

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Мерген Овезов¹

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¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

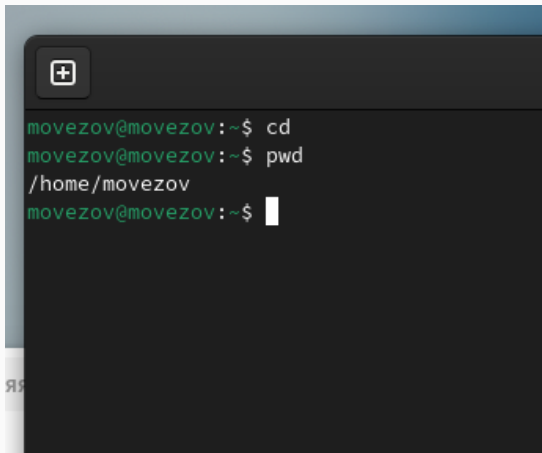
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

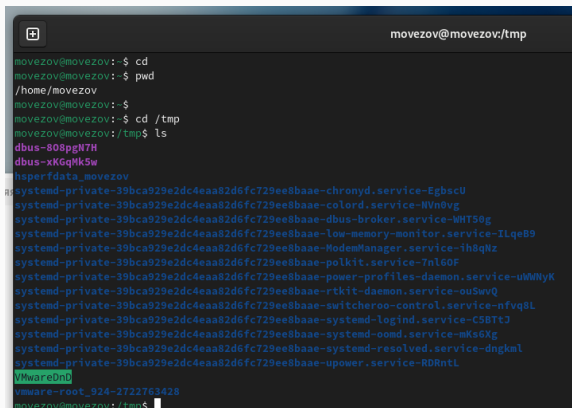


```
movezov@movezov:~$ cd
movezov@movezov:~$ pwd
/home/movezov
movezov@movezov:~$
```

A terminal window with a dark background and a light blue title bar. The window contains a terminal session where the user 'movezov' runs the 'cd' command, then the 'pwd' command, which outputs '/home/movezov'. The prompt returns to '~\$'.

Рис. 1: Путь к домашнему каталогу

Опции команды ls



```
movezov@movezov:tmp
movezov@movezov:~$ cd
movezov@movezov:~$ pwd
/home/movezov
movezov@movezov:~$ cd /tmp
movezov@movezov:/tmp$ ls
dbus-808pgN7H
dbus-xKGqMk5w
hsperfdata_movezov
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-chrond.service-EgbsCU
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-colord.service-NVn0vg
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-dbus-broker.service-WHT50g
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-low-memory-monitor.service-ILqeB9
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-ModemManager.service-ih8qNz
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-polkit.service-7nl60F
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-power-profiles-daemon.service-uWwNyK
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-rtkit-daemon.service-ouSvvQ
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-switcheroo-control.service-nfvq8L
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-logind.service-CS8TtJ
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-oond.service-mKs6Xg
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-resolved.service-dngkml
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-upower.service-RDRnTL
VMwareDnD
vmware-root_924-2722763428
movezov@movezov:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
movezov@movezov:~/tmp$ ls -a
.
..
dbus-808pgN7H
dbus-xKGqMk5w
.font-unix
hsperfdata_movezov
.ICE-unix
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-chronyd.service-EgbsCU
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-colord.service-NVn8vg
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-dbus-broker.service-WHT50g
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-low-memory-monitor.service-ILqeB9
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-ModemManager.service-ih8qNz
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-polkit.service-7nl6OF
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-power-profiles-daemon.service-uWwHlyk
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-rtkit-daemon.service-ouSwvQ
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-swlcheroo-control.service-nfvq8L
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-systemd-logind.service-C5BTtJ
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-systemd-oomd.service-mKs6Xg
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-systemd-resolved.service-dngkml
systemd-private-39bca929e2dc4aaa82d6fc729ee8baae-upower.service-RDRntL
VMwareDn0
vmware-root_924-2722763428
.X0-lock
.X1024-lock
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
movezov@movezov:~/tmp$
```

