

# 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



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

Рис. 1: Путь к домашнему каталогу

# Опции команды ls

```
nsplugin@nsplugin:~$ cd /tmp
nsplugin@nsplugin:/tmp$ ls
dbus-cE0LBfkG
dbus-IQuMGT6A
systemd-private-39ec87e129bc41fe80d1c09d5934237a-chronyd.service-LNXRaK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-colord.service-cMLtEK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-dbus-broker.service-pnyu4n
systemd-private-39ec87e129bc41fe80d1c09d5934237a-fwupd.service-AjxB0y
systemd-private-39ec87e129bc41fe80d1c09d5934237a-low-memory-monitor.service-YlEgI
systemd-private-39ec87e129bc41fe80d1c09d5934237a-ModemManager.service-ulKvII
systemd-private-39ec87e129bc41fe80d1c09d5934237a-polkit.service-49nx7m
systemd-private-39ec87e129bc41fe80d1c09d5934237a-power-profiles-daemon.service-8hVnRB
systemd-private-39ec87e129bc41fe80d1c09d5934237a-rtkit-daemon.service-vVg4Pf
systemd-private-39ec87e129bc41fe80d1c09d5934237a-switcheroo-control.service-QIcGTK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-logind.service-RkubLP
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-oond.service-rmzEB
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-resolved.service-46EpBp
systemd-private-39ec87e129bc41fe80d1c09d5934237a-upower.service-aSHWAn
vmware-root_869-3988752897
nsplugin@nsplugin:/tmp$
```

Рис. 2: Команда ls

# Опции команды ls

```
nsplugin@nsplugin:/tmp$ ls -la
..
dbus-cE0LBfKG
dbus-IQuMGt6A
.font-unix
.ICE-unix
systemd-private-39ec87e129bc41fe80d1c09d5934237a-chrond.service-LMXRaK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-colord.service-cMLtEK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-dbus-broker.service-pnyu4n
systemd-private-39ec87e129bc41fe80d1c09d5934237a-fwupd.service-Ajx80y
systemd-private-39ec87e129bc41fe80d1c09d5934237a-low-memory-monitor.service-YisEgI
systemd-private-39ec87e129bc41fe80d1c09d5934237a-ModemManager.service-uLkVII
systemd-private-39ec87e129bc41fe80d1c09d5934237a-polkit.service-49nx7m
systemd-private-39ec87e129bc41fe80d1c09d5934237a-power-profiles-daemon.service-8hVnRB
systemd-private-39ec87e129bc41fe80d1c09d5934237a-rtkit-daemon.service-vVg4Pf
systemd-private-39ec87e129bc41fe80d1c09d5934237a-switcheroo-control.service-QIC6Tk
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-logind.service-RkubLP
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-oond.service-rmyzEB
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-resolved.service-46Ep8p
systemd-private-39ec87e129bc41fe80d1c09d5934237a-upower.service-a5MwAn
vmware-root_869-3988752892
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
nsplugin@nsplugin:/tmp$
```

Рис. 3: Команда ls -la



# Опции команды ls

```
nspugin@nspugin:/tmp$ ls -l
итого 0
srw-rw-rw-. 1 root root 0 map 7 15:38 dbus-cE0LBfKQ
srw-rw-rw-. 1 root root 0 map 7 15:38 dbus-IQuMGt6A
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-chronyd.s
ervice-LNXRaK
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-color.d.se
rvice-cMLTEK
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-dbus-brok
er.service-pnyu4n
drwx-----, 3 root root 60 map 7 15:42 systemd-private-39ec87e129bc41fe86d1c09d5934237a-fwupd.ser
vice-AjxB8y
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-low-memor
y-monitor.service-VlsEgI
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-ModemMana
ger.service-ulkVII
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-polkit.se
rvice-49nx7w
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-power-pro
files-daemon.service-8hVnRB
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-rtkit-dae
mon.service-vVg4Pf
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-switchero
e-control.service-QlC6TK
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-systemd-l
ogind.service-RkubLP
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-systemd-o
mond.service-rmyzEB
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-systemd-r
esolved.service-46Ep8p
drwx-----, 3 root root 60 map 7 15:38 systemd-private-39ec87e129bc41fe86d1c09d5934237a-upower.se
rvice-a5HMAN
drwx-----, 2 root root 40 map 7 15:38 vmware-root_869-3988752892
nspugin@nspugin:/tmp$
```

