

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

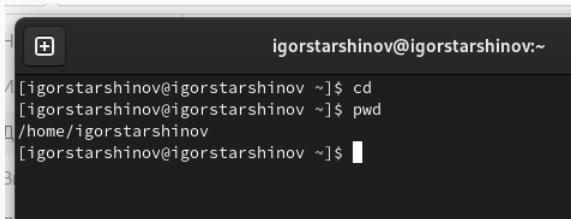
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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 background. The title bar shows a plus icon and the text "igorstarshinov@igorstarshinov:~". The terminal content shows a sequence of commands and their outputs: "cd" is entered, followed by "pwd", which outputs "/home/igorstarshinov". The prompt returns to the shell.

```
igorstarshinov@igorstarshinov:~  
[igorstarshinov@igorstarshinov ~]$ cd  
[igorstarshinov@igorstarshinov ~]$ pwd  
/home/igorstarshinov  
[igorstarshinov@igorstarshinov ~]$
```

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
[igorstarshinov@igorstarshinov ~]$ cd /tmp
[igorstarshinov@igorstarshinov tmp]$ ls
systemd-private-89b0ddc5f006450cb145d86a41e34925-chronyd.service-Z1CYm0
systemd-private-89b0ddc5f006450cb145d86a41e34925-colord.service-8yuaLU
systemd-private-89b0ddc5f006450cb145d86a41e34925-dbus-broker.service-j5UZog
systemd-private-89b0ddc5f006450cb145d86a41e34925-low-memory-monitor.service-o2JuX0
systemd-private-89b0ddc5f006450cb145d86a41e34925-ModemManager.service-NdrcJC
systemd-private-89b0ddc5f006450cb145d86a41e34925-power-profiles-daemon.service-H3bx0u
systemd-private-89b0ddc5f006450cb145d86a41e34925-rtkit-daemon.service-0LWkQ9
systemd-private-89b0ddc5f006450cb145d86a41e34925-switcheroo-control.service-eJ7714
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-logind.service-YatgtR
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-oond.service-BvDRn2
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-resolved.service-H10ng4
```

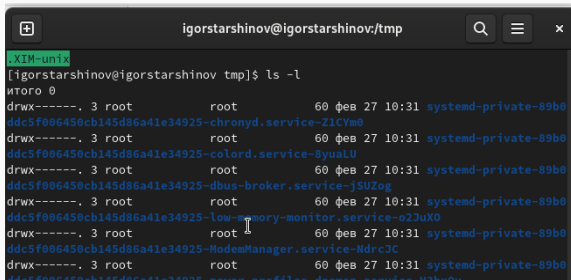
Рис. 2: Команда ls

Опции команды ls

```
[igorstarshinov@igorstarshinov tmp]$ ls -la
total 12
drwxr-xr-x 2 igorstarshinov igorstarshinov 4096 Aug 11 12:54 .
drwxr-xr-x 1 igorstarshinov igorstarshinov 4096 Aug 11 12:54 ..
-rw-r--r-- 1 igorstarshinov igorstarshinov  100 Aug 11 12:54 .font-unix
-rw-r--r-- 1 igorstarshinov igorstarshinov  100 Aug 11 12:54 .ICE-unix
systemd-private-89b0ddc5f006450cb145d86a41e34925-chrond.service-Z1CYm0
systemd-private-89b0ddc5f006450cb145d86a41e34925-colord.service-8yuaLU
systemd-private-89b0ddc5f006450cb145d86a41e34925-dbus-broker.service-jSUZog
systemd-private-89b0ddc5f006450cb145d86a41e34925-low-memory-monitor.service-o2JuxO
systemd-private-89b0ddc5f006450cb145d86a41e34925-ModemManager.service-NdrcJC
systemd-private-89b0ddc5f006450cb145d86a41e34925-power-profiles-daemon.service-H3bx0u
systemd-private-89b0ddc5f006450cb145d86a41e34925-rtkit-daemon.service-0LWkQ9
systemd-private-89b0ddc5f006450cb145d86a41e34925-switcheroo-control.service-eJ7714
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-logind.service-YatgTR
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-oomd.service-BvDRn2
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-resolved.service-H10ng4
systemd-private-89b0ddc5f006450cb145d86a41e34925-upower.service-I47cBV
tmp-8276f414-125d-4a70-82f5-bdca2e41a7d1
```

Рис. 3: Команда ls -a

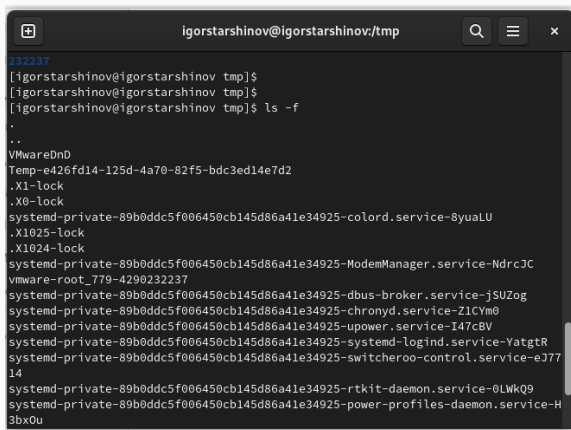
Опции команды ls