Рис. 3: Команда ls -a

Опции команды ls

```
movezov@movezov:/tmp$ ls -l
итого 0
srwxrwxrwx. 1 root root 0 апр 29 08:59 dbus-808pgNTH
srwxrwxrwx. 1 root root 0 апр 29 08:59 dbus-xKg9pkSw
drwxr-xr-x. 2 movezov movezov 40 апр 29 09:25 .asperfdata_movezov
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-chrond.service-egbacU
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-colord.service-BuNdyg
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-dbus-broker.service-WHT5ag
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-lvm-monitor.service-ILqeB9
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-ModemManager.service-lhQqHz
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-polkit.service-7nL6Of
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-power-profiles-daemon.service-uWwYk
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-rtkit-daemon.service-ou5eQd
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-switcheroo-control.service-nfuqLl
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-systemd-logind.service-CS8T3j
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-systemd-oomd.service-wS6Xg
drwx-----. 3 root root 60 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-systemd-resolved.service-dng8nl
drwxrwxrwt. 2 movezov movezov 280 апр 29 10:00 [Mounted]
drwx-----. 2 root root 40 апр 29 08:59 systemd-private-39bca929e2dc4aaa2d6fc729ee8base-upower.service-RD8nti
movezov@movezov:/tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
movezov@movezov:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-oond.service-mKs6Xg
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-resolved.service-dngkml
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-dbus-broker.service-WHT50g
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-chronyd.service-EgbscU
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-low-memory-monitor.service-ILqeB9
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-polkit.service-7nl60F
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-power-profiles-daemon.service-uWWNyK
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-rtkit-daemon.service-ouSwvQ
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-switcheroo-control.service-nfvq8L
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-systemd-logind.service-C5BTtJ
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-upower.service-RDRntL
vmware-root_924-2722763428
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-ModemManager.service-ih8qNz
dbus-808pgN7H
dbus-xKGqMk5w
.X1024-lock
.X1025-lock
systemd-private-39bca929e2dc4eaa82d6fc729ee8baae-colord.service-NVn0vg
.X0-lock
.X1-lock
VMwareDnD
hspcrdata_movezov
movezov@movezov:/tmp$
```

Рис. 5: Команда ls -f

```
movezov@movezov: /tmp$  
movezov@movezov: /tmp$ cd /var/spool  
movezov@movezov: /var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1580 авг 28 18:09 abrt  
drwx-----. 1 abrt abrt  0 июл 19 2023 abrt-upload  
drwx--x---. 1 root lp      6 фев 16 2024 cups  
drwxr-xr-x. 1 root root    0 июл 21 2023 lpd  
drwxrwxr-x. 1 root mail  574 авг 29 08:58 mail  
drwxr-xr-x. 1 root root    0 июл 21 2023 plymouth  
movezov@movezov: /var/spool$
```

Рис. 6: Каталог /var/spool

```
movezov@movezov: /var/spool$
movezov@movezov: /var/spool$ cd
movezov@movezov: $ ls
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
movezov@movezov: $ ls -al
итого 24
drwx-----, 1 movezov movezov 510 авг 29 09:47 .
drwxr-xr-x, 1 root root 560 авг 29 08:58 ..
-rw-----, 1 movezov movezov 2791 авг 29 18:19 .bash_history
-rw-r--r--, 1 movezov movezov 18 янв 22 2024 .bash_logout
-rw-r--r--, 1 movezov movezov 144 янв 22 2024 .bash_profile
-rw-r--r--, 1 movezov movezov 677 авг 29 09:45 .bashrc
drwx-----, 1 movezov movezov 462 авг 29 10:21 .cache
drwx-----, 1 movezov movezov 398 авг 29 09:50 .config
-rw-r--r--, 1 movezov movezov 334 мар 25 03:00 .emacs
-rw-r--r--, 1 movezov movezov 230 авг 29 09:14 .gitconfig
drwxr-xr-x, 1 movezov movezov 74 авг 29 09:55 git-extended
drwx-----, 1 movezov movezov 136 авг 29 09:09 .gnupg
drwx-----, 1 movezov movezov 20 авг 29 09:00 .local
drwxr-xr-x, 1 movezov movezov 48 авг 29 09:11 .mozilla
drwx-----, 1 movezov movezov 132 авг 29 09:13 .ssh
drwxr-xr-x, 1 movezov movezov 10 авг 29 09:13 work
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Видео
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Документы
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Загрузки
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Изображения
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Музыка
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Общедоступные
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 'Рабочий стол'
drwxr-xr-x, 1 movezov movezov 0 авг 29 09:00 Шаблоны
movezov@movezov: $
```

