x 3 mrkarapetyan studsci 2048 окт 13 16:08 Изображения
drwxr-xr-x 2 mrkarapetyan studsci 2048 фев 16 16:24 Музыка
drwxr-xr-x 2 mrkarapetyan studsci 2048 сен 14 12:19 Общедоступные
drwxr-xr-x 2 mrkarapetyan studsci 2048 сен 14 12:19 'Рабочий стол'
drwxr-xr-x 2 mrkarapetyan studsci 2048 сен 14 12:19 Шаблоны
```

Рис. 6: Имя домашнего каталога

В домашнем каталоге создаём новый каталог с именем newdir.

```
mrkarapetyan@dk8n77 ~ $ mkdir newdir
mrkarapetyan@dk8n77 ~ $ ls
bin      GNUstep  newdir   public_html  work   Документы  Изображения  Общедоступные  Шаблоны
bn       main.cpp public    tmp          Видео   Загрузки   Музыка        'Рабочий стол'
```

Рис. 7: Создание каталога newdir

В каталоге `~/newdir` создаём новый каталог с именем `morefun`.

```
mrkarapetyan@dk8n77 ~/newdir $ mkdir morefun
mrkarapetyan@dk8n77 ~/newdir $ ls
morefun
mrkarapetyan@dk8n77 ~/newdir $ mkdir letters nemos nisk
mrkarapetyan@dk8n77 ~/newdir $ ls
letters morefun nemos nisk
```

Рис. 8: Создание каталога `morefun`

Создаём одной командой три новых каталога с именами

```
mrkarapetyan@dk8n77 ~$ rm -r newdir
mrkarapetyan@dk8n77 ~$ ls
bin  GNUstep  public  tmp  Видео  Загрузки  Музыка  'Рабочий стол'
bn   main.cpp  public_html  work  Документы  Изображения  Общедоступные  Шаблоны
mrkarapetyan@dk8n77 ~$
```

Рис. 9: Создание каталогов и их удаление

```
LS(1)                                User Commands                                LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILES (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

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

    -a, --all
        do not ignore entries starting with .

    -A, --almost-all
        do not list implied . and ..

    --author
        with -l, print the author of each file

    -b, --escape
        print C-style escapes for nongraphic characters

    --block-size=SIZE
        with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

    -B, --ignore-backups
        do not list implied entries ending with ~

    -c          with -lt: sort by, and show, ctime (time of last change of file status information);
                with -l: show ctime and sort by name; otherwise: sort by ctime, newest first

    -C          list entries by columns

    --color[=WHEN]
        color the output WHEN; more info below

    -d, --directory
        list directories themselves, not their contents

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

Рис. 10: Команда man ls

```
-o      like -l, but do not list group information

-p, --indicator-style=slash
      append / indicator to directories

-q, --hide-control-chars
      print ? instead of nongraphic characters

--show-control-chars
      show nongraphic characters as-is (the default, unless program is 'ls' and output is a
      terminal)

-Q, --quote-name
      enclose entry names in double quotes

--quoting-style=WORD
      use quoting style WORD for entry names: literal, locale, shell, shell-always,
      shell-escape, shell-escape-always, c, escape (overrides QUOTING_STYLE environment
      variable)

-r, --reverse
      reverse order while sorting

-R, --recursive
      list subdirectories recursively

-s, --size
      print the allocated size of each file, in blocks

-S      sort by file size, largest first

--sort=WORD
      sort by WORD instead of name: none (-u), size (-S), time (-t), version (-v), extension
      (-X), width

--time=WORD
      select which timestamp used to display or sort; access time (-u): atime, access, use;
      metadata change time (-c): ctime, status; modified time (default): mtime, modifica-
      tion; birth time: birth, creation;

      with -l, WORD determines which time to show; with --sort=time, sort by WORD (newest
      first)
```

Manual page ls(1) line 116/237 66% (press h for help or q to quit)

Рис. 11: -R, --recursive

```

-l, --size
    print the allocated size of each file, in blocks

-S      sort by file size, largest first

--sort=WORD
    sort by WORD instead of name: none (-U), size (-S), time (-t), version (-v), extension
    (-X), width

--time=WORD
    select which timestamp used to display or sort; access time (-u): atime, access, use;
    metadata change time (-c): ctime, status; modified time (default): mtime, modifica-
    tion; birth time: birth, creation;

    with -l, WORD determines which time to show; with --sort=time, sort by WORD (newest
    first)

--time-style=TIME_STYLE
    time/date format with -l; see TIME_STYLE below

-t      sort by time, newest first; see --time

-T, --tabsize=COLS
    assume tab stops at each COLS instead of 8

-u      with -lt: sort by, and show, access time; with -l: show access time and sort by name;
    otherwise: sort by access time, newest first

-U      do not sort; list entries in directory order

-v      natural sort of (version) numbers within text

-w, --width=COLS
    set output width to COLS. 0 means no limit

-x      list entries by lines instead of by columns

-X      sort alphabetically by entry extension

-Z, --context
    print any security context of each file

--zero  end each output line with NUL, not newline

