

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Сыймык Койлюбаев¹

7 марта, 2024, Москва, Россия

¹Российский Университет Дружбы Народов

Цели и задачи работы

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

Имя и путь к домашнему каталогу



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

A terminal window with a dark background. The title bar shows a window icon and the text "skoylubaev@skoylubaev:~". The terminal content shows a user at a shell prompt entering "cd", then "pwd", which outputs "/home/skoylubaev", and finally another prompt with a cursor.

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
skoylubaev@skoylubaev:~$ cd /tmp
skoylubaev@skoylubaev:/tmp$ ls
dbus-PgGCaDKv
dbus-YnXqm0iU
systemd-private-31218989dd734091a751b85a5f8eee88-chrond.service-oSwJX7
systemd-private-31218989dd734091a751b85a5f8eee88-colord.service-DcvFBn
systemd-private-31218989dd734091a751b85a5f8eee88-dbus-broker.service-6oYilv
systemd-private-31218989dd734091a751b85a5f8eee88-fwupd.service-Vgpc6Y
systemd-private-31218989dd734091a751b85a5f8eee88-low-memory-monitor.service-9CuNmS
systemd-private-31218989dd734091a751b85a5f8eee88-ModemManager.service-nKI9cR
systemd-private-31218989dd734091a751b85a5f8eee88-polkit.service-J1MhsT
systemd-private-31218989dd734091a751b85a5f8eee88-power-profiles-daemon.service-wGh3Bs
systemd-private-31218989dd734091a751b85a5f8eee88-rtkit-daemon.service-6wbj0T
systemd-private-31218989dd734091a751b85a5f8eee88-switcheroo-control.service-iXtEvl
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-hostnamed.service-4irdGq
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-logind.service-4zGQyG
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-oomd.service-vt8clF
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-resolved.service-KzgKul
systemd-private-31218989dd734091a751b85a5f8eee88-upower.service-ljQK0Y
vmware-root_866-2722763301
skoylubaev@skoylubaev:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
skoylubaev@skoylubaev:/tmp$ ls -la
.
..
dbus-PgGCaDKv
dbus-YnXqm8iU
.font-unix
.ICE-unix
systemd-private-31218989dd734091a751b85a5f8eee88-chronyd.service-oSwJK7
systemd-private-31218989dd734091a751b85a5f8eee88-colord.service-DcvF8n
systemd-private-31218989dd734091a751b85a5f8eee88-dbus-broker.service-6oYiIv
systemd-private-31218989dd734091a751b85a5f8eee88-fwupd.service-Vgpc6Y
systemd-private-31218989dd734091a751b85a5f8eee88-low-memory-monitor.service-9CuHm5
systemd-private-31218989dd734091a751b85a5f8eee88-ModemManager.service-nKI9cR
systemd-private-31218989dd734091a751b85a5f8eee88-polkit.service-JlMhsT
systemd-private-31218989dd734091a751b85a5f8eee88-power-profiles-daemon.service-wGh3Bs
systemd-private-31218989dd734091a751b85a5f8eee88-rtkit-daemon.service-6wbj0T
systemd-private-31218989dd734091a751b85a5f8eee88-switcheroo-control.service-iXtEvL
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-logind.service-4zGQyG
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-oemd.service-vt8clF
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-resolved.service-KzgKuL
systemd-private-31218989dd734091a751b85a5f8eee88-upower.service-ljQKOY
vmware-root_866-2722763381
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
skoylubaev@skoylubaev:/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
skoylubaev@skoylubaev:/tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 map 7 16:10 dbus-PgCaBkv
srw-rw-rw-. 1 root root 0 map 7 16:10 dbus-YnqguUu
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-chronyd.service-6b2K7
drwx----- 3 root root 60 map 7 16:10 systemd-private-31218989dd734091a751b85a5f8ee88-calord.service-BcvF8n
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-dbus-broker.service-6oYilv
drwx----- 3 root root 60 map 7 16:21 systemd-private-31218989dd734091a751b85a5f8ee88-fwupd.service-Vgpc6V
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-low-memory-monitor.service-9CuHas
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-ModemManager.service-nK19cR
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-polkit.service-31RhaT
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-power-profiles-daemon.service-wGh3Bs
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-rtkit-daemon.service-6ahj0T
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-switcheroo-control.service-1x4tvl
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-systemd-logind.service-4ZGQyG
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-systemd-oomd.service-vt8clF
drwx----- 3 root root 60 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-systemd-resolved.service-KzpKul
drwx----- 2 root root 40 map 7 16:09 systemd-private-31218989dd734091a751b85a5f8ee88-upower.service-ljQKQV
drwx----- 2 root root 40 map 7 16:09 vmware-root_866-2722763301
skoylubaev@skoylubaev:/tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
skoylubaev@skoylubaev:/tmp$ ls -f
.
..
systemd-private-31218989dd734091a751b85a5f8eee88-fwupd.service-Vgpc6Y
.X1-lock
.X0-lock
systemd-private-31218989dd734091a751b85a5f8eee88-colord.service-DcvFBn
.X1025-lock
.X1024-lock
dbus-YnXqm0iU
dbus-PgGCaDKV
systemd-private-31218989dd734091a751b85a5f8eee88-ModemManager.service-nKI9cR
vmware-root_866-2722763301
systemd-private-31218989dd734091a751b85a5f8eee88-upower.service-ljQKQY
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-logind.service-4zGQyG
systemd-private-31218989dd734091a751b85a5f8eee88-switcheroo-control.service-ixtEvl
systemd-private-31218989dd734091a751b85a5f8eee88-rtkit-daemon.service-6wbj0T
systemd-private-31218989dd734091a751b85a5f8eee88-power-profiles-daemon.service-wGh3Bs
systemd-private-31218989dd734091a751b85a5f8eee88-polkit.service-J1MhsT
systemd-private-31218989dd734091a751b85a5f8eee88-low-memory-monitor.service-9CuNmS
systemd-private-31218989dd734091a751b85a5f8eee88-chrond.service-oSWJX7
systemd-private-31218989dd734091a751b85a5f8eee88-dbus-broker.service-6oYilv
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-resolved.service-KzgKul
systemd-private-31218989dd734091a751b85a5f8eee88-systemd-oomd.service-vt8cLf
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
skoylubaev@skoylubaev:/tmp$
```

Рис. 5: Команда ls -f

