

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

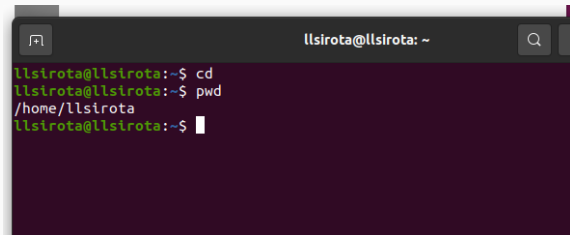
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

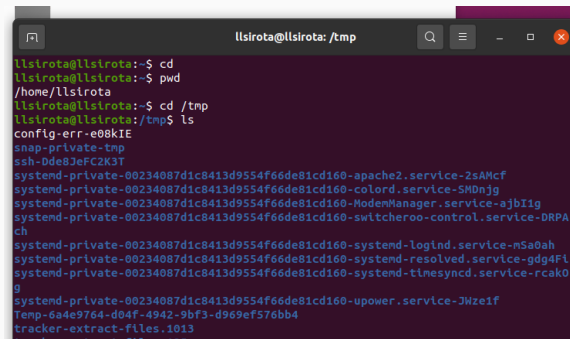
Имя и путь к домашнему каталогу

A terminal window with a dark purple background. The title bar at the top reads 'llsirota@llsirota: ~'. The terminal shows a sequence of commands: 'cd' followed by 'pwd', which outputs '/home/llsirota'. The prompt 'llsirota@llsirota:~\$' is followed by a cursor.

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

Рис. 1: Путь к домашнему каталогу

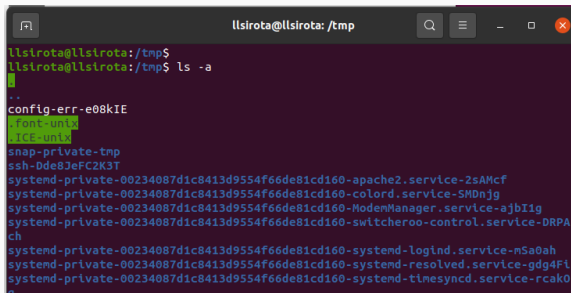
Опции команды ls



```
llsirota@llsirota: /tmp
llsirota@llsirota:~$ cd
llsirota@llsirota:~$ pwd
/home/llsirota
llsirota@llsirota:~$ cd /tmp
llsirota@llsirota:/tmp$ ls
config-err-e08kIE
snap-private-tmp
ssh-Dde8JeFC2K3T
systemd-private-00234087d1c8413d9554f66de81cd160-apache2.service-2sAMcf
systemd-private-00234087d1c8413d9554f66de81cd160-colord.service-SMDnJg
systemd-private-00234087d1c8413d9554f66de81cd160-ModemManager.service-ajbI1g
systemd-private-00234087d1c8413d9554f66de81cd160-switcheroo-control.service-DRPA
ch
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-logind.service-mSa0ah
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-resolved.service-gdg4Ft
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-timesyncd.service-rcak0
g
systemd-private-00234087d1c8413d9554f66de81cd160-upower.service-JWze1f
Temp-6a4e9764-d04f-4942-9bf3-d969ef576bb4
tracker-extract-files.1013
```

