

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Магамадов Асхаб Ахиатович¹

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¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

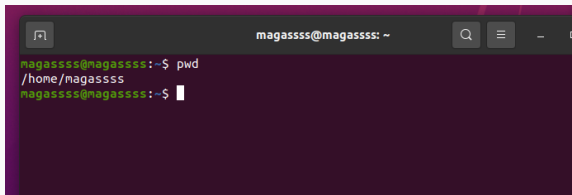
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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

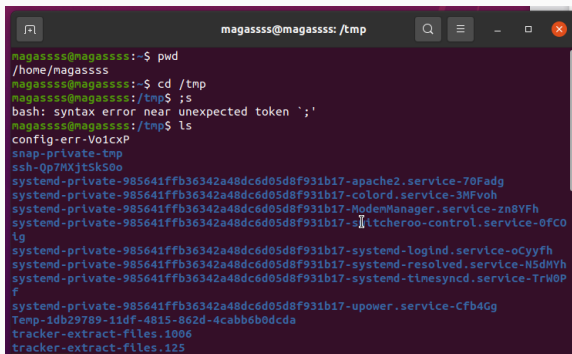
Имя и путь к домашнему каталогу



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

Рис. 1: Путь к домашнему каталогу

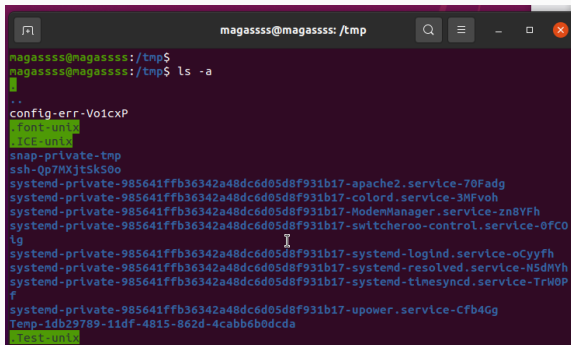
Опции команды ls

A terminal window with a dark background and light-colored text. The window title is 'magassss@magassss: /tmp'. The user has entered several commands: 'pwd' (returns '/home/magassss'), 'cd /tmp' (changes directory), and a semicolon ';' (causes a 'bash: syntax error near unexpected token `;''). Finally, the user enters 'ls', which lists the contents of the /tmp directory. The output shows various system files and directories, including 'config-err-Vo1cxP', 'snap-private-tmp', 'ssh-Qp7MXjtSkS0o', and several 'systemd-private' directories. The last line of the output is 'tracker-extract-files.125', which is highlighted with a green underline.

```
magassss@magassss:~$ pwd
/home/magassss
magassss@magassss:~$ cd /tmp
magassss@magassss:/tmp$ ;
bash: syntax error near unexpected token `;'
magassss@magassss:/tmp$ ls
config-err-Vo1cxP
snap-private-tmp
ssh-Qp7MXjtSkS0o
systemd-private-985641ffb36342a48dc6d05d8f931b17-apache2.service-70Fadg
systemd-private-985641ffb36342a48dc6d05d8f931b17-colord.service-3MFvoh
systemd-private-985641ffb36342a48dc6d05d8f931b17-ModemManager.service-zn8YFh
systemd-private-985641ffb36342a48dc6d05d8f931b17-slttcheroo-control.service-0fCO
lg
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-logind.service-oCyyfh
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-resolved.service-N5dMYh
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-timesyncd.service-TrW0P
f
systemd-private-985641ffb36342a48dc6d05d8f931b17-upower.service-Cfb4Gg
Temp-1db29789-11df-4815-862d-4cabb6b0dcda
tracker-extract-files.1006
tracker-extract-files.125
```

