

# Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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# Цели и задачи работы

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## Цель лабораторной работы

Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

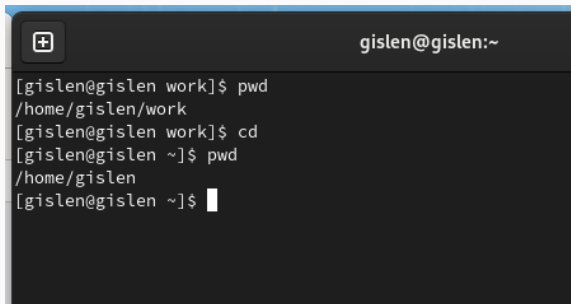
# Задачи лабораторной работы

- 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**

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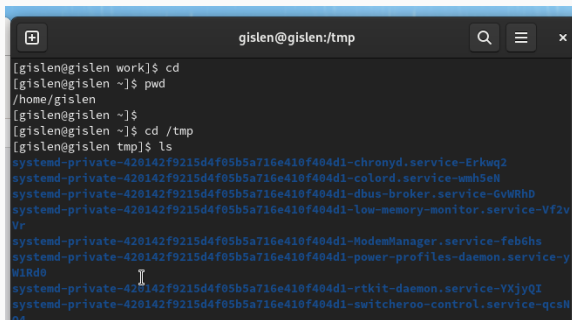
# Имя и путь к домашнему каталогу

A terminal window with a dark background and light text. The title bar shows a window icon and the text 'gislen@gislen:~'. The terminal content shows a sequence of commands and their outputs: 'pwd' returns '/home/gislen/work', 'cd' returns to the home directory, and another 'pwd' returns '/home/gislen'. The prompt is '[gislen@gislen ~]\$' with a cursor.

```
[gislen@gislen work]$ pwd
/home/gislen/work
[gislen@gislen work]$ cd
[gislen@gislen ~]$ pwd
/home/gislen
[gislen@gislen ~]$
```

**Рис. 1:** Путь к домашнему каталогу

# Опции команды ls



A terminal window titled 'gislen@gislen:/tmp' with standard window controls (maximize, search, menu, close). The terminal shows a sequence of commands and their outputs:

```
[gislen@gislen work]$ cd
[gislen@gislen ~]$ pwd
/home/gislen
[gislen@gislen ~]$
[gislen@gislen ~]$ cd /tmp
[gislen@gislen tmp]$ ls
systemd-private-420142f9215d4f05b5a716e410f404d1-chronyd.service-ErkWq2
systemd-private-420142f9215d4f05b5a716e410f404d1-colord.service-wmh5eN
systemd-private-420142f9215d4f05b5a716e410f404d1-dbus-broker.service-GvWRhD
systemd-private-420142f9215d4f05b5a716e410f404d1-low-memory-monitor.service-Vf2v
Vr
systemd-private-420142f9215d4f05b5a716e410f404d1-ModemManager.service-feb6hs
systemd-private-420142f9215d4f05b5a716e410f404d1-power-profiles-daemon.service-y
W1Rd0
systemd-private-420142f9215d4f05b5a716e410f404d1-rtkit-daemon.service-YXjyQI
systemd-private-420142f9215d4f05b5a716e410f404d1-switcheroo-control.service-qcsN
ns
```