```
skoylubaev@skoylubaev:/tmp$  
skoylubaev@skoylubaev:/tmp$ cd /var/spool/  
skoylubaev@skoylubaev:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1438 мар  7 16:09 abrt  
drwx-----. 1 abrt abrt   0 июл 19 2023 abrt-upload  
drwx--x---. 1 root lp      6 ноя  1 04:09 cups  
drwxr-xr-x. 1 root root    0 июл 21 2023 lpd  
drwxrwxr-x. 1 root mail 1178 мар  6 14:27 mail  
drwxr-xr-x. 1 root root    0 июл 21 2023 plymouth  
skoylubaev@skoylubaev:/var/spool$
```

Рис. 6: Каталог /var/spool

```
skoylubaev@skoylubaev: /var/spool$ cd
skoylubaev@skoylubaev: $ ls
git-extended  work  Вложен  Документы  Загружен  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
skoylubaev@skoylubaev: $ ls -al
total 20
drwxr-xr-x. 1 skoylubaev skoylubaev 408 мар 2 11:20 .
drwxr-xr-x. 1 root      root      1172 мар 6 14:27 ..
-rw-r--r--. 1 skoylubaev skoylubaev 240 мар 2 11:35 .bash_history
-rw-r--r--. 1 skoylubaev skoylubaev 18 мар 19 2023 .bash_logout
-rw-r--r--. 1 skoylubaev skoylubaev 144 мар 19 2023 .bash_profile
-rw-r--r--. 1 skoylubaev skoylubaev 680 мар 2 11:19 .bashrc
drwxr-xr-x. 1 skoylubaev skoylubaev 418 мар 2 11:21 .cache
drwxr-xr-x. 1 skoylubaev skoylubaev 424 мар 2 11:21 .config
-rw-r--r--. 1 skoylubaev skoylubaev 234 мар 2 11:17 .gitconfig
drwxr-xr-x. 1 skoylubaev skoylubaev 74 мар 2 11:25 git-extended
drwxr-xr-x. 1 skoylubaev skoylubaev 280 фев 19 16:12 .gnupg
drwxr-xr-x. 1 skoylubaev skoylubaev 20 фев 12 13:10 .local
drwxr-xr-x. 1 skoylubaev skoylubaev 48 фев 12 13:19 .mozilla
drwxr-xr-x. 1 skoylubaev skoylubaev 132 фев 12 13:31 .ssh
drwxr-xr-x. 1 skoylubaev skoylubaev 10 фев 12 13:30 work
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Вложен
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Документы
drwxr-xr-x. 1 skoylubaev skoylubaev 28 мар 2 11:31 Загружен
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Изображения
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Музыка
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Общедоступные
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 'Рабочий стол'
drwxr-xr-x. 1 skoylubaev skoylubaev 0 фев 12 13:10 Шаблоны
skoylubaev@skoylubaev: $
```

Рис. 7: Файлы в домашнем каталоге

