

# 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.

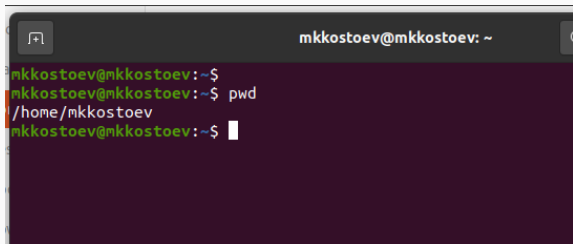
# Задачи лабораторной работы

- 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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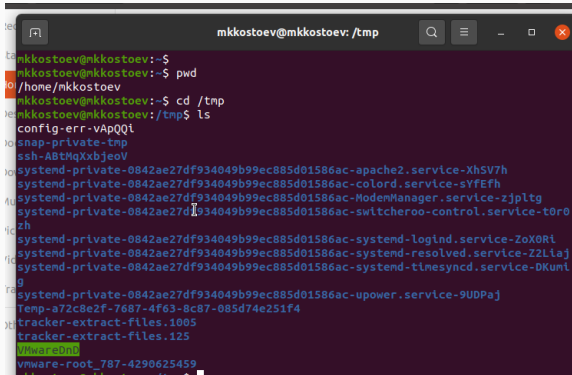
# Имя и путь к домашнему каталогу



```
mkkostoev@mkkostoev: ~  
mkkostoev@mkkostoev:~$  
mkkostoev@mkkostoev:~$ pwd  
/home/mkkostoev  
mkkostoev@mkkostoev:~$
```

Рис. 1: Путь к домашнему каталогу

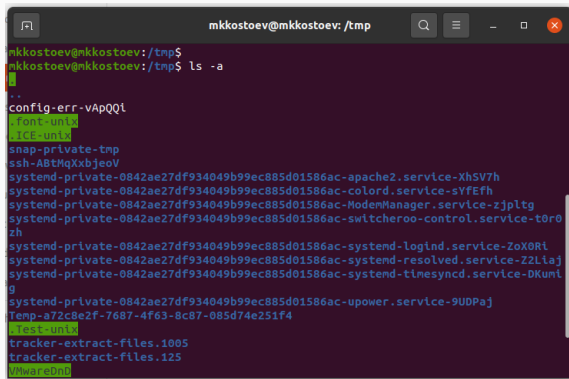
# Опции команды ls



```
mkkostoev@mkkostoev: /tmp
mkkostoev@mkkostoev:~$ pwd
/home/mkkostoev
mkkostoev@mkkostoev:~$ cd /tmp
mkkostoev@mkkostoev:/tmp$ ls
config-err-vApQQ1
snap-private-tmp
ssh-ABtMqXxbjeoV
systemd-private-0842ae27df934049b99ec885d01586ac-apache2.service-XhSV7h
systemd-private-0842ae27df934049b99ec885d01586ac-colord.service-sYfEfH
systemd-private-0842ae27df934049b99ec885d01586ac-ModemManager.service-zjpltg
systemd-private-0842ae27df934049b99ec885d01586ac-switcheroo-control.service-t0r0
zh
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-logind.service-ZoX0Ri
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-resolved.service-Z2Llaj
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-timesyncd.service-DKumi
g
systemd-private-0842ae27df934049b99ec885d01586ac-upower.service-9UD0Paj
Temp-a72c8e2f-7687-4f63-8c87-085d74e251f4
tracker-extract-files.1005
tracker-extract-files.125
VMwareDnD
vmware-root_787-4290625459
```