Рис. 2: Команда ls

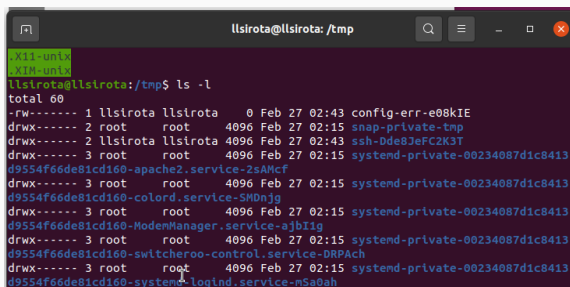
Опции команды ls

A terminal window with a dark background. The title bar shows 'llsirota@llsirota: /tmp'. The prompt is 'llsirota@llsirota:/tmp\$'. The command 'ls -a' has been entered. The output lists hidden files and system directories. The files '.font-unix' and '.ICE-unix' are highlighted in green. The output is as follows:

```
llsirota@llsirota:/tmp$  
llsirota@llsirota:/tmp$ ls -a  
.  
..  
config-err-e08kIE  
font-unix  
ICE-unix  
snap-private-tnp  
ssh-Dde8JeFC2K3T  
systemd-private-00234087d1c8413d9554f66de81cd160-apache2.service-2sAMcf  
systemd-private-00234087d1c8413d9554f66de81cd160-colord.service-SMDnjg  
systemd-private-00234087d1c8413d9554f66de81cd160-ModemManager.service-ajbI1g  
systemd-private-00234087d1c8413d9554f66de81cd160-switcheroo-control.service-DRPA  
ch  
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-logind.service-mSa0ah  
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-resolved.service-gdg4Ff  
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-timesyncd.service-rcak0
```

Рис. 3: Команда ls -a

Опции команды ls

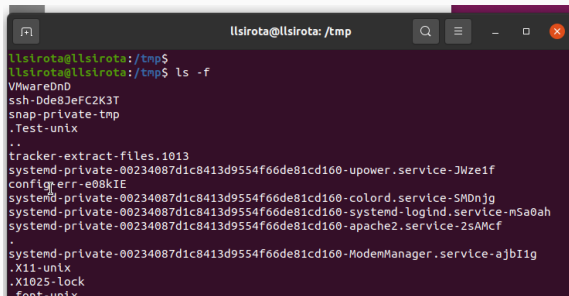


A terminal window titled 'llsirota@llsirota: /tmp' showing the output of the 'ls -l' command. The output lists files and directories in the /tmp directory with their permissions, owner, group, size, date, and name. The files are: config-err-e08kIE, snap-private-tmp, ssh-Dde8JeFC2K3T, systemd-private-00234087d1c8413d9554f66de81cd160-apache2.service-2sAMcf, systemd-private-00234087d1c8413d9554f66de81cd160-colord.service-SMDnjg, systemd-private-00234087d1c8413d9554f66de81cd160-ModemManager.service-ajbIlg, systemd-private-00234087d1c8413d9554f66de81cd160-switcheroo-control.service-DRPAch, and systemd-private-00234087d1c8413d9554f66de81cd160-systemd-logind.service-mSa0ah.

```
llsirota@llsirota: /tmp$ ls -l
total 60
-rw----- 1 llsirote llsirote  0 Feb 27 02:43 config-err-e08kIE
drwx----- 2 root    root      4096 Feb 27 02:15 snap-private-tmp
drwx----- 2 llsirote llsirote  4096 Feb 27 02:43 ssh-Dde8JeFC2K3T
drwx----- 3 root    root      4096 Feb 27 02:15 systemd-private-00234087d1c8413
d9554f66de81cd160-apache2.service-2sAMcf
drwx----- 3 root    root      4096 Feb 27 02:15 systemd-private-00234087d1c8413
d9554f66de81cd160-colord.service-SMDnjg
drwx----- 3 root    root      4096 Feb 27 02:15 systemd-private-00234087d1c8413
d9554f66de81cd160-ModemManager.service-ajbIlg
drwx----- 3 root    root      4096 Feb 27 02:15 systemd-private-00234087d1c8413
d9554f66de81cd160-switcheroo-control.service-DRPAch
drwx----- 3 root    root      4096 Feb 27 02:15 systemd-private-00234087d1c8413
d9554f66de81cd160-systemd-logind.service-mSa0ah
```

Рис. 4: Команда ls -l

Опции команды ls



```
llsirota@llsirota: /tmp
llsirota@llsirota: /tmp$ ls -f
VMwareDnD
ssh-Dde8JeFC2K3T
snap-private-tmp
.Test-unix
..
tracker-extract-files.1013
systemd-private-00234087d1c8413d9554f66de81cd160-upower.service-JWze1f
config-err-e08kIE
systemd-private-00234087d1c8413d9554f66de81cd160-colord.service-SMDnjg
systemd-private-00234087d1c8413d9554f66de81cd160-systemd-logind.service-mSa0ah
systemd-private-00234087d1c8413d9554f66de81cd160-apache2.service-2sAMcf
.
systemd-private-00234087d1c8413d9554f66de81cd160-ModemManager.service-ajbI1g
.X11-unix
.X1025-lock
font-unix
```