```
skoylubaev@skoylubaev:~$  
skoylubaev@skoylubaev:~$ mkdir newdir  
skoylubaev@skoylubaev:~$ mkdir newdir/morefun  
skoylubaev@skoylubaev:~$ mkdir letters memos msk  
skoylubaev@skoylubaev:~$ ls  
git-extended  memos  newdir  Впеч  Загрузки  Музыка  'Рабочий стол'  
letters      msk    work    Документы  Изображения  Общедоступные  Шаблоны  
skoylubaev@skoylubaev:~$ rm letters/ memos/ msk/  
rm: невозможно удалить 'letters/': Это каталог  
rm: невозможно удалить 'memos/': Это каталог  
rm: невозможно удалить 'msk/': Это каталог  
skoylubaev@skoylubaev:~$ rm -r letters/ memos/ msk/  
skoylubaev@skoylubaev:~$ rm -r newdir/  
skoylubaev@skoylubaev:~$ ls  
git-extended  work  Впеч  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны  
skoylubaev@skoylubaev:~$
```

Рис. 8: Действия с каталогами

Опции команды ls

```
'./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':
core.py __init__.py main.py pandocattributes.py

'./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts':
image-report mpv-shot

./Видео:

./Документы:

./Загрузки:
защиты.zip

./Изображения:

./Музыка:

./Общедоступные:

'./Рабочий стол':

./Шаблоны:
skoylubaevs koylubaev:~$ ls -lt
Загрузки  git-extended  work  Видео  Документы  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
skoylubaevs koylubaev:~$
```

Рис. 9: Команда ls -R и ls -t

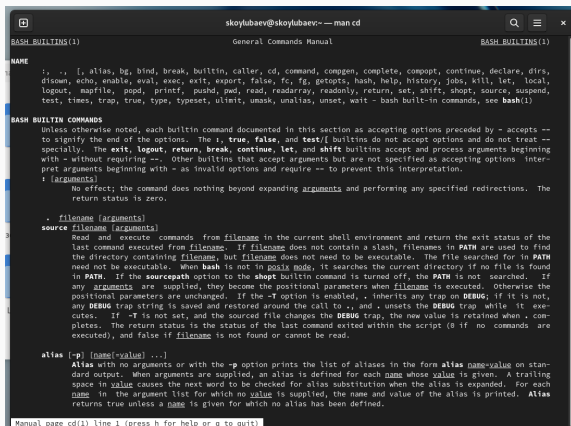
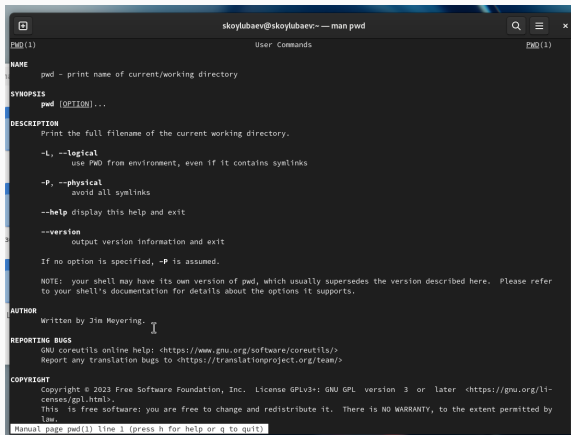


Рис. 10: Справка по команде cd

Справка по командам



```
skoylubaev@skoylubaev:~ -- man pwd
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 options it supports.