Рис. 4: Команда ls -l

# Опции команды ls

```
nsplugin@nsplugin:/tmp$ ls -f
..
systemd-private-39ec87e129bc41fe80d1c09d5934237a-fwupd.service-Ajx80y
.X1-lock
.X0-lock
systemd-private-39ec87e129bc41fe80d1c09d5934237a-colord.service-cMLtEK
.X1025-lock
.X1024-lock
dbus-cE0LBfkG
dbus-IQuMGt6A
systemd-private-39ec87e129bc41fe80d1c09d5934237a-ModemManager.service-uLkVII
vmware-root_869-3988752892
systemd-private-39ec87e129bc41fe80d1c09d5934237a-upower.service-aSMWAn
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-logind.service-RkubLP
systemd-private-39ec87e129bc41fe80d1c09d5934237a-switcheroo-control.service-QIcGTK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-rtkit-daemon.service-vVg4Pf
systemd-private-39ec87e129bc41fe80d1c09d5934237a-power-profiles-daemon.service-8HvNRB
systemd-private-39ec87e129bc41fe80d1c09d5934237a-polkit.service-49nx7m
systemd-private-39ec87e129bc41fe80d1c09d5934237a-low-memory-monitor.service-YlEgI
systemd-private-39ec87e129bc41fe80d1c09d5934237a-chrond.service-LNXRaK
systemd-private-39ec87e129bc41fe80d1c09d5934237a-dbus-broker.service-pnyu4n
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-resolved.service-46EpBp
systemd-private-39ec87e129bc41fe80d1c09d5934237a-systemd-oomd.service-rmyzEB
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
nsplugin@nsplugin:/tmp$
```

Рис. 5: Команда ls -f

```
nsplugin@nsplugin:/tmp$ cd /var/spool
nsplugin@nsplugin:/var/spool$ ls -al
итого 0
drwxr-xr-x. 1 root root 68 ноя 1 04:09 .
drwxr-xr-x. 1 root root 200 ноя 1 04:15 ..
drwxr-x--x. 1 root abrt 1438 мар 7 15:37 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
nsplugin@nsplugin:/var/spool$
```

Рис. 6: Каталог /var/spool

# Домашний каталог

```
nsplugin@nsplugin:/var/spool$ cd
nsplugin@nsplugin:~$ ls
git-extended  Видео      Загрузки    Музыка      'Рабочий стол'
work          Документы  Изображения Общедоступные Шаблоны
nsplugin@nsplugin:~$ ls -al
итого 20
drwx-----. 1 nsplugin nsplugin 498 мар 1 23:50 .
drwxr-xr-x. 1 root root 1172 мар 6 14:27 ..
-rw-----. 1 nsplugin nsplugin 1725 мар 2 00:04 .bash_history
-rw-r--r--. 1 nsplugin nsplugin 18 июл 19 2023 .bash_logout
-rw-r--r--. 1 nsplugin nsplugin 144 июл 19 2023 .bash_profile
-rw-r--r--. 1 nsplugin nsplugin 678 мар 1 23:48 .bashrc
drwx-----. 1 nsplugin nsplugin 418 мар 1 23:52 .cache
drwx-----. 1 nsplugin nsplugin 424 мар 1 23:51 .config
-rw-r--r--. 1 nsplugin nsplugin 237 фев 26 13:14 .gitconfig
drwxr-xr-x. 1 nsplugin nsplugin 74 мар 1 23:58 git-extended
drwx-----. 1 nsplugin nsplugin 136 фев 12 10:10 .gnupg
drwx-----. 1 nsplugin nsplugin 20 фев 11 13:41 .local
drwxr-xr-x. 1 nsplugin nsplugin 48 фев 11 13:42 .mozilla
drwx-----. 1 nsplugin nsplugin 132 фев 11 14:03 .ssh
drwxr-xr-x. 1 nsplugin nsplugin 10 фев 11 14:02 work
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Видео
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Документы
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Загрузки
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Изображения
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Музыка
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Общедоступные
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 'Рабочий стол'
drwxr-xr-x. 1 nsplugin nsplugin 0 фев 11 13:41 Шаблоны
nsplugin@nsplugin:~$
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

# Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandoc
xnos':
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:

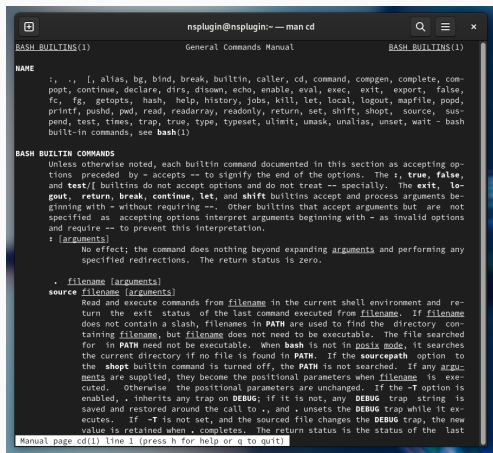
./Общедоступные:

./Рабочий стол':

./Шаблоны:
nsplugin@nsplugin:~$ ls -lt
git-extended Видео Загрузки Музыка 'Рабочий стол'
work Документы Изображения Общедоступные Шаблоны
nsplugin@nsplugin:~$
```