Рис. 2: Команда ls

# Опции команды ls

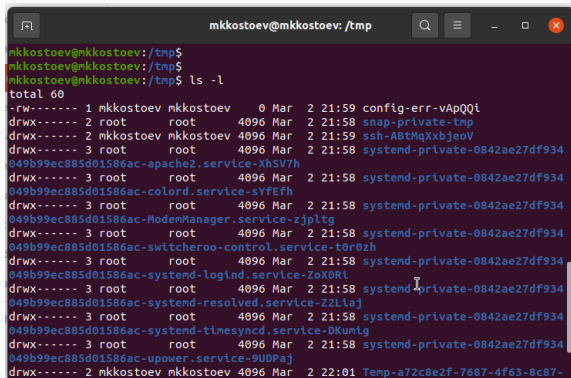
A terminal window with a dark purple background and light green text. The window title is 'mkkostoev@mkkostoev: /tmp'. The prompt is 'mkkostoev@mkkostoev: /tmp\$'. The command 'ls -a' has been entered, and the output is displayed. The output lists hidden files and directories, including '.config-err-vApQQi', '.font-unix', '.ICE-unix', 'snap-private-tmp', 'ssh-ABtMqXxbjeov', and several systemd-private directories with long names. It also shows 'g', 'Temp-a72c8e2f-7687-4f63-8c87-085d74e251f4', '.Test-unix', 'tracker-extract-files.1005', 'tracker-extract-files.125', and 'VMwareDnT'.

```
mkkostoev@mkkostoev: /tmp$  
mkkostoev@mkkostoev: /tmp$ ls -a  
.  
..  
config-err-vApQQi  
.font-unix  
.ICE-unix  
snap-private-tmp  
ssh-ABtMqXxbjeov  
systemd-private-0842ae27df934049b99ec885d01586ac-apache2.service-XhSV7h  
systemd-private-0842ae27df934049b99ec885d01586ac-colord.service-sYfEfH  
systemd-private-0842ae27df934049b99ec885d01586ac-ModemManager.service-zjpltg  
systemd-private-0842ae27df934049b99ec885d01586ac-switcheroo-control.service-t0r0  
zh  
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-logind.service-ZoX0Ri  
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-resolved.service-Z2Liaj  
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-timesyncd.service-DKumI  
g  
systemd-private-0842ae27df934049b99ec885d01586ac-upower.service-9UDPaJ  
Temp-a72c8e2f-7687-4f63-8c87-085d74e251f4  
.Test-unix  
tracker-extract-files.1005  
tracker-extract-files.125  
VMwareDnT
```

Рис. 3: Команда ls -a



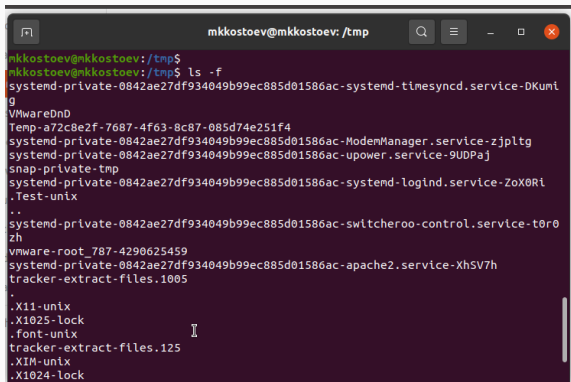
# Опции команды ls



```
mkkostoev@mkkostoev: /tmp
mkkostoev@mkkostoev: /tmp$
mkkostoev@mkkostoev: /tmp$ ls -l
total 60
-rw----- 1 mkkostoev mkkostoev  0 Mar  2 21:59 config-err-vApQqi
drwx----- 2 root      root      4096 Mar  2 21:58 snap-private-tmp
drwx----- 2 mkkostoev mkkostoev 4096 Mar  2 21:59 ssh-ABtMqXxbjeoV
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-apache2.service-XhSV7h
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-colord.service-sYFEfh
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-ModemManager.service-zjpltg
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-switcheroo-control.service-t0R0zh
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-systemd-logind.service-ZoX0Ri
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-systemd-resolved.service-Z2Liaj
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-systemd-timesyncd.service-DKumig
drwx----- 3 root      root      4096 Mar  2 21:58 systemd-private-0842ae27df934
049b99ec885d01586ac-upower.service-9UDPaJ
drwx----- 2 mkkostoev mkkostoev 4096 Mar  2 22:01 Temp-a72c8e2f-7687-4f63-8c87-
```

Рис. 4: Команда ls -l

# Опции команды ls

A terminal window with a dark purple background and white text. The window title is 'mkkostoev@mkkostoev: /tmp'. The prompt is 'mkkostoev@mkkostoev: /tmp\$'. The command 'ls -f' has been entered and executed. The output lists various files and directories, including systemd-private directories, VMWareDnD, Temp, ModemManager.service, upower.service, snap-private-tmp, logind.service, Test-unix, switcheroo-control.service, vmware-root, apache2.service, tracker-extract-files.1005, .X11-unix, .X1025-lock, .font-unix, tracker-extract-files.125, .XIM-unix, and .X1024-lock. A cursor is visible on the line '.font-unix'.

```
mkkostoev@mkkostoev: /tmp$  
mkkostoev@mkkostoev: /tmp$ ls -f  
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-timesyncd.service-DKuni  
g  
VMWareDnD  
Temp-a72c8e2f-7687-4f63-8c87-085d74e251f4  
systemd-private-0842ae27df934049b99ec885d01586ac-ModemManager.service-zjpltg  
systemd-private-0842ae27df934049b99ec885d01586ac-upower.service-9UDPaJ  
snap-private-tmp  
systemd-private-0842ae27df934049b99ec885d01586ac-systemd-logind.service-ZoX0Ri  
.Test-unix  
..  
systemd-private-0842ae27df934049b99ec885d01586ac-switcheroo-control.service-t0r0  
zh  
vmware-root_787-4290625459  
systemd-private-0842ae27df934049b99ec885d01586ac-apache2.service-XhSV7h  
tracker-extract-files.1005  
.  
.X11-unix  
.X1025-lock  
.font-unix  
tracker-extract-files.125  
.XIM-unix  
.X1024-lock
```