Рис. 5: Команда ls -f

```
llsirota@llsirota:/tmp$  
llsirota@llsirota:/tmp$  
llsirota@llsirota:/tmp$ cd /var/spool/  
llsirota@llsirota:/var/spool$ ls -l  
total 20  
drwxr-xr-x 2 root  root 4096 Nov 29  2021 anacron  
drwxr-xr-x 3 root  root 4096 Aug 19  2021 cron  
drwx--x-- 3 root  lp   4096 Aug 19  2021 cups  
drwxr-xr-x 3 root  root 4096 Aug 19  2021 libreoffice  
lrwxrwxrwx 1 root  root   7 Nov 29  2021 mail -> ../mail  
drwx----- 2 syslog adm  4096 Feb 11  2020 rsyslog  
llsirota@llsirota:/var/spool$
```

Рис. 6: Каталог /var/spool

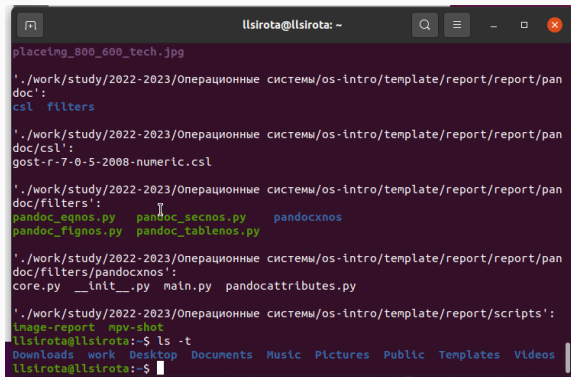
```
llsirota@llsirota:/var/spool$  
llsirota@llsirota:/var/spool$ cd  
llsirota@llsirota:~$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos work  
llsirota@llsirota:~$ ls -al  
total 100  
drwxr-xr-x 18 llsirote llsirote 4096 Feb 14 03:22 .  
drwxr-xr-x 19 root      root    4096 Feb 24 23:17 ..  
-rw-r----- 1 llsirote llsirote 6198 Feb 27 02:15 .bash_history  
-rw-r--r-- 1 llsirote llsirote 220 Feb 10 02:26 .bash_logout  
-rw-r--r-- 1 llsirote llsirote 3771 Feb 10 02:26 .bashrc  
drwxr-xr-x 16 llsirote llsirote 4096 Feb 14 02:47 .cache  
drwx----- 16 llsirote llsirote 4096 Feb 14 03:23 .config  
drwxr-xr-x 2 llsirote llsirote 4096 Feb 10 02:30 Desktop  
drwxr-xr-x 2 llsirote llsirote 4096 Feb 10 02:30 Documents  
drwxr-xr-x 2 llsirote llsirote 4096 Feb 27 03:24 Downloads  
-rw-rw-r-- 1 llsirote llsirote 201 Feb 14 03:22 .gitconfig  
drwx----- 4 llsirote llsirote 4096 Feb 20 09:16 .gnupg  
drwxr-xr-x 4 llsirote llsirote 4096 Feb 10 02:56 .local  
drwx----- 4 llsirote llsirote 4096 Feb 14 02:47 .mozilla  
drwxr-xr-x 2 llsirote llsirote 4096 Feb 10 02:30 Music  
drwxr-xr-x 2 llsirote llsirote 4096 Feb 10 02:30 Pictures
```

Рис. 7: Файлы в домашнем каталоге

```
llsirota@llsirota:~$  
llsirota@llsirota:~$  
llsirota@llsirota:~$ mkdir newdir  
llsirota@llsirota:~$ mkdir newdir/morefun  
llsirota@llsirota:~$ mkdir letters memos misk  
llsirota@llsirota:~$ ls  
Desktop  Downloads  memos  Music  Pictures  Templates  work  
Documents  letters  misk  newdir  Public  Videos  
llsirota@llsirota:~$ 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  
llsirota@llsirota:~$ rm -r letters/ memos/ misk/  
llsirota@llsirota:~$ rm -r newdir/  
llsirota@llsirota:~$ ls  
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos  work  
llsirota@llsirota:~$
```