Рис. 9: Команда ls -R и ls -t

# Справка по командам



```
nsplugin@nsplugin:~ -- man cd
BASH_BUILTINS(1) General Commands Manual BASH_BUILTINS(1)

NAME
:, ., [, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, com-
popt, 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, sus-
pend, test, times, trap, true, type, typeset, ulimit, umask, unalias, unset, wait - bash
builtin commands, see bash(1)

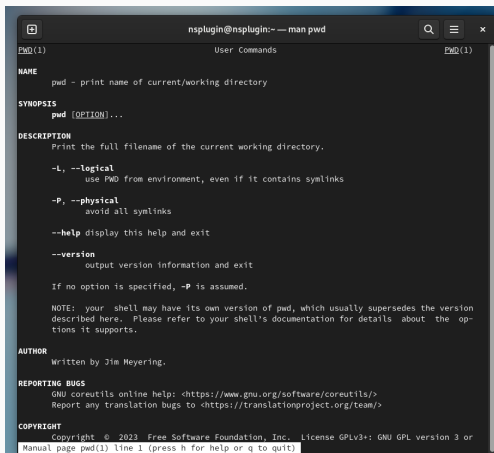
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting op-
tions preceded by - accepts -- to signify the end of the options. The :, true, false,
and test/[ builtins do not accept options and do not treat -- specially. The exit, lo-
gout, return, break, continue, let, and shift builtins accept and process arguments be-
ginning 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 re-
    turn 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 con-
    taining 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 argu-
    ments are supplied, they become the positional parameters when filename is exe-
    cuted. 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 exe-
    cutes. If -T is not set, and the sourced file changes the DEBUG trap, the new
    value is retained when . completes. The return status is the status of the last
    Manual page cd(1) line 1 (press h for help or q to quit)
```

Рис. 10: Справка по команде cd

# Справка по командам



```
nsplugin@nsplugin:~ — 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.

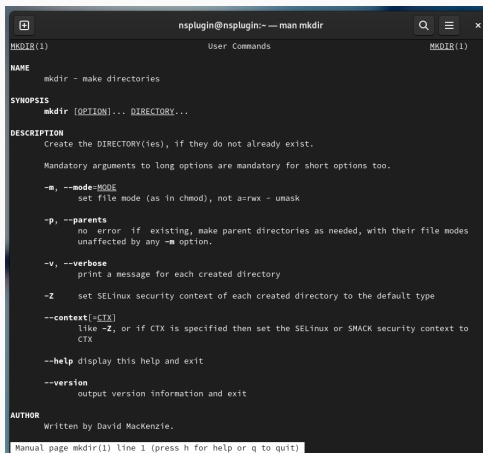
AUTHOR
  Written by Jim Meyering.

REPORTING BUGS
  GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
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  Manual page pwd(1) line 1 (press h for help or q to quit)
```

Рис. 11: Справка по команде pwd





```
nsplugin@nsplugin:~ -- man mkdir
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

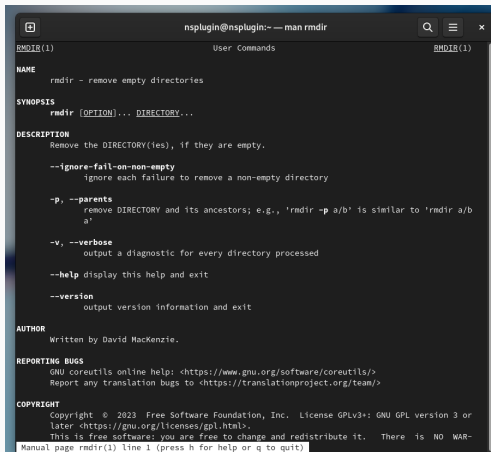
  --help
      display this help and exit

  --version
      output version information and exit

AUTHOR
  Written by David MacKenzie.

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

Рис. 12: Справка по команде mkdir



```
nsplugin@nsplugin:~ — 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

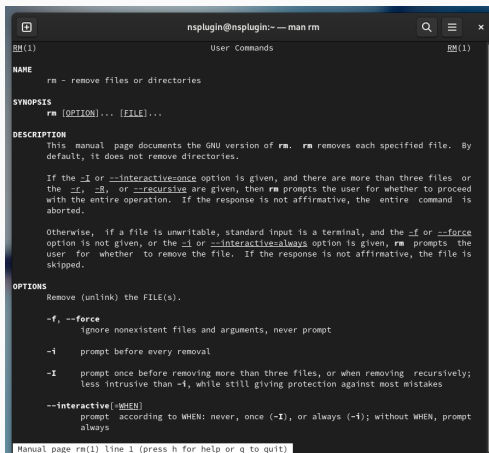
  --version
      output version information and exit

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/>

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

Рис. 13: Справка по команде rmdir



```
nsplugin@nsplugin:~ — 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, -B, 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[=WHEN]
    prompt according to WHEN: never, once (-I), or always (-i); without WHEN, prompt always

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

Рис. 14: Справка по команде rm

# История командной строки

```
97  ls
98  ls -al
99  mkdir newdir
100 mkdir newdir/morefun
101 mkdir letters memos misk
102 ls
103 rm letters/ memos/ misk/
104 rm -r letters/ memos/ misk/
105 ls
106 rm -r newdir/
107 ls
108 ls -R
109 ls -t
110 man cd
111 ,am pwd
112 man pwd
113 man mkdir
114 man rmdir
115 man rm
116 history
nsplugin@nsplugin:~$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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