```
igorstarshinov@igorstarshinov/tmp
.XIM-unix
[igorstarshinov@igorstarshinov tmp]$ ls -l
итого 0
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-chrond.service-Z1CYm0
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-colord.service-8yuaLU
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-dbus-broker.service-jSUZog
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-low-memory-monitor.service-o2JuX0
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-ModemManager.service-NdrcJC
drwx-----, 3 root      root      60 фев 27 10:31 systemd-private-89b0
ddc5f006450cb145d86a41e34925-power-profiles-daemon.service-H3bu0u
```

Рис. 4: Команда ls -l

Опции команды ls

A terminal window with a dark background and light text. The title bar shows the user 'igorstarshinov' and the current directory 'igorstarshinov/tmp'. The terminal shows the execution of the 'ls -f' command, listing various files and directories including 'VMwareDnD', 'Temp-e426fd14-125d-4a70-82f5-bdc3ed14e7d2', and several systemd service files. The output is wrapped across multiple lines.

```
igorstarshinov@igorstarshinov/tmp
232237
[igorstarshinov@igorstarshinov tmp]$
[igorstarshinov@igorstarshinov tmp]$
[igorstarshinov@igorstarshinov tmp]$ ls -f
.
..
VMwareDnD
Temp-e426fd14-125d-4a70-82f5-bdc3ed14e7d2
.X1-lock
.X0-lock
systemd-private-89b0ddc5f006450cb145d86a41e34925-colord.service-8yuaLU
.X1025-lock
.X1024-lock
systemd-private-89b0ddc5f006450cb145d86a41e34925-ModemManager.service-NdrcJC
vmware-root_779-4290232237
systemd-private-89b0ddc5f006450cb145d86a41e34925-dbus-broker.service-jSUZog
systemd-private-89b0ddc5f006450cb145d86a41e34925-chronyd.service-Z1CYm0
systemd-private-89b0ddc5f006450cb145d86a41e34925-upower.service-I47cBV
systemd-private-89b0ddc5f006450cb145d86a41e34925-systemd-logind.service-YatgtR
systemd-private-89b0ddc5f006450cb145d86a41e34925-switcheroo-control.service-eJ77
14
systemd-private-89b0ddc5f006450cb145d86a41e34925-rtkit-daemon.service-0LWkQ9
systemd-private-89b0ddc5f006450cb145d86a41e34925-power-profiles-daemon.service-H
3bxOu
```

Рис. 5: Команда ls -f

