

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
lgorelashvili@logelashvili:~$ cd /tmp
lgorelashvili@logelashvili:/tmp$ ls
dbus-1wnE1R2E
dbus-RETTAagb
systemd-private-58db48f63b31490c9ab8fe3bde82133-chronyd.service-ZKyB8H
systemd-private-58db48f63b31490c9ab8fe3bde82133-colord.service-gcUpT4
systemd-private-58db48f63b31490c9ab8fe3bde82133-dbus-broker.service-RIoX3r
systemd-private-58db48f63b31490c9ab8fe3bde82133-fwupd.service-DZ2B48
systemd-private-58db48f63b31490c9ab8fe3bde82133-low-memory-monitor.service-zC06wg
systemd-private-58db48f63b31490c9ab8fe3bde82133-ModemManager.service-GUj3EI
systemd-private-58db48f63b31490c9ab8fe3bde82133-polkit.service-bUGUZq
systemd-private-58db48f63b31490c9ab8fe3bde82133-power-profiles-daemon.service-ocg5WJ
systemd-private-58db48f63b31490c9ab8fe3bde82133-rtkit-daemon.service-KD90vw
systemd-private-58db48f63b31490c9ab8fe3bde82133-switcheroo-control.service-CtHtCk
systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-logind.service-k7svkr
systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-oomd.service-pRIbuz
systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-resolved.service-9EXZgv
systemd-private-58db48f63b31490c9ab8fe3bde82133-upower.service-5SnUr4
vmware-root_867-3988621819
lgorelashvili@logelashvili:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
lgorelashvili@logelashvili:/tmp$ ls -la
..
dbus-1wnE1R2E
dbus-RETTAagb
.font-unix
.ICE-unix
systemd-private-58db48f63b31490c9ab8fe3bdd82133-chrond.service-ZKyB8H
systemd-private-58db48f63b31490c9ab8fe3bdd82133-colord.service-gcUpT4
systemd-private-58db48f63b31490c9ab8fe3bdd82133-dbus-broker.service-RioX3r
systemd-private-58db48f63b31490c9ab8fe3bdd82133-fwupd.service-DZ2B48
systemd-private-58db48f63b31490c9ab8fe3bdd82133-low-memory-monitor.service-zC06wg
systemd-private-58db48f63b31490c9ab8fe3bdd82133-ModemManager.service-6Uj3EI
systemd-private-58db48f63b31490c9ab8fe3bdd82133-polkit.service-bUGUZq
systemd-private-58db48f63b31490c9ab8fe3bdd82133-power-profiles-daemon.service-ocgSWJ
systemd-private-58db48f63b31490c9ab8fe3bdd82133-rtkit-daemon.service-KD90vw
systemd-private-58db48f63b31490c9ab8fe3bdd82133-switcheroo-control.service-CtHTCk
systemd-private-58db48f63b31490c9ab8fe3bdd82133-systemd-logind.service-k7svkr
systemd-private-58db48f63b31490c9ab8fe3bdd82133-systemd-oomd.service-pRIBuz
systemd-private-58db48f63b31490c9ab8fe3bdd82133-systemd-resolved.service-9EXZgv
systemd-private-58db48f63b31490c9ab8fe3bdd82133-upower.service-5SnUr4
vmware-root_867-3988621819
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
lgorelashvili@logelashvili:/tmp$
```

Рис. 3: Команда ls -la

Опции команды ls