Рис. 5: Команда ls -f

```
mkkostoev@mkkostoev:/tmp$  
mkkostoev@mkkostoev:/tmp$ cd /var/spool/  
mkkostoev@mkkostoev:/var/spool$ ls  
anacron  cron  cups  libreoffice  mail  rsyslog  
mkkostoev@mkkostoev:/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  
mkkostoev@mkkostoev:/var/spool$
```

Рис. 6: Каталог /var/spool

```
mkkostoev@mkkostoev:~$ cd /var/spool$ ls
Desktop  Downloads  lab05  lab0.zip  Pictures  Templates  work
Documents lab04      lab06  Music    Public    Videos

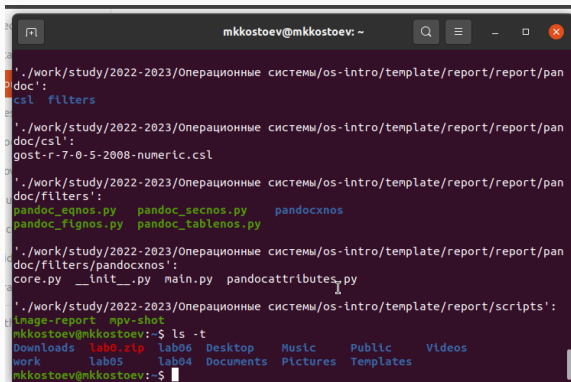
mkkostoev@mkkostoev:~$ ls -l
total 7340
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Desktop
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Documents
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Mar 2 22:01 Downloads
drwxrwxr-x 3 mkkostoev mkkostoev 4096 Jan 5 06:58 lab04
drwxrwxr-x 3 mkkostoev mkkostoev 4096 Jan 5 07:54 lab05
drwxrwxr-x 3 mkkostoev mkkostoev 4096 Jan 5 07:54 lab06
-rw-rw-r-- 1 mkkostoev mkkostoev 7464775 Jan 5 07:54 lab0.zip
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Music
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Pictures
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Public
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Templates
drwxr-xr-x 2 mkkostoev mkkostoev 4096 Jan 5 06:47 Videos
drwxrwxr-x 3 mkkostoev mkkostoev 4096 Mar 2 21:57 work
mkkostoev@mkkostoev:~$
```

Рис. 7: Файлы в домашнем каталоге

```
mkkostoev@mkkostoev:~$  
mkkostoev@mkkostoev:~$ mkdir newdir  
mkkostoev@mkkostoev:~$ mkdir newdir/morefun  
mkkostoev@mkkostoev:~$ mkdir letters memos misk  
mkkostoev@mkkostoev:~$ ls  
Desktop  Downloads  lab05  lab0.zip  memos  Music  Pictures  Templates  work  
Documents  lab04  lab06  letters  misk  newdir  Public  Videos  
mkkostoev@mkkostoev:~$ 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  
mkkostoev@mkkostoev:~$ rmdir letters/ memos/ misk/  
mkkostoev@mkkostoev:~$ rmdir newdir/  
rmdir: failed to remove 'newdir/': Directory not empty  
mkkostoev@mkkostoev:~$ rm -r newdir/  
mkkostoev@mkkostoev:~$ ls  
Desktop  Downloads  lab05  lab0.zip  Pictures  Templates  work  
Documents  lab04  lab06  Music  Public  Videos  
mkkostoev@mkkostoev:~$
```

Рис. 8: Действия с каталогами

# Опции команды ls



```
mkkostoev@mkkostoev: ~  
'./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_flgno.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/report/scripts':  
image-report mpv-shot  
mkkostoev@mkkostoev:~$ ls -t  
Downloads lab0.zip lab06 Desktop Music Public Videos  
work lab05 lab04 Documents Pictures Templates  
mkkostoev@mkkostoev:~$
```

