

Операционные системы

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

- 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

```
bash: /usr/libexec/nc/nc.sh: Нет такого файла или каталога
[rodvish@vbox ~]$ cd
[rodvish@vbox ~]$ pwd
/home/rodvish
[rodvish@vbox ~]$
```

Рис. 1:Путь к домашнему каталогу

```
rodvish@vbox ~]$ cd /tmp
rodvish@vbox tmp]$ ls
systemd-private-15f2157552e346199b3cbdb89e2efd7c-chrond.service-0rd6A2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-colord.service-a5KmlW0
systemd-private-15f2157552e346199b3cbdb89e2efd7c-dbus-broker.service-FKXXYT
systemd-private-15f2157552e346199b3cbdb89e2efd7c-low-memory-monitor.service-ZEUX
systemd-private-15f2157552e346199b3cbdb89e2efd7c-ModemManager.service-33scxT
systemd-private-15f2157552e346199b3cbdb89e2efd7c-power-profiles-daemon.service-M
YKzK
systemd-private-15f2157552e346199b3cbdb89e2efd7c-rtkit-daemon.service-NEJELm
systemd-private-15f2157552e346199b3cbdb89e2efd7c-switcheroo-control.service-hJVE
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-logind.service-UyafK2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-oemd.service-plUng4
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-resolved.service-XNbGNA
systemd-private-15f2157552e346199b3cbdb89e2efd7c-upower.service-xHOZsP
temp-f7133fb4-2351-422c-b4c2-556f6edce881
rodvish@vbox tmp]$
```

Рис. 2: Команда ls

Опции команды ls

```
[rodvish@vbox tmp]$ ls -la
.
.
. font-unix
. ICE-unix
. iprt-localipc-DRMIpcServer
systemd-private-15f2157552e346199b3cbdb89e2efd7c-chrond.service-0rd6A2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-colord.service-a5KmW8
systemd-private-15f2157552e346199b3cbdb89e2efd7c-dbus-broker.service-FKXXYT
systemd-private-15f2157552e346199b3cbdb89e2efd7c-low-memory-monitor.service-ZEUX94
systemd-private-15f2157552e346199b3cbdb89e2efd7c-ModemManager.service-33scxT
systemd-private-15f2157552e346199b3cbdb89e2efd7c-power-profiles-daemon.service-NAYKzK
systemd-private-15f2157552e346199b3cbdb89e2efd7c-rtkit-daemon.service-NEJELm
systemd-private-15f2157552e346199b3cbdb89e2efd7c-switcheroo-control.service-hJYE8a
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-logind.service-UyafK2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-oomd.service-plUng4
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-resolved.service-XNbGNA
systemd-private-15f2157552e346199b3cbdb89e2efd7c-upower.service-xHOZsP
Temp-f7133fb4-2351-422c-b4c2-556f6edce881
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
[rodvish@vbox tmp]$
```

Рис. 3: Команда ls -la


```
[rodvish@vbox tmp]$ ls -l
итого 0
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-chronyd.service-0rd6A2
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-colord.service-a5KmlW0
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-dbus-broker.service-FKXXYT
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-low-memory-monitor.service-ZEUX94
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-ModemManager.service-33scxT
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-power-profiles-daemon.service-NAYKz
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-rtkit-daemon.service-NEJELm
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-switcheroo-control.service-hJYE8a
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-logind.service-UyafK2
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-oomd.service-plUng4
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-resolved.service-XNbGNA
drwx-----. 3 root    root    60 сен 17 10:18 systemd-private-15f2157552e346199b3cbdb89e2efd7c-upower.service-xH0ZsP
drwx-----. 2 rodvish rodvish 40 сен 17 10:53 Temp-f7133fb4-2351-422c-b4c2-556f6edce881
[rodvish@vbox tmp]$
```

Рис. 4: Команда ls -l

```
[rodvish@vbox tmp]$ ls -f
.
..
Temp-f7133fb4-2351-422c-b4c2-556f6edce881
.X1-lock
.X0-lock
systemd-private-15f2157552e346199b3cbdb89e2efd7c-colord.service-a5KmW0
.X1025-lock
.X1024-lock
systemd-private-15f2157552e346199b3cbdb89e2efd7c-ModemManager.service-33scxT
systemd-private-15f2157552e346199b3cbdb89e2efd7c-dbus-broker.service-FKXXYT
.iprt-localipc-DRMIpcServer
systemd-private-15f2157552e346199b3cbdb89e2efd7c-chronyd.service-0rd6A2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-upower.service-xH0ZsP
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-logind.service-UyafK2
systemd-private-15f2157552e346199b3cbdb89e2efd7c-switcheroo-control.service-hJYE8a
systemd-private-15f2157552e346199b3cbdb89e2efd7c-rtkit-daemon.service-NEJELm
systemd-private-15f2157552e346199b3cbdb89e2efd7c-power-profiles-daemon.service-NAYKzK
systemd-private-15f2157552e346199b3cbdb89e2efd7c-low-memory-monitor.service-ZEUX94
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-resolved.service-XNbGNA
systemd-private-15f2157552e346199b3cbdb89e2efd7c-systemd-oomd.service-plUng4
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
[rodvish@vbox tmp]$
```