Рис. 7: Файлы в домашнем каталоге

```
movezov@movezov:~$  
movezov@movezov:~$ mkdir newdir  
movezov@movezov:~$ mkdir newdir/morefun  
mkdir: невозможно создать каталог «newdir/morefun»: Нет такого файла или каталога  
movezov@movezov:~$ mv newdir/ newdir/  
movezov@movezov:~$ mkdir newdir/morefun  
movezov@movezov:~$ mkdir letters memos misk  
movezov@movezov:~$ ls  
git-extended  memos  newdir  Видео  Загрузки  Музыка  'Рабочий стол'  
letters      misk   work    Документы  Изображения  Общедоступные  Шаблоны  
movezov@movezov:~$ rm letters memos misk  
rm: невозможно удалить 'letters': Это каталог  
rm: невозможно удалить 'memos': Это каталог  
rm: невозможно удалить 'misk': Это каталог  
movezov@movezov:~$ rm -r letters/ memos misk  
movezov@movezov:~$ rm -r newdir  
movezov@movezov:~$ ls  
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны  
movezov@movezov:~$
```

Рис. 8: Действия с каталогами

Опции команды ls

```
concrete --html --cpu --memory --performance --test.py
"/work/study/2023-2024/Операционные системы/os-intro/template/report/scripts":
image-report  mpv-shot

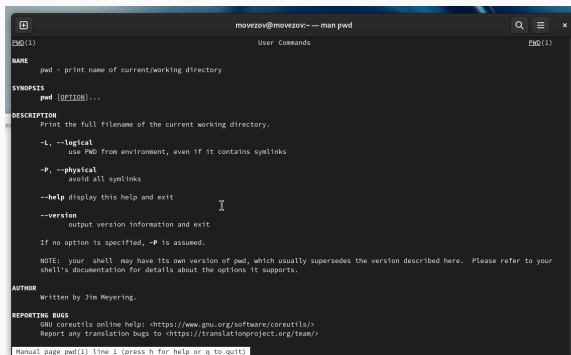
./Видео:
./Документы:
./Загрузки:
./Изображения:
./Музыка:
./Общедоступные:
"/Рабочий стол":
./Шаблоны:
monegovmonegov: $ ls -t
git-extension  work  Видео  Документы  Загрузки  Изображения  Музыка  Общедоступные  'Рабочий стол'  Шаблоны
monegovmonegov: $
```

Рис. 9: Команда ls -R и ls -t

```
movezov@movezov:~$  
movezov@movezov:~$ 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  
        processing instances of '..'  
-e      if the -P option is supplied, and the current working  
        directory cannot be determined successfully, exit with  
        a non-zero status  
-@      on systems that support it, present a file with extended  
        attributes as a directory containing the file attributes  
  
The default is to follow symbolic links, as if '-L' were specified.  
'..' is processed by removing the immediately previous pathname component  
back to a slash or the beginning of DIR.
```

Рис. 10: Справка по команде cd

Справка по командам



```
movezov@movezov:~$ 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.

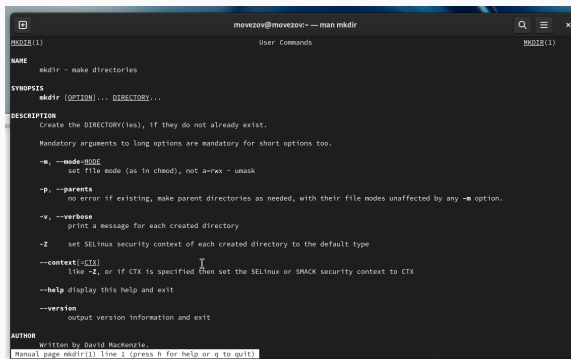
  NOTE: your shell may have its own version of pwd, which usually supersedes the version described here. Please refer to your
  shell's documentation for details about the options it supports.

AUTHOR
  Written by Jim Meyering.

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

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

Рис. 11: Справка по команде pwd