```
lgorelashvili@lgorelashvili:~$  
lgorelashvili@lgorelashvili:~/tmp$ ls -l  
итого 0  
srwxrwxrwx. 1 root root 0 map 7 11:19 dbus-1wnE1R2E  
srwxrwxrwx. 1 root root 0 map 7 11:19 dbus-RETTAagb  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-chronyd.service-ZKyb8H  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-colord.service-gcUpT4  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-dbus-broker.service-RIoX3r  
drwx----- 3 root root 60 map 7 11:22 systemd-private-58db48f63b31490c9ab8fe3bde82133-fwupd.service-0Z2B48  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-low-memory-monitor.service  
-zC80wg  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-ModemManager.service-6Uj3E  
I  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-polkit.service-bUGU2q  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-power-profiles-daemon.serv  
ice-ocgSMQ  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-rtkit-daemon.service-KD9ov  
w  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-switcheroo-control.service  
-cCHECK  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-logind.service-k7s  
vkr  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-oned.service-PRIBu  
s  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-systemd-resolved.service-9  
EX2gw  
drwx----- 3 root root 60 map 7 11:19 systemd-private-58db48f63b31490c9ab8fe3bde82133-upower.service-550Ur4  
drwx----- 2 root root 40 map 7 11:19 vmware-root_867-3588621819  
lgorelashvili@lgorelashvili:~/tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
lgorelashvili@logelashvili:~/tmp$ ls -f
.
..
systemd-private-58db48f63b31490c9ab8fe3bded82133-fwupd.service-DZ2B48
.X1-lock
.X0-lock
systemd-private-58db48f63b31490c9ab8fe3bded82133-colord.service-gcUpT4
.X1025-lock
.X1024-lock
dbus-RETTAagb
dbus-iwnE1R2E
systemd-private-58db48f63b31490c9ab8fe3bded82133-ModemManager.service-6Uj3EI
vmware-root_867-3988621819
systemd-private-58db48f63b31490c9ab8fe3bded82133-upower.service-5SnUr4
systemd-private-58db48f63b31490c9ab8fe3bded82133-systemd-logind.service-k7svkr
systemd-private-58db48f63b31490c9ab8fe3bded82133-switcheroo-control.service-CtHtCk
systemd-private-58db48f63b31490c9ab8fe3bded82133-rtkit-daemon.service-KD90Vw
systemd-private-58db48f63b31490c9ab8fe3bded82133-power-profiles-daemon.service-ocgSWJ
systemd-private-58db48f63b31490c9ab8fe3bded82133-polkit.service-bUGUZq
systemd-private-58db48f63b31490c9ab8fe3bded82133-low-memory-monitor.service-zC06wg
systemd-private-58db48f63b31490c9ab8fe3bded82133-chronyd.service-ZKyb8H
systemd-private-58db48f63b31490c9ab8fe3bded82133-dbus-broker.service-RIoX3r
systemd-private-58db48f63b31490c9ab8fe3bded82133-systemd-resolved.service-9EXZgv
systemd-private-58db48f63b31490c9ab8fe3bded82133-systemd-oond.service-pRiBuz
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
lgorelashvili@logelashvili:~/tmp$
```

Рис. 5: Команда ls -f

```
lgorelashvili@logelashvili:~/tmp$  
lgorelashvili@logelashvili:~/tmp$ cd /var/spool/  
lgorelashvili@logelashvili:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1366 мар  7 10:09 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  
lgorelashvili@logelashvili:/var/spool$
```

Рис. 6: Каталог /var/spool

Домашний каталог

```
lgorelashvili@lgorelashvili: /var/spool$ cd
lgorelashvili@lgorelashvili:~$ ls
git-extended  Видео          Загрузки      Музыка        'Рабочий стол'
work         Документы      Изображения   Общедоступные  Шаблоны
lgorelashvili@lgorelashvili:~$ ls -al
итого 20
drwx----- 1 lgorelashvili lgorelashvili 498 мар 1 21:36 .
drwxr-xr-x. 1 root      root      1172 мар 6 14:27 ..
-rw----- 1 lgorelashvili lgorelashvili 2673 мар 1 21:51 .bash_history
-rw-r--r-- 1 lgorelashvili lgorelashvili 18 июл 19 2023 .bash_logout
-rw-r--r-- 1 lgorelashvili lgorelashvili 144 июл 19 2023 .bash_profile
-rw-r--r-- 1 lgorelashvili lgorelashvili 683 мар 1 21:35 .bashrc
drwx----- 1 lgorelashvili lgorelashvili 418 мар 1 21:38 .cache
drwx----- 1 lgorelashvili lgorelashvili 424 мар 1 21:38 .config
-rw-r--r-- 1 lgorelashvili lgorelashvili 240 мар 1 21:30 .gitconfig
drwxr-xr-x. 1 lgorelashvili lgorelashvili 74 мар 1 21:41 git-extended
drwx----- 1 lgorelashvili lgorelashvili 280 фев 19 16:07 .gnupg
drwx----- 1 lgorelashvili lgorelashvili 20 фев 10 14:31 .local
drwxr-xr-x. 1 lgorelashvili lgorelashvili 48 фев 10 14:34 .mozilla
drwx----- 1 lgorelashvili lgorelashvili 132 фев 10 14:49 .ssh
drwxr-xr-x. 1 lgorelashvili lgorelashvili 10 фев 10 14:48 work
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Видео
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Документы
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Загрузки
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Изображения
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Музыка
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Общедоступные
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 'Рабочий стол'
drwxr-xr-x. 1 lgorelashvili lgorelashvili 0 фев 10 14:31 Шаблоны
lgorelashvili@lgorelashvili:~$
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