Рис. 2: Команда ls

# Опции команды ls



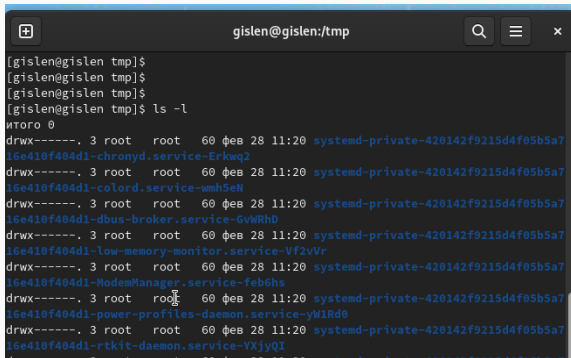
A terminal window titled 'gislen@gislen:/tmp' with search, menu, and close icons. The command history shows the user navigating to the /tmp directory and running 'ls -a'. The output lists hidden files and system services. The files '.font-unix' and '.ICE-unix' are highlighted in green. The cursor is positioned at the end of the line containing 'systemd-private-420142f9215d4f05b5a716e410f404d1-power-profiles-daemon.service-yW1Rd0'.

```
Temp-01ff868c-ed81-4698-9afb-a9530ae1f409
vmware-root_778-2956993651
[gislen@gislen tmp]$
[gislen@gislen tmp]$
[gislen@gislen tmp]$ ls -a
.
..
.font-unix
.ICE-unix
systemd-private-420142f9215d4f05b5a716e410f404d1-chronyd.service-ErkWq2
systemd-private-420142f9215d4f05b5a716e410f404d1-colord.service-wmh5eN
systemd-private-420142f9215d4f05b5a716e410f404d1-dbus-broker.service-GvWRhD
systemd-private-420142f9215d4f05b5a716e410f404d1-low-memory-monitor.service-Vf2V
Vr
systemd-private-420142f9215d4f05b5a716e410f404d1-ModemManager.service-feb6hs
systemd-private-420142f9215d4f05b5a716e410f404d1-power-profiles-daemon.service-y
W1Rd0
systemd-private-420142f9215d4f05b5a716e410f404d1-rtkit-daemon.service-YXjyQI
```

Рис. 3: Команда ls -a



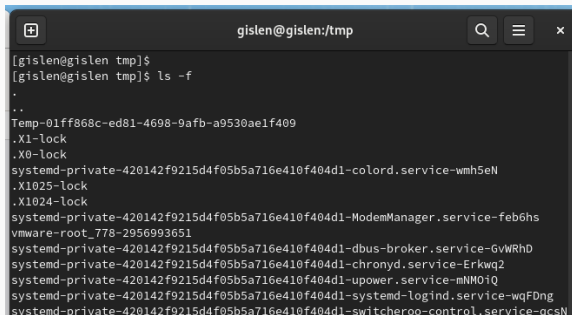
# Опции команды ls

A terminal window titled 'gislen@gislen:/tmp' with search, menu, and close icons. It shows the execution of 'ls -l' in a directory named 'tmp'. The output lists several systemd-private directories owned by root, each containing a service file. The files are color-coded: blue for directories and red for files. The last line of the output is partially cut off.

```
[gislen@gislen tmp]$  
[gislen@gislen tmp]$  
[gislen@gislen tmp]$  
[gislen@gislen tmp]$ ls -l  
итого 0  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-chronyd.service-ErkWq2  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-colord.service-wmh5eN  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-dbus-broker.service-GvWRhD  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-low-memory-monitor.service-Vf2vVr  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-ModemManager.service-feb6hs  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-power-profiles-daemon.service-yWIRd0  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7  
16e410f404d1-rtkit-daemon.service-YXjyQI  
drwx-----. 3 root  root  60 фев 28 11:20 systemd-private-420142f9215d4f05b5a7
```

Рис. 4: Команда ls -l

# Опции команды ls



```
gislen@gislen:/tmp
[gislen@gislen tmp]$
[gislen@gislen tmp]$ ls -f
.
..
Temp-01ff868c-ed81-4698-9afb-a9530aelf409
.X1-lock
.X0-lock
systemd-private-420142f9215d4f05b5a716e410f404d1-colord.service-wmh5eN
.X1025-lock
.X1024-lock
systemd-private-420142f9215d4f05b5a716e410f404d1-ModemManager.service-feb6hs
vmware-root_778-2956993651
systemd-private-420142f9215d4f05b5a716e410f404d1-dbus-broker.service-GvWRhD
systemd-private-420142f9215d4f05b5a716e410f404d1-chronyd.service-Erkww2
systemd-private-420142f9215d4f05b5a716e410f404d1-upower.service-mNM0iq
systemd-private-420142f9215d4f05b5a716e410f404d1-systemd-logind.service-wqFDng
systemd-private-420142f9215d4f05b5a716e410f404d1-switcheroo-control.service-qcsN
```