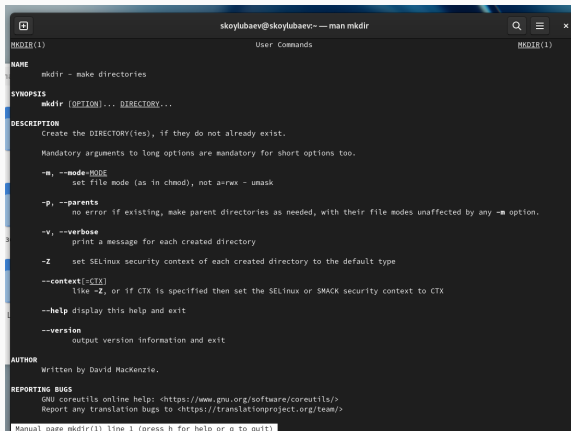
AUTHOR
  Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd



```
skoylubaev@skoylubaev:~$ man mkdir
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

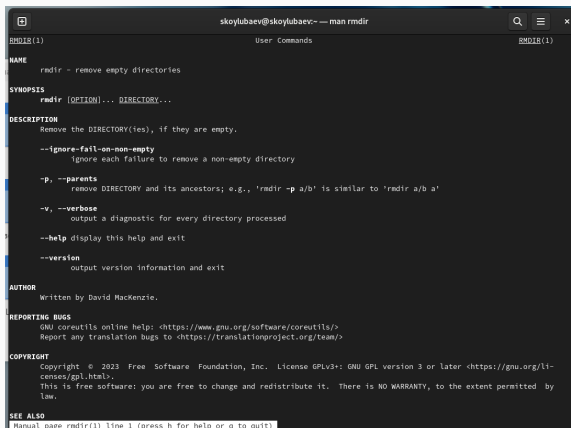
AUTHOR
  Written by David MacKenzie.

REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
  Report any translation bugs to <https://translationproject.org/team/>

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

Рис. 12: Справка по команде mkdir

Справка по командам



```
skoylubaev@skoylubaev:~ — man rmdir
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

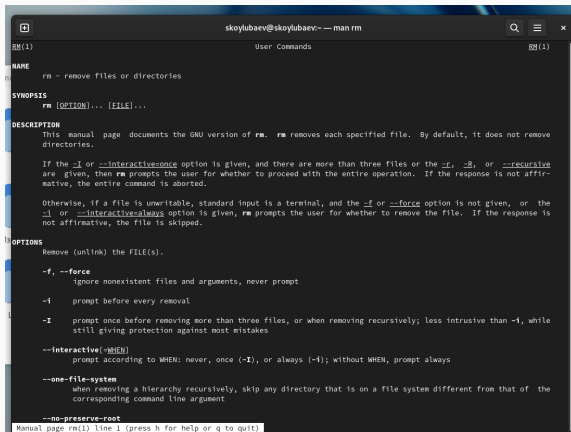
AUTHOR
  Written by David MacKenzie.

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

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

Рис. 13: Справка по команде rmdir



```
skoylubaev@skoylubaev:~$ man rm
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, -d, or --recursive
  are given, then rm prompts the user for whether to proceed with the entire operation. If the response is not affir-
  mative, 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

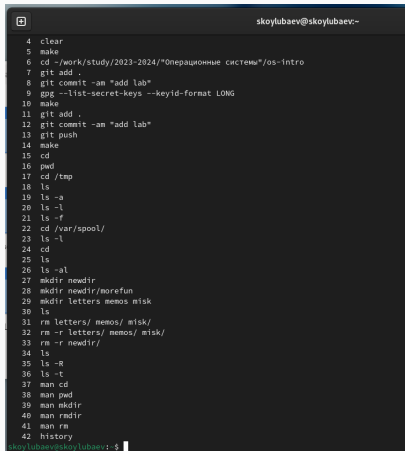
  --one-file-system
      when removing a hierarchy recursively, skip any directory that is on a file system different from that of the
      corresponding command line argument

  --no-preserve-root
      do not treat '/' specially (the default)

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

Рис. 14: Справка по команде rm

История командной строки



```
skoylubaev@skoylubaev:~$
4 clear
5 make
6 cd ~/work/study/2023-2024/"Операционные системы"/os-intro
7 git add .
8 git commit -an "add lab"
9 gpg --list-secret-keys --keyid-format LONG
10 make
11 git add .
12 git commit -an "add lab"
13 git push
14 make
15 cd
16 pwd
17 cd /tmp
18 ls
19 ls -a
20 ls -l
21 ls -f
22 cd /var/spool/
23 ls -l
24 cd
25 ls
26 ls -al
27 mkdir newdir
28 mkdir newdir/morefun
29 mkdir letters memos misk
30 ls
31 rm letters/ memos/ misk/
32 rm -r letters/ memos/ misk/
33 rm -r newdir/
34 ls
35 ls -R
36 ls -t
37 man cd
38 man pwd
39 man mkdir
40 man rmdir
41 man rm
42 history
skoylubaev@skoylubaev:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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