```

Manual page ls(1) line 143/237 76% (press h for help or q to quit)

Рис. 12: `--time-style=TIME_STYLE`


```
cd(1P)                                POSIX Programmer's Manual                                cd(1P)

PROLOG
This manual page is part of the POSIX Programmer's Manual.  The Linux implementation of this
interface may differ (consult the corresponding Linux manual page for details of Linux behav-
ior), or the interface may not be implemented on Linux.

NAME
cd - change the working directory

SYNOPSIS
cd [-L|-P] [directory]

cd -

DESCRIPTION
The cd utility shall change the working directory of the current shell execution environment
(see Section 2.12, Shell Execution Environment) by executing the following steps in sequence.
(In the following steps, the symbol curpath represents an intermediate value used to simplify
the description of the algorithm used by cd. There is no requirement that curpath be made
visible to the application.)

1. If no directory operand is given and the HOME environment variable is empty or undefined,
the default behavior is implementation-defined and no further steps shall be taken.

2. If no directory operand is given and the HOME environment variable is set to a non-empty
value, the cd utility shall behave as if the directory named in the HOME environment
variable was specified as the directory operand.

3. If the directory operand begins with a <slash> character, set curpath to the operand and
proceed to step 7.

4. If the first component of the directory operand is dot or dot-dot, proceed to step 6.

5. Starting with the first pathname in the <colon>-separated pathnames of CDPATH (see the
ENVIRONMENT VARIABLES section) if the pathname is non-null, test if the concatenation of
that pathname, a <slash> character if that pathname did not end with a <slash> character,
and the directory operand names a directory. If the pathname is null, test if the con-
catenation of dot, a <slash> character, and the operand names a directory. In either
case, if the resulting string names an existing directory, set curpath to that string and
proceed to step 7. Otherwise, repeat this step with the next pathname in CDPATH until all
pathnames have been tested.

6. Set curpath to the directory operand.

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

Рис. 13: Команда man 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 de-
    scribed 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/>

SEE ALSO
    getcwd(3)

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

    Packaged by Gentoo (9.4 (p0))
    Copyright © 2023 Free Software Foundation, Inc.
    License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.

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

Рис. 14: Команда man pwd

```
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/>
    Report any translation bugs to <https://translationproject.org/team/>

SEE ALSO
    mkdir(2)

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

Рис. 15: Команда man mkdir

```
rmmdir(1)                                User Commands                                rmmdir(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/>

SEE ALSO
    rmdir(2)

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

    Packaged by Gentoo (9.4 (p0))
    Copyright © 2023 Free Software Foundation, Inc.
    License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>.
    This is free software: you are free to change and redistribute it.
    There is NO WARRANTY, to the extent permitted by law.

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

Рис. 16: Команда man rmdir

```
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.

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

Рис. 17: Команда man rm

Получим при помощи команды history

```
mrkarapetyan@dk8n77 ~ $ history
```

```
531 cd
532 cd
533 pwd
534 cd /tmp
535 ls
536 ls -a
537 ls -F
538 ls /var/spool
539 cd
540 ls
541 ls -l
542 mkdir newdir
543 ls
544 cd newdir
545 mkdir morefun
546 ls
547 mkdir letters nemos nisk
548 ls
549 rm -r letters nemos nisk
550 rm -r newdir
551 cd
552 rm -r newdir
553 ls
554 man
555 man ls
556 man cd
557 man pwd
558 man pwd
559 man mkdir
560 man rmdir
561 man rm
562 history
```

```
mrkarapetyan@dk8n77 ~ $
```

Выполним модификацию и исполнение нескольких команд из буфера команд

```
mrkarapetyan@dk8n77 ~ $ ls -F
bin/  GNUstep/  public/  tmp/  Видео/  Загрузки/  Музыка/  'Рабочий стол'/
bn    main.cpp  public_html@  work/  Документы/  Изображения/  Общедоступные/  Шаблоны/
mrkarapetyan@dk8n77 ~ $ █

mrkarapetyan@dk8n77 ~ $ ls -a
.      bn      GNUstep  .mozilla  .texlive2023  Документы  Шаблоны
.      .cache  .gtkrc-2.0  .pki      tmp           Загрузки
.bash_history  .config  .ICEauthority  .profile  .VirtualBox  Изображения
.bash_profile  .emacs.d  .lessht      public    work         Музыка
.bashrc        .gitconfig  .local      public_html  .Xauthority  Общедоступные
bin            .gnupg      main.cpp    .ssh       Видео        'Рабочий стол'
mrkarapetyan@dk8n77 ~ $ █
```

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