```

[igorstarshinov@igorstarshinov tmp]$ cd /var/spool
[igorstarshinov@igorstarshinov spool]$ ls
abrt  abrt-upload  cups  lpd  mail  plymouth
[igorstarshinov@igorstarshinov 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
[igorstarshinov@igorstarshinov spool]$
```

Рис. 6: Каталог /var/spool

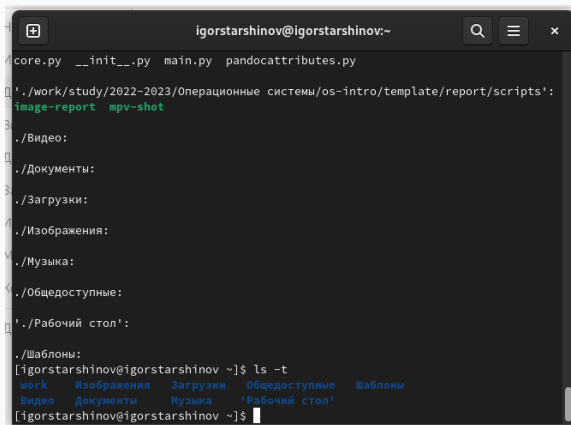
```
[igorstarshinov@igorstarshinov spool]$  
[igorstarshinov@igorstarshinov spool]$ cd  
[igorstarshinov@igorstarshinov ~]$ ls  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка  'Рабочий стол'  
[igorstarshinov@igorstarshinov ~]$ ls -al  
итого 24  
drwx-----. 1 igorstarshinov igorstarshinov 498 фев 13 12:52 .  
drwxr-xr-x. 1 root root 904 фев 24 11:56 ..  
-rw-----. 1 igorstarshinov igorstarshinov 5642 фев 27 10:30 .bash_history  
-rw-r--r--. 1 igorstarshinov igorstarshinov 18 окт 11 17:45 .bash_logout  
-rw-r--r--. 1 igorstarshinov igorstarshinov 141 окт 11 17:45 .bash_profile  
-rw-r--r--. 1 igorstarshinov igorstarshinov 492 окт 11 17:45 .bashrc  
drwx-----. 1 igorstarshinov igorstarshinov 402 фев 13 13:04 .cache  
drwx-----. 1 igorstarshinov igorstarshinov 334 фев 13 12:56 .config  
-rw-r--r--. 1 igorstarshinov igorstarshinov 237 фев 13 12:52 .gitconfig  
drwx-----. 1 igorstarshinov igorstarshinov 134 фев 20 11:15 .gnupg  
drwx-----. 1 igorstarshinov igorstarshinov 26 фев 13 13:04 .local  
drwxr-xr-x. 1 igorstarshinov igorstarshinov 48 фев 13 12:54 .maildir
```

Рис. 7: Файлы в домашнем каталоге

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

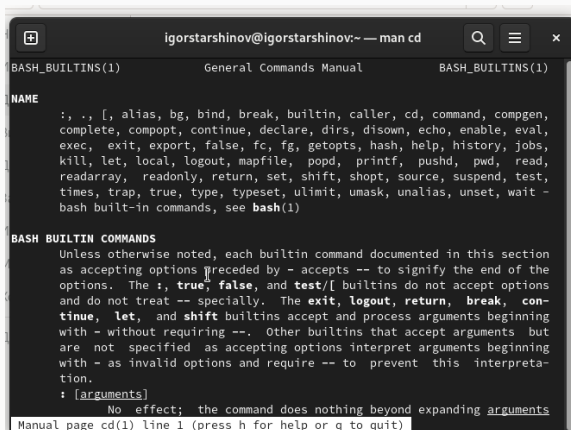
Рис. 8: Действия с каталогами

Опции команды ls



```
igorstarshinov@igorstarshinov:~  
core.py __init__.py main.py pandocattributes.py  
./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':  
image-report mpv-shot  
./Видео:  
./Документы:  
./Загрузки:  
./Изображения:  
./Музыка:  
./Общедоступные:  
./Рабочий стол':  
./Шаблоны:  
[igorstarshinov@igorstarshinov ~]$ ls -t  
work      Изображения  Загрузки    Общедоступные  Шаблоны  
Видео     Документы    Музыка      'Рабочий стол'  
[igorstarshinov@igorstarshinov ~]$
```

Рис. 9: Команда ls -R и ls -t



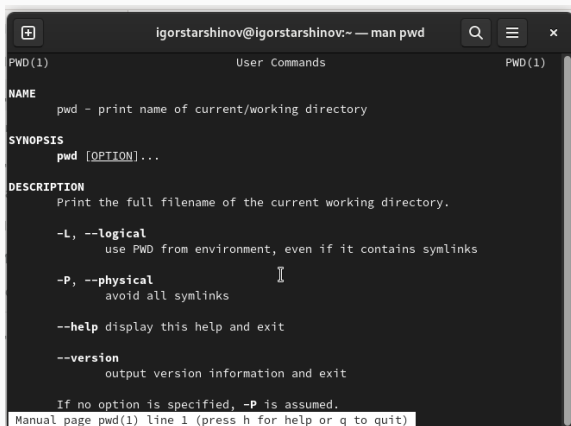
```
igorstarshinov@igorstarshinov:~ — man cd
BASH_BUILTINS(1)      General Commands Manual      BASH_BUILTINS(1)

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, con-
tinue, 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 interpreta-
tion.
: [arguments]
    No effect; the command does nothing beyond expanding arguments
Manual page cd(1) line 1 (press h for help or q to quit)
```

Рис. 10: Справка по команде cd

Справка по командам



```
igorstarshinov@igorstarshinov:~ — 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

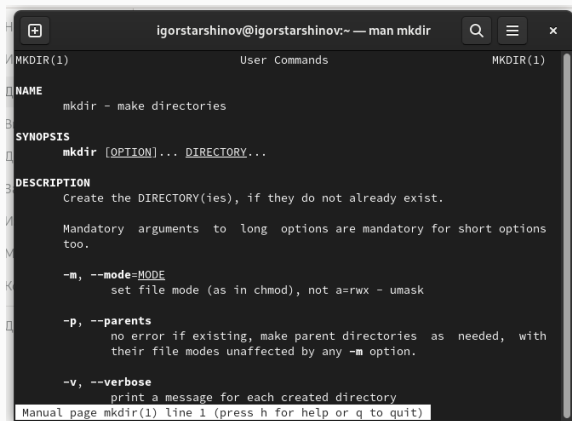
    --version
        output version information and exit