Опции команды ls

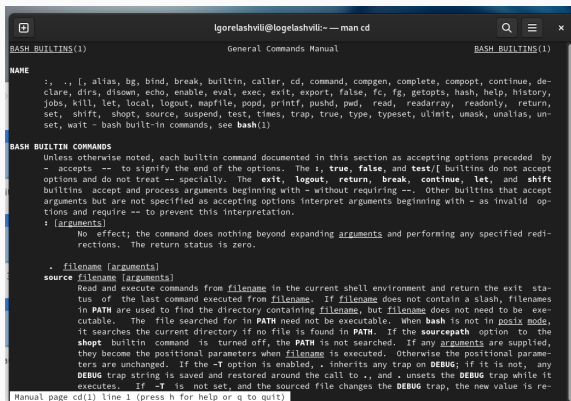
```
./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':
core.py __init__.py main.py pandocattributes.py

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

./Видео:
./Документы:
./Загрузки:
./Изображения:
./Музыка:
./Общедоступные:
'./Рабочий стол':
./Шаблоны:
lgorelashvili@lgorelashvili:~$ ls -t
git-extended Видео Музыка Загрузки 'Рабочий стол'
work Изображения Документы Общедоступные Шаблоны
lgorelashvili@lgorelashvili:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



```
lgorelashvili@logelashvili:~ — man cd
BASH BUILTINS(1)                                General Commands Manual                                BASH BUILTINS(1)

NAME
:, ., [, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, compopt, continue, declare, dirs, disown, echo, enable, eval, exec, exit, export, false, fc, fg, getopts, hash, help, history, jobs, kill, let, local, logout, mapfile, popd, printf, pushd, pwd, read, readarray, readonly, return, set, shift, shopt, source, suspend, test, times, trap, true, type, typeset, ulimit, umask, unalias, unset, wait - bash built-in commands, see bash(1)

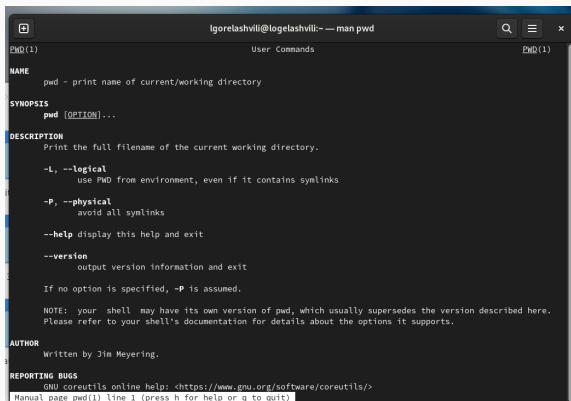
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by - accepts -- to signify the end of the options. The :, true, false, and test/[ builtins do not accept options and do not treat -- specially. The exit, logout, return, break, continue, let, and shift builtins accept and process arguments beginning with - without requiring --. Other builtins that accept arguments but are not specified as accepting options interpret arguments beginning with - as invalid options and require -- to prevent this interpretation.
: [arguments]
    No effect; the command does nothing beyond expanding arguments and performing any specified redirections. The return status is zero.