```
movezov@movezov:~ -- 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

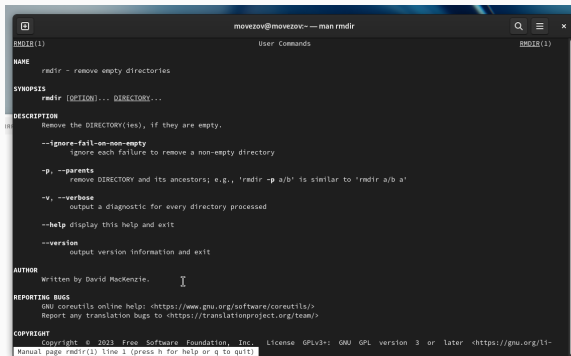
    --version
        output version information and exit

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

Справка по командам



```
movezov@movezov:~ -- 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

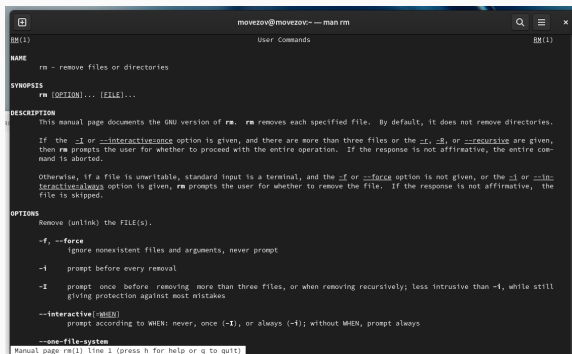
  --version
      output version information and exit

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



```
movezov@movezov:~$ 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 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 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

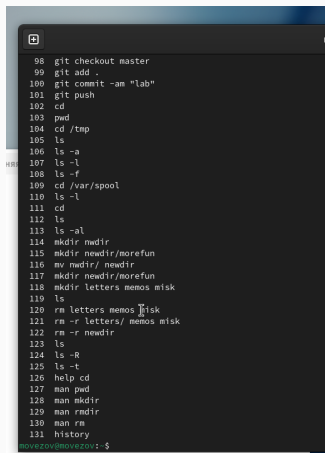
--interactive[=WHEN]
    prompt according to WHEN: never, once (-I), or always (-i); without WHEN, prompt always

--one-file-system

Manual page rm(1) line 2 (press h for help or q to quit)
```

Рис. 14: Справка по команде rm

История командной строки

A terminal window with a dark background and light-colored text. It displays a list of 14 commands, each preceded by a line number from 98 to 131. The commands are: git checkout master, git add ., git commit -am "lab", git push, cd, pwd, cd /tmp, ls, ls -a, ls -l, ls -f, cd /var/spool, ls -l, cd, ls, ls -al, mkdir newdir, mkdir newdir/morefun, mv newdir/ 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 history command is highlighted in green. At the bottom, the prompt 'movezov@movezov: \$' is visible.

```
98 git checkout master
99 git add .
100 git commit -am "lab"
101 git push
102 cd
103 pwd
104 cd /tmp
105 ls
106 ls -a
107 ls -l
108 ls -f
109 cd /var/spool
110 ls -l
111 cd
112 ls
113 ls -al
114 mkdir newdir
115 mkdir newdir/morefun
116 mv newdir/ newdir
117 mkdir newdir/morefun
118 mkdir letters memos misk
119 ls
120 rm letters memos misk
121 rm -r letters/ memos misk
122 rm -r newdir
123 ls
124 ls -R
125 ls -t
126 help cd
127 man pwd
128 man mkdir
129 man rmdir
130 man rm
131 history
movezov@movezov: $
```

Рис. 15: Команда history

Выводы по проделанной работе

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