    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



The screenshot shows a terminal window with the title bar "igorstarshinov@igorstarshinov:~ — man mkdir". The window displays the manual page for the "mkdir" command. The content is as follows:

```
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.

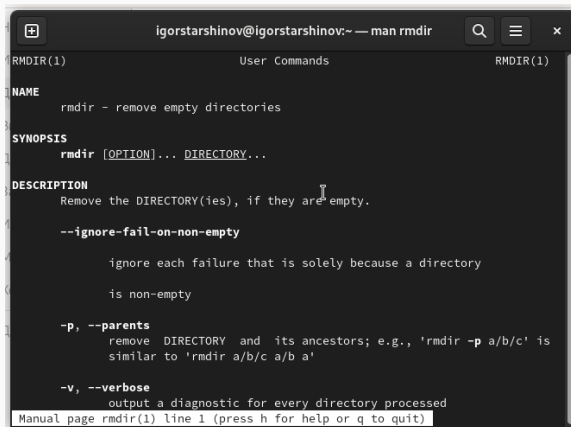
    -m, --mode=MODE
        set file mode (as in chmod), not a=rwx - umask

    -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



```
igorstarshinov@igorstarshinov:~ — 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.

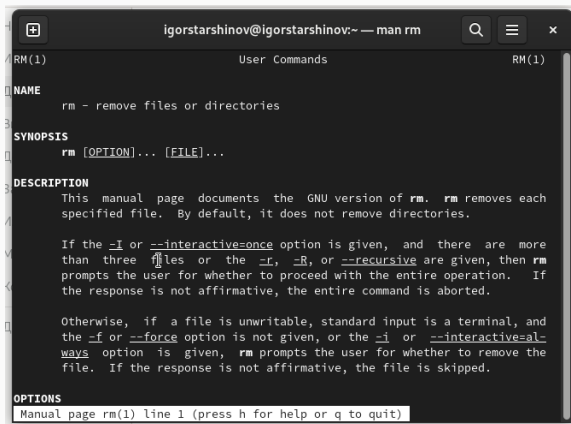
    --ignore-fail-on-non-empty
        ignore each failure that is solely because a directory
        is non-empty

    -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



```
igorstarshinov@igorstarshinov:~ — 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.

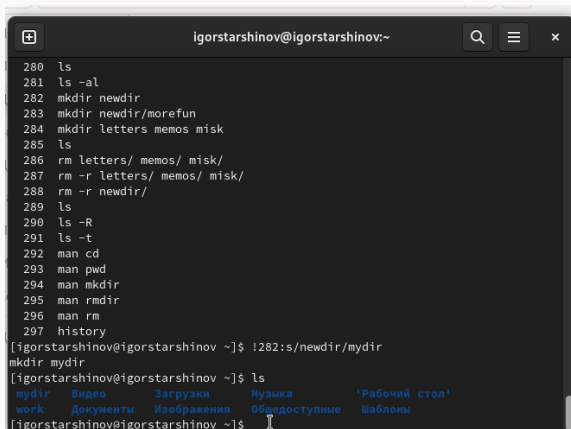
    If the -i or --interactive=once option is given, and there are more
    than three files or the -r, -R, or --recursive are given, then rm
    prompts the user for whether to proceed with the entire operation. If
    the response is not affirmative, the entire command is aborted.

    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=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 screenshot of a terminal window titled 'igorstarshinov@igorstarshinov:~'. The terminal displays a list of commands and their outputs, numbered from 280 to 297. The commands include 'ls', 'ls -al', 'mkdir newdir', 'mkdir newdir/morefun', 'mkdir letters memos misk', 'rm letters/ memos/ misk/', 'rm -r letters/ memos/ misk/', 'rm -r newdir/', 'ls', 'ls -R', 'ls -t', 'man cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. The output of the 'history' command shows the previous commands in a numbered list. The terminal window has a dark background and a light-colored text. The title bar shows the user's name and the current directory. There are also search, menu, and close buttons in the title bar.

```
280 ls
281 ls -al
282 mkdir newdir
283 mkdir newdir/morefun
284 mkdir letters memos misk
285 ls
286 rm letters/ memos/ misk/
287 rm -r letters/ memos/ misk/
288 rm -r newdir/
289 ls
290 ls -R
291 ls -t
292 man cd
293 man pwd
294 man mkdir
295 man rmdir
296 man rm
297 history
[igorstarshinov@igorstarshinov ~]$ !282:s/newdir/mydir
mkdir mydir
[igorstarshinov@igorstarshinov ~]$ ls
mydir  Видео  Загрузки  Музыка  'Рабочий стол'
work   Документы  Изображения  Общедоступные  Шаблоны
[igorstarshinov@igorstarshinov ~]$
```

Рис. 15: Команда history

Выводы по проделанной работе

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