. filename [arguments]
source filename [arguments]
    Read and execute commands from filename in the current shell environment and return the exit status of the last command executed from filename. If filename does not contain a slash, filenames in PATH are used to find the directory containing filename, but filename does not need to be executable. The file searched for in PATH need not be executable. When bash is not in posix mode, it searches the current directory if no file is found in PATH. If the sourcepath option to the shopt builtin command is turned off, the PATH is not searched. If any arguments are supplied, they become the positional parameters when filename is executed. Otherwise the positional parameters are unchanged. If the -T option is enabled, . inherits any trap on DEBUG; if it is not, any DEBUG trap string is saved and restored around the call to ., and . unsets the DEBUG trap while it executes. If -T is not set, and the sourced file changes the DEBUG trap, the new value is re-
```

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

Рис. 10: Справка по команде cd

Справка по командам



```
lgorelashvili@lgorelashvili:~$ 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

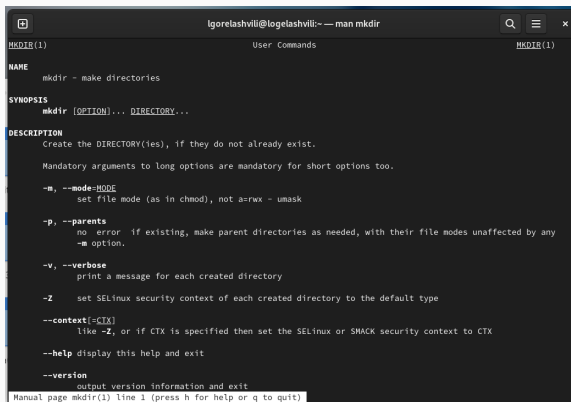
  If no option is specified, -P is assumed.

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

Рис. 11: Справка по команде pwd



```
lgorelashvili@logelashvili:~ — 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

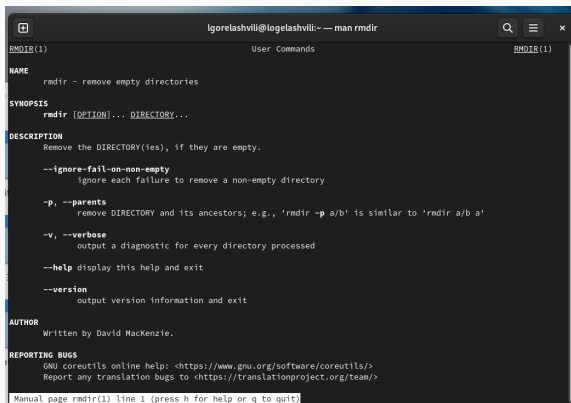
  --help
      display this help and exit

  --version
      output version information and exit

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

Рис. 12: Справка по команде mkdir

Справка по командам



```
lgorelashvili@logelashvili:~ -- 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

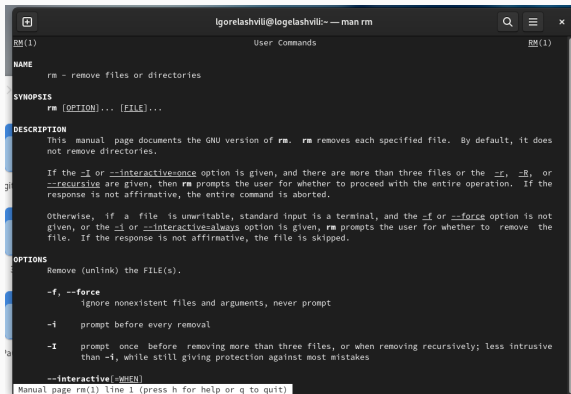
AUTHOR
  Written by David MacKenzie.

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

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

Рис. 13: Справка по команде rmdir

Справка по командам



```
lgorelashvili@logelashvili:~ -- 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, -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=[how]

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

Рис. 14: Справка по команде rm

История командной строки

```
117 ls -l
118 cd
119 ls
120 ls -al
121 mkdir newdir
122 mkdir newdir/morefun
123 mkdir letters memos misk
124 rm letters/ memos/ misk/
125 rm -r letters/ memos/ misk/
126 rm -r newdir/
127 ls
128 ls -R
129 ls -t
130 ls -R
131 ls -t
132 man cd
133 man pwd
134 man mkdir
135 man rmdir
136 man rm
137 history
lgorelashvili@logelashvili:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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