Рис. 5: Команда ls -f

```
[rodvish@vbox tmp]$ cd /var/spool/  
[rodvish@vbox spool]$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 192 сен 16 23:15 abrt  
drwx-----. 1 abrt abrt  0 июн 30 2023 abrt-upload  
drwx--x---. 1 root lp    6 ноя  3 2023 cups  
drwxr-xr-x. 1 root root  0 авг  9 2022 lpd  
drwxrwxr-x. 1 root mail 20 авг  9 2022 mail  
drwxr-xr-x. 1 root root  0 сен 29 2022 plymouth  
[rodvish@vbox spool]$
```

Рис. 6:Каталог /var/spool

```
[rodvish@vbox ~]$ cd
[rodvish@vbox ~]$ ls
bin browserpass-linux64-3.0.8 browserpass-linux64-3.0.8.tar.gz.1 LICENSE Видео Избранная 'Рабочий стол'
browserpass-linux64-3.0.8 browserpass-linux64-3.0.8.tar.gz git-extended Pictures Документы Загрузки Общедоступные Загрузки
[rodvish@vbox ~]$ ls -al
total 4396
drwxr-xr-x. 1 rodvish rodvish 1448 сен 17 10:58 .
drwxr-xr-x. 1 root root 14 авр 9 2022 ..
-rw-r--r--. 1 rodvish rodvish 15378 сен 16 21:00 .bash_history
-rw-r--r--. 1 rodvish rodvish 18 мие 20 2022 .bash_logout
-rw-r--r--. 1 rodvish rodvish 246 сен 17 00:17 .bash_profile
-rw-r--r--. 1 rodvish rodvish 840 сен 17 00:17 .bashrc
drwxr-xr-x. 1 rodvish rodvish 142 сен 17 00:17 .bashrc.d
drwxr-xr-x. 1 rodvish rodvish 14 сен 17 00:11 bin
drwxr-xr-x. 1 rodvish rodvish 300 сен 17 00:05 browserpass-linux64-3.0.8
-rw-r--r--. 1 rodvish rodvish 2197571 фев 8 2022 browserpass-linux64-3.0.8.tar.gz
-rw-r--r--. 1 rodvish rodvish 2197571 фев 8 2022 browserpass-linux64-3.0.8.tar.gz.1
drwxr-xr-x. 1 rodvish rodvish 576 сен 17 00:32 .cache
drwxr-xr-x. 1 rodvish rodvish 680 сен 17 00:17 .config
drwxr-xr-x. 1 rodvish rodvish 34 сен 17 00:34 Downloads
-rw-r--r--. 1 rodvish rodvish 421 сен 15 21:51 .gitconfig
drwxr-xr-x. 1 rodvish rodvish 74 сен 16 20:34 git-extended
drwxr-xr-x. 1 rodvish rodvish 156 сен 16 23:50 .gnss
-rw-r--r--. 1 rodvish rodvish 569 сен 17 00:17 .gtkrc-2.0
-rw-r--r--. 1 rodvish rodvish 29 сен 16 20:08 .lessht
-rw-r--r--. 1 rodvish rodvish 18657 сен 17 00:17 LICENSE
drwxr-xr-x. 1 rodvish rodvish 20 сен 15 20:39 local
drwxr-xr-x. 1 rodvish rodvish 48 сен 15 21:39 .maxilla
drwxr-xr-x. 1 rodvish rodvish 10 сен 16 18:28 .npm
drwxr-xr-x. 1 rodvish rodvish 610 сен 16 18:43 .npm
drwxr-xr-x. 1 rodvish rodvish 32 сен 16 23:45 .password-store
drwxr-xr-x. 1 rodvish rodvish 50 сен 17 10:58 Pictures
drwxr-xr-x. 1 rodvish rodvish 132 сен 16 19:57 .ssh
drwxr-xr-x. 1 rodvish rodvish 18 сен 16 13:12 .ssh-live2022
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-clipboard-tty2-control.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-clipboard-tty2-service.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-draganddrop-tty2-control.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-draganddrop-tty2-service.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-hostversion-tty2-control.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-seamless-tty2-control.pid
-rw-r--r--. 1 rodvish rodvish 5 сен 17 10:18 .vboxclient-seamless-tty2-service.pid
-rw-r--r--. 1 rodvish rodvish 139 сен 17 00:17 .vimrc
-rw-r--r--. 1 rodvish rodvish 165 сен 16 23:57 .wget-hsts
drwxr-xr-x. 1 rodvish rodvish 10 сен 15 21:57 work
-rw-r--r--. 1 rodvish rodvish 118 сен 17 00:17 .XCompose
drwxr-xr-x. 1 rodvish rodvish 0 сен 15 20:39 .Xresources
drwxr-xr-x. 1 rodvish rodvish 0 сен 15 20:39 .Xresources
```