Рис. 9: Команда ls -R и ls -t

```
work 10003 10004 documents pictures templates
mkkostoev@mkkostoev:~$ 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.

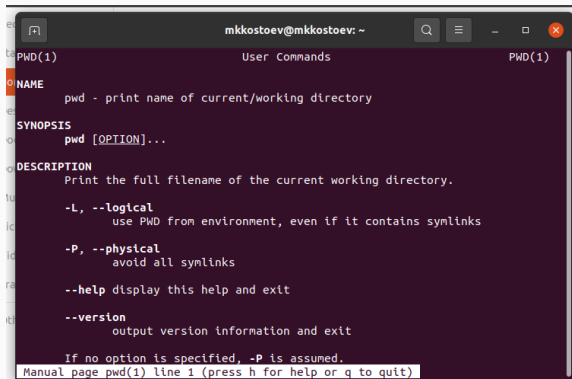
    The variable CDPATH defines the search path for the directory containing
    DIR.  Alternative directory names in CDPATH are separated by a colon (:).
    A null directory name is the same as the current directory.  If DIR begins
    with a slash (/), then CDPATH is not used.

    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
```

Рис. 10: Справка по команде cd

# Справка по командам



```
mkkostoev@mkkostoev: ~
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

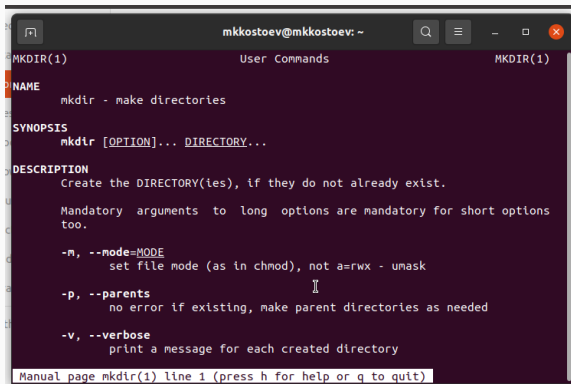
    --help display this help and exit

    --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





```
mkkostoev@mkkostoev: ~
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.

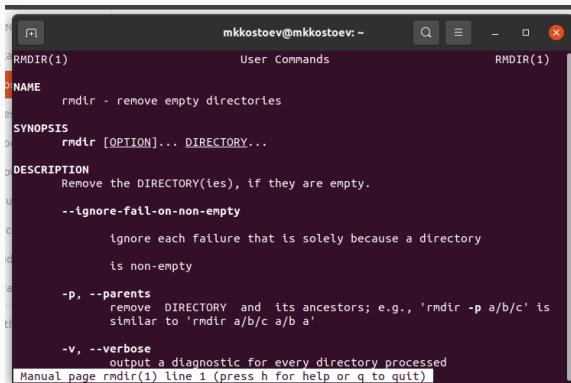
    -m, --mode=MODE
        set file mode (as in chmod), not a=rwx - umask

    -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



```
mkkostoev@mkkostoev: ~
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

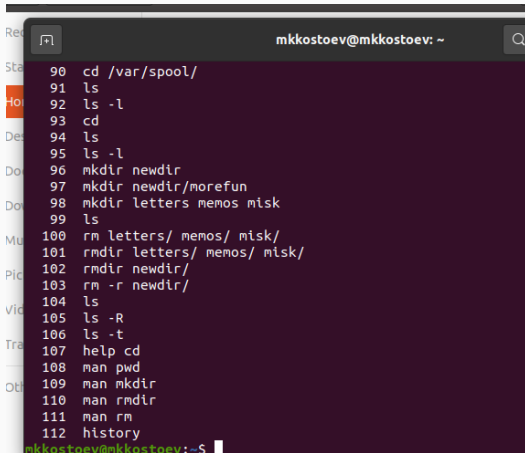
# Справка по командам



```
mkkostoev@mkkostoev: ~  
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 window title is 'mkkostoev@mkkostoev: ~'. On the left side, there is a vertical list of file names: 'Rec', 'Sta', 'Ho', 'De', 'Do', 'Do', 'Mu', 'Pic', 'Vic', 'Tra', 'Oti'. The terminal shows a sequence of commands numbered 90 to 112. Command 112 is 'history', which displays the list of commands from 90 to 112. The prompt 'mkkostoev@mkkostoev:~\$' is visible at the bottom.

```
mkkostoev@mkkostoev: ~  
90 cd /var/spool/  
91 ls  
92 ls -l  
93 cd  
94 ls  
95 ls -l  
96 mkdir newdir  
97 mkdir newdir/morefun  
98 mkdir letters memos misk  
99 ls  
100 rm letters/ memos/ misk/  
101 rmdir letters/ memos/ misk/  
102 rmdir newdir/  
103 rm -r newdir/  
104 ls  
105 ls -R  
106 ls -t  
107 help cd  
108 man pwd  
109 man mkdir  
110 man rmdir  
111 man rm  
112 history  
mkkostoev@mkkostoev:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

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