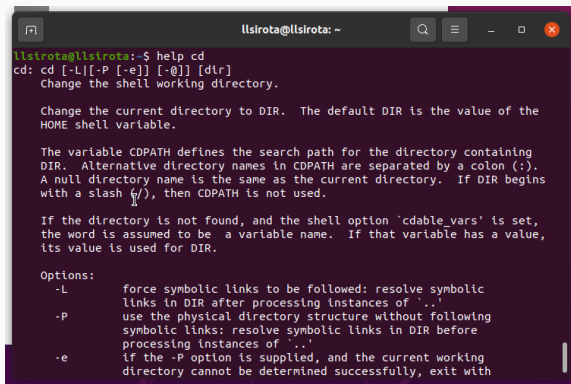
Рис. 8: Действия с каталогами

Опции команды ls



```
llsirota@llsirota: ~  
placeimg_800_600_tech.jpg  
'. /work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc':  
csl filters  
'. /work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc/csl':  
gost-r-7-0-5-2008-numeric.csl  
'. /work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc/filters':  
pandoc_eqnos.py  pandoc_secnos.py  pandocxnos  
pandoc_fignos.py  pandoc_tablenos.py  
'. /work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc/filters/pandocxnos':  
core.py  __init__.py  main.py  pandocattributes.py  
'. /work/study/2022-2023/Операционные системы/os-intro/template/scripts':  
image-report  mpv-shot  
llsirota@llsirota:~$ ls -t  
Downloads  work  Desktop  Documents  Music  Pictures  Public  Templates  Videos  
llsirota@llsirota:~$
```

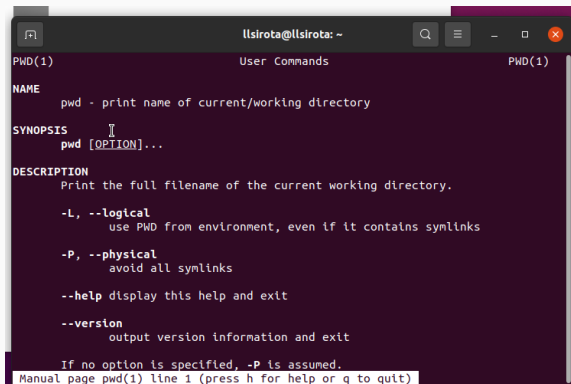
Рис. 9: Команда ls -R и ls -t



```
llsirota@llsirota: ~  
llsirota@llsirota:~$ 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.  
  
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
```

Рис. 10: Справка по команде cd

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
        avoid all symlinks

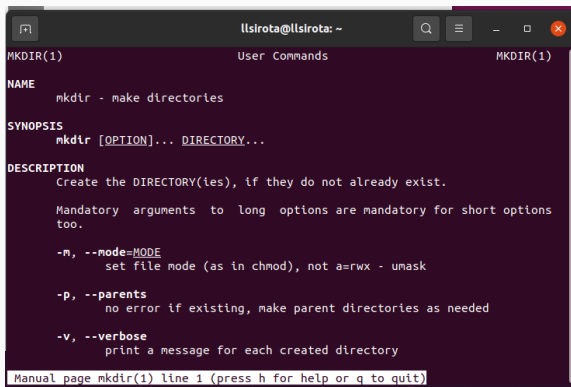
    --help display this help and exit

    --version
        output version information and exit

    If no option is specified, -P is assumed.
    Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd

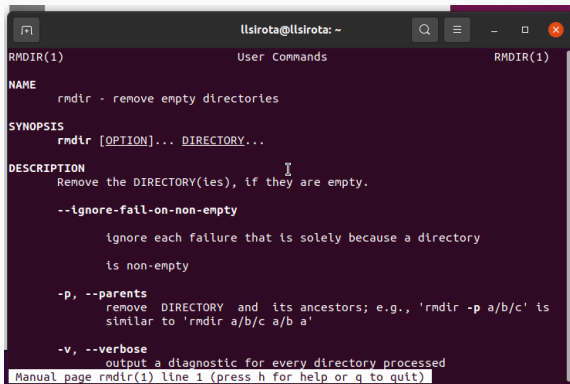
Справка по командам



```
llsirota@llsirota: ~  
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  
  
    -v, --verbose  
        print a message for each created directory  
  
Manual page mkdir(1) line 1 (press h for help or q to quit)
```