Рис. 5: Команда ls -f

```
[gislen@gislen tmp]$  
[gislen@gislen tmp]$ cd /var/spool/  
[gislen@gislen spool]$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 578 фев 21 15:05 abrt  
drwx-----. 1 abrt abrt  0 мар 11 2022 abrt-upload  
drwx--x---. 1 root lp    6 окт  3 11:46 cups  
drwxr-xr-x. 1 root root  0 авг  9 2022 lpd  
drwxrwxr-x. 1 root mail 910 фев 24 11:56 mail  
drwxr-xr-x. 1 root root  0 мар  7 2022 plymouth  
[gislen@gislen spool]$
```

**Рис. 6:** Каталог /var/spool

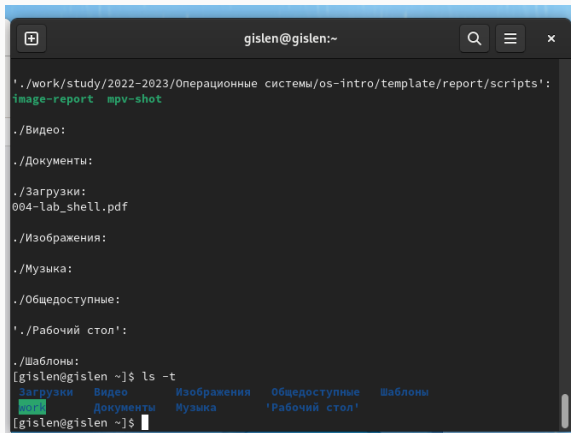
```
[gislen@gislen spool]$  
[gislen@gislen spool]$ cd  
[gislen@gislen ~]$ ls  
Моя Документы Изображения Общедоступные Шаблоны  
Видео Загрузки Музыка 'Рабочий стол'  
[gislen@gislen ~]$ ls -al  
итого 24  
drwx----- 1 gislen gislen 498 фев 15 11:36 .  
drwxr-xr-x 1 root root 904 фев 24 11:56 ..  
-rw----- 1 gislen gislen 6052 фев 21 13:48 .bash_history  
-rw-r--r-- 1 gislen gislen 18 янв 20 2022 .bash_logout  
-rw-r--r-- 1 gislen gislen 141 янв 20 2022 .bash_profile  
-rw-r--r-- 1 gislen gislen 492 янв 20 2022 .bashrc  
drwx----- 1 gislen gislen 386 фев 15 11:54 .cache  
drwxr-xr-x 1 gislen gislen 348 фев 15 11:37 .config  
-rw-r--r-- 1 gislen gislen 233 фев 15 11:36 .gitconfig  
drwx----- 1 gislen gislen 134 фев 21 13:44 .gnupg  
drwx----- 1 gislen gislen 26 фев 15 11:54 .local  
drwxr-xr-x 1 gislen gislen 48 сен 23 17:07 .mozilla  
drwx----- 1 gislen gislen 132 фев 15 11:38 .ssh  
drwxr-xr-x 1 gislen gislen 18 окт 29 11:59 .texlive2022  
drwxrwxrwx 1 gislen gislen 10 окт 15 12:20 .vscode
```

Рис. 7: Файлы в домашнем каталоге

```
[gislen@gislen ~]$  
[gislen@gislen ~]$ mkdir newdir  
[gislen@gislen ~]$ mkdir newdir/morefun  
[gislen@gislen ~]$ mkdir letters memos misk  
[gislen@gislen ~]$ ls  
letters  misk  morefun  Документы  Изображения  Общедоступные  Шаблоны  
memos    newdir  Видео    Загрузки   Музыка        'Рабочий стол'  
[gislen@gislen ~]$ rm letters/ memos/ misk/  
rm: невозможно удалить 'letters/': Это каталог  
rm: невозможно удалить 'memos/': Это каталог  
rm: невозможно удалить 'misk/': Это каталог  
[gislen@gislen ~]$ rm -r letters/ memos/ misk/  
[gislen@gislen ~]$ rm -r newdir/  
[gislen@gislen ~]$ ls  
morefun  Документы  Изображения  Общедоступные  Шаблоны  
Видео    Загрузки   Музыка        'Рабочий стол'  
[gislen@gislen ~]$
```