Рис. 7:Файлы в домашнем каталоге

```
[rodvish@vbox ~]$ mkdir newdir
[rodvish@vbox ~]$ mkdir newdir/morefun
[rodvish@vbox ~]$ ls
bin                browserpass-linux64-3.0.8.tar.gz  Downloads  LICENSE  Pictures  Видео  Загрузки  Музыка  'Рабочий стол'
browserpass-linux64-3.0.8  browserpass-linux64-3.0.8.tar.gz.1  git-extended  newdir  work  Документы  Изображения  Общедоступные  Шаблоны
[rodvish@vbox ~]$ mkdir letters memos misk
[rodvish@vbox ~]$ rm -r letters/ memos/ misk/
[rodvish@vbox ~]$ ls
bin                browserpass-linux64-3.0.8.tar.gz  Downloads  LICENSE  Pictures  Видео  Загрузки  Музыка  'Рабочий стол'
browserpass-linux64-3.0.8  browserpass-linux64-3.0.8.tar.gz.1  git-extended  newdir  work  Документы  Изображения  Общедоступные  Шаблоны
[rodvish@vbox ~]$ rm -r newdir/
[rodvish@vbox ~]$ ls
bin                browserpass-linux64-3.0.8.tar.gz  Downloads  LICENSE  work  Документы  Изображения  Общедоступные  Шаблоны
browserpass-linux64-3.0.8  browserpass-linux64-3.0.8.tar.gz.1  git-extended  Pictures  Видео  Загрузки  Музыка  'Рабочий стол'
[rodvish@vbox ~]$
```

Рис. 8: Действия с каталогами

```
(rodvish@vbox ~)$ man ls
(rodvish@vbox ~)$ ls -t
Pictures LICENSE browserpass-linux64-3.0.0 git-extended work документы Общедоступные Наблюдения browserpass-linux64-3.0.0.tar.gz.1
Downloads bin загрузки Изображения Видео Музыка 'Рабочий стол' browserpass-linux64-3.0.0.tar.gz
(rodvish@vbox ~)$
```

3.1 В показанном каталоге создайте новый каталог с именем newdir.

Рис. 9: Команда ls -R и ls -t

```
[rodvish@vbox ~]$ ls -t
Pictures  LICENSE  browserpass-linux64-3.0.8  git-extended  work  Документы  Общедоступные  Шаблоны  browserpass-linux64-3.0.8.tar.gz.1
Downloads bin      Загрузки  Изображения  Видео  Музыка  'Рабочий стол'  browserpass-linux64-3.0.8.tar.gz

[rodvish@vbox ~]$ help cd
cd: cd [-L|[-P [-e]] [-@]] [varanor]
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.
```

Рис. 10: Справка по команде cd

```
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.

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

Рис. 11: Справка по команде pwd


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

Рис. 12:Справка по команде mkdir

```
rmmdir(1) User Commands

NAME
  rmmdir - remove empty directories

SYNOPSIS
  rmmdir [OPTION]... DIRECTORY...

DESCRIPTION
  Remove the DIRECTORY(ies), if they are empty.

  --ignore-fail-on-non-empty
    ignore each failure that is solely because a directory is non-empty

  -p, --parents
    remove DIRECTORY and its ancestors; e.g., 'rmmdir -p a/b/c' is similar to 'rmmdir a/b/c 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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Manual page rmmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13:Справка по команде rmmdir

```
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, 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 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 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

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

Рис. 14:Справка по команде rm

```
533 gh release create v1.2.3 -F CHANGELOG.md
534 cd
535 cd
536 pwd
537 cd /tmp
538 ls
539 ls -a
540 ls -l
541 ls -f
542 cd /var/spool/
543 ls -l
544 cd
545 ls
546 ls -al
547 mkdir newdir
548 mkdir newdir/morefun
549 ls
550 mkdir letters memos misk
551 rm -r letters/ memos/ misk/
552 ls
553 rm -r newdir/
554 ls
555 man
556 man ls
557 ls -t
558 help cd
559 man pwd
560 man mkdir
561 man rmdir
562 man rm
563 man rmdir
564 history
[rodvish@vbox ~]$
```

Рис. 15:Команда history

Выводы по проделанной работе

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