Рис. 12: Справка по команде mkdir

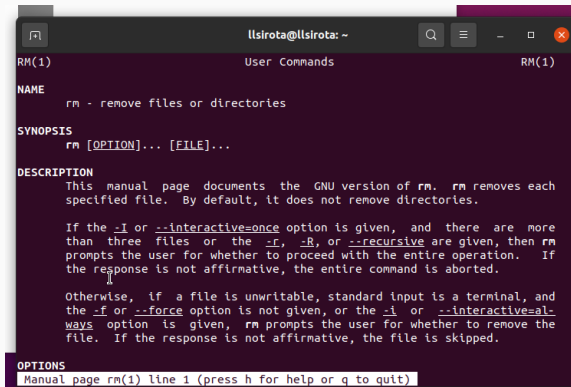
Справка по командам



```
llsirota@llsirota: ~  
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 that is solely because a directory  
        is non-empty  
  
    -p, --parents  
        remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is  
        similar to 'rmdir a/b/c a/b a'  
  
    -v, --verbose  
        output a diagnostic for every directory processed  
Manual page rmdir(1) line 1 (press h for help or q to quit)
```

Рис. 13: Справка по команде rmdir

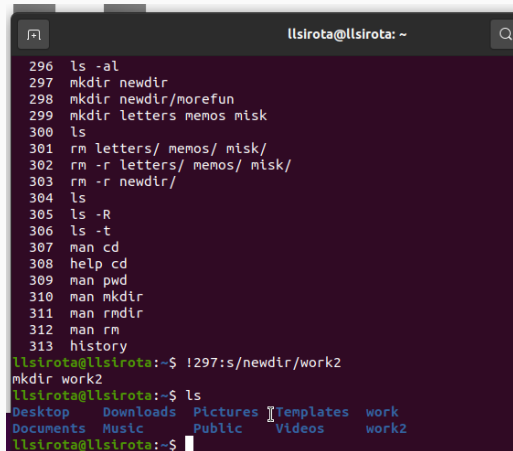
Справка по командам



```
lslirota@lslirota: ~  
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=al-  
    ways option is given, rm prompts the user for whether to remove the  
    file. If the response is not affirmative, the file is skipped.  
  
OPTIONS  
    Manual page rm(1) line 1 (press h for help or q to quit)
```

Рис. 14: Справка по команде rm

История командной строки

A terminal window with a dark purple background and white text. The title bar at the top reads 'llsirota@llsirota: ~'. The terminal shows a list of 13 commands numbered 296 to 313, which are the contents of the 'history' command. The commands include 'ls -al', 'mkdir newdir', 'mkdir newdir/morefun', 'mkdir letters memos misk', 'ls', 'rm letters/ memos/ misk/', 'rm -r letters/ memos/ misk/', 'rm -r newdir/', 'ls', 'ls -R', 'ls -t', 'man cd', 'help cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. After the history list, the user enters '!297:s/newdir/work2' and 'mkdir work2'. Then, the user enters 'ls', and the terminal displays a directory listing for the current directory, showing 'Desktop', 'Downloads', 'Pictures', 'Templates', 'work', 'Documents', 'Music', 'Public', 'Videos', and 'work2'. The prompt 'llsirota@llsirota:~\$' is followed by a cursor.

```
llsirota@llsirota: ~
296 ls -al
297 mkdir newdir
298 mkdir newdir/morefun
299 mkdir letters memos misk
300 ls
301 rm letters/ memos/ misk/
302 rm -r letters/ memos/ misk/
303 rm -r newdir/
304 ls
305 ls -R
306 ls -t
307 man cd
308 help cd
309 man pwd
310 man mkdir
311 man rmdir
312 man rm
313 history
llsirota@llsirota:~$ !297:s/newdir/work2
mkdir work2
llsirota@llsirota:~$ ls
Desktop  Downloads  Pictures  Templates  work
Documents Music      Public    Videos    work2
llsirota@llsirota:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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