Рис. 8: Действия с каталогами

# Опции команды ls



A terminal window titled 'gislen@gislen:~' showing a directory listing. The prompt is `'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':`. The user has entered `image-report mpv-shot`. Below this, several directory names are listed: `./Видео:`, `./Документы:`, `./Загрузки:`, `./Изображения:`, `./Музыка:`, `./Общедоступные:`, and `./Рабочий стол:`. The user then enters `[gislen@gislen ~]$ ls -t`, which displays a tree-like structure of the directory contents. The output shows `Загрузки`, `Видео`, `Изображения`, `Общедоступные`, and `Шаблоны` on the first line, and `Работы`, `Документы`, `Музыка`, and `'Рабочий стол'` on the second line. The prompt is `[gislen@gislen ~]$`.

```
'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':
image-report mpv-shot

./Видео:

./Документы:

./Загрузки:
004-lab_shell.pdf

./Изображения:

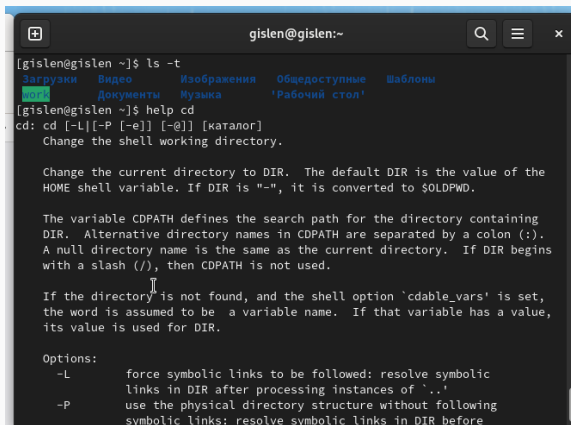
./Музыка:

./Общедоступные:

./Рабочий стол:

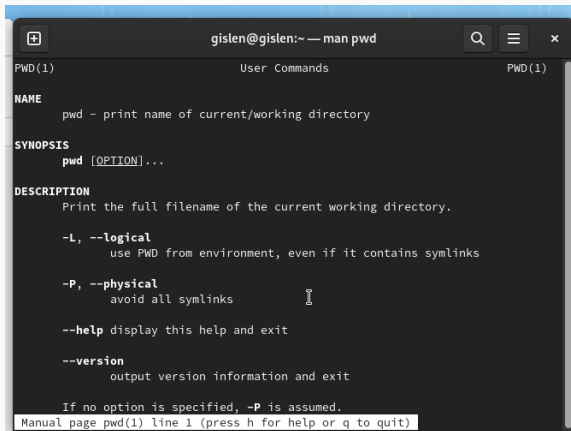
./Шаблоны:
[gislen@gislen ~]$ ls -t
Загрузки  Видео  Изображения  Öffentlich  Шаблоны
Работы    Документы  Музыка  'Рабочий стол'
```

Рис. 9: Команда `ls -R` и `ls -t`



```
gislen@gislen:~  
[gislen@gislen ~]$ ls -t  
Загрузки Видео Изображения Общедоступные Шаблоны  
work документы Музыка 'Рабочий стол'  
[gislen@gislen ~]$ help cd  
cd: cd [-L|[-P [-e]] [-@]] [каталог]  
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
```

Рис. 10: Справка по команде cd



```
gislen@gislen:~ — 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

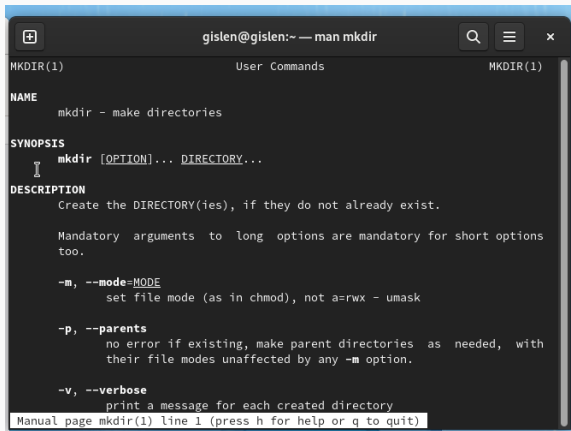
    If no option is specified, -P is assumed.

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

Рис. 11: Справка по команде pwd



# Справка по командам



```
gislen@gislen:~ — 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.

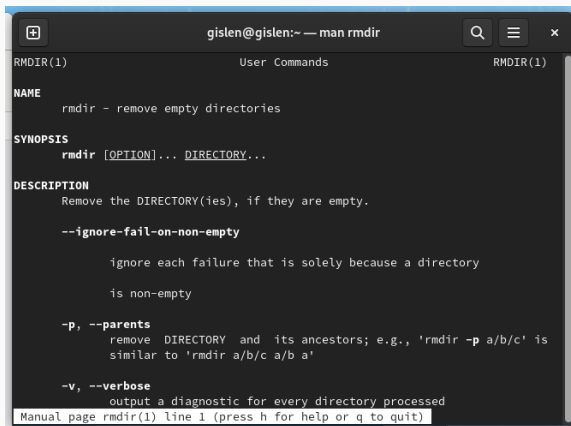
    Mandatory arguments to long options are mandatory for short options
    too.

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

Рис. 12: Справка по команде mkdir



```
gislen@gislen:~ — man rmdir
RMDIR(1) User Commands RMDIR(1)

NAME
    rmdir - remove empty directories

SYNOPSIS
    rmdir [OPTION]... DIRECTORY...

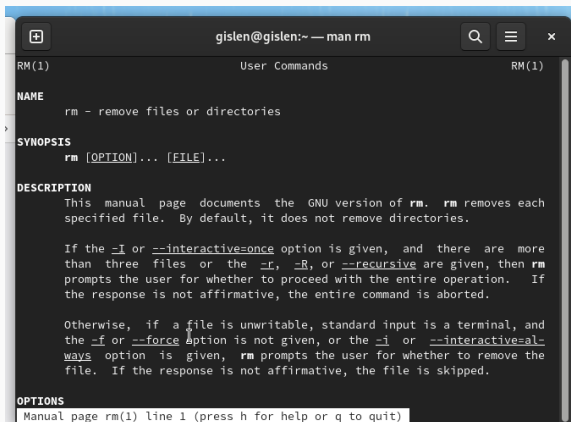
DESCRIPTION
    Remove the DIRECTORY(ies), if they are empty.

    --ignore-fail-on-non-empty
        ignore each failure 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



The screenshot shows a terminal window titled "gislen@gislen:~ — man rm". The window displays the manual page for the "rm" command. The content is as follows:

```
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.

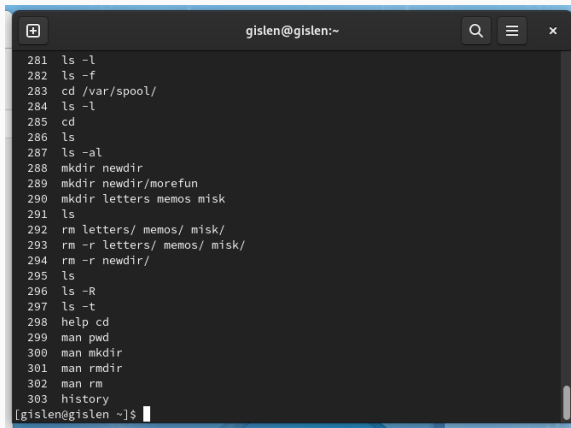
    If the -I or --interactive=once option is given, and there are more
    than three files or the -r, -R, or --recursive are given, then rm
    prompts the user for whether to proceed with the entire operation. If
    the response is not affirmative, the entire command is aborted.

    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 titled 'gislen@gislen:~' with search, menu, and close icons in the title bar. The terminal displays a list of 17 commands, each preceded by a line number from 281 to 303. The commands are: 'ls -l', 'ls -f', 'cd /var/spool/', 'ls -l', 'cd', 'ls', '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', 'help cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. The prompt '[gislen@gislen ~]\$' is visible at the bottom with a cursor.

```
281 ls -l
282 ls -f
283 cd /var/spool/
284 ls -l
285 cd
286 ls
287 ls -al
288 mkdir newdir
289 mkdir newdir/morefun
290 mkdir letters memos misk
291 ls
292 rm letters/ memos/ misk/
293 rm -r letters/ memos/ misk/
294 rm -r newdir/
295 ls
296 ls -R
297 ls -t
298 help cd
299 man pwd
300 man mkdir
301 man rmdir
302 man rm
303 history
[gislen@gislen ~]$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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