Рис. 2: Команда ls

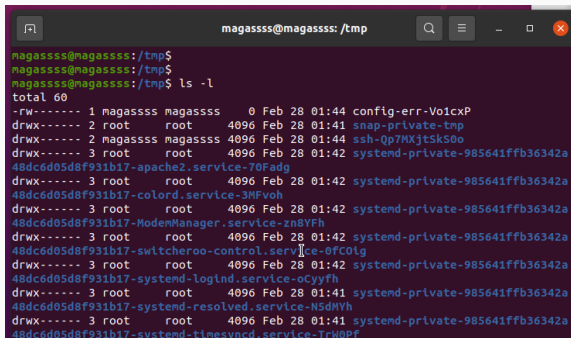
Опции команды ls

A terminal window with a dark purple background and light green text. The window title is 'magasssss@magasssss: /tmp'. The prompt is 'magasssss@magasssss: /tmp\$'. The command 'ls -a' has been entered. The output lists hidden files and system services. Some files like '.font-unix', '.ICE-unix', and 'Test-unix' are highlighted in green. The window has standard Linux terminal window controls at the top right: a search icon, a menu icon, and window management icons (minimize, maximize, close).

```
magasssss@magasssss: /tmp$  
magasssss@magasssss: /tmp$ ls -a  
.  
..  
config-err-Vo1cxP  
.font-unix  
.ICE-unix  
snap-private-tnp  
ssh-Qp7MXjtSk50o  
systemd-private-985641ffb36342a48dc6d05d8f931b17-apache2.service-70Fadg  
systemd-private-985641ffb36342a48dc6d05d8f931b17-colord.service-3MFvoh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-ModemManager.service-zn8YFh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-switcheroo-control.service-0fC0  
lg  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-logind.service-oCyyfh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-resolved.service-N5dMYh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-timesyncd.service-TrWOP  
f  
systemd-private-985641ffb36342a48dc6d05d8f931b17-upower.service-Cfb4Gg  
Temp-1db29789-11df-4815-862d-4cabb6b0dcda  
Test-unix
```

Рис. 3: Команда ls -a

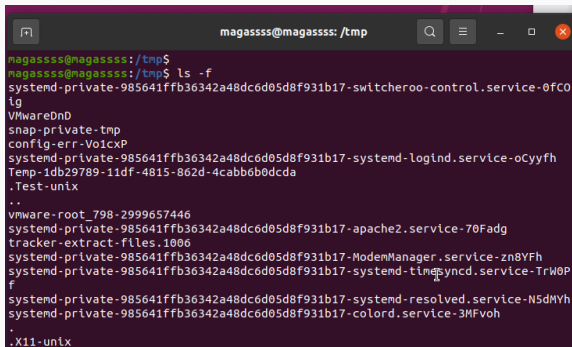
Опции команды ls

A terminal window with a dark purple background and light green text. The window title is 'magassss@magassss: /tmp'. The user has entered the command 'ls -l' and the output is displayed. The output shows a list of files and directories with their permissions, owner, group, size, date, and name. The files are: 'config-err-Vo1cxP', 'snap-private-tmp', 'ssh-Qp7MXjtSk50o', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-apache2.service-70Fadg', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-colorld.service-3MFvoh', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-ModemManager.service-zn8YFh', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-switcheroo-control.service-0fC0lg', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-logind.service-oCyyfh', 'systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-resolved.service-N5dMYh', and 'systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-timesyncd.service-TrW0Pf'.

```
magassss@magassss: /tmp$  
magassss@magassss: /tmp$  
magassss@magassss: /tmp$ ls -l  
total 60  
-rw----- 1 magassss magassss  0 Feb 28 01:44 config-err-Vo1cxP  
drwx----- 2 root      root      4096 Feb 28 01:41 snap-private-tmp  
drwx----- 2 magassss magassss 4096 Feb 28 01:44 ssh-Qp7MXjtSk50o  
drwx----- 3 root      root      4096 Feb 28 01:42 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-apache2.service-70Fadg  
drwx----- 3 root      root      4096 Feb 28 01:42 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-colorld.service-3MFvoh  
drwx----- 3 root      root      4096 Feb 28 01:42 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-ModemManager.service-zn8YFh  
drwx----- 3 root      root      4096 Feb 28 01:42 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-switcheroo-control.service-0fC0lg  
drwx----- 3 root      root      4096 Feb 28 01:42 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-systemd-logind.service-oCyyfh  
drwx----- 3 root      root      4096 Feb 28 01:41 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-systemd-resolved.service-N5dMYh  
drwx----- 3 root      root      4096 Feb 28 01:41 systemd-private-985641ffb36342a  
48dc6d05d8f931b17-systemd-timesyncd.service-TrW0Pf
```

Рис. 4: Команда ls -l

Опции команды ls

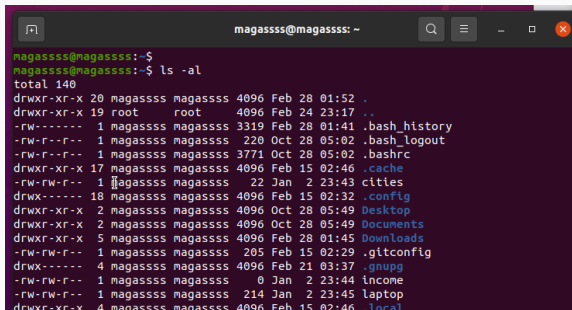
A terminal window with a dark purple background and white text. The window title is 'magassss@magassss: /tmp'. The prompt is 'magassss@magassss: /tmp\$'. The command 'ls -f' has been entered, and the output is a long list of files and directories, including systemd-private directories, VMware files, and various service files.

```
magassss@magassss: /tmp$  
magassss@magassss: /tmp$ ls -f  
systemd-private-985641ffb36342a48dc6d05d8f931b17-switcheroo-control.service-0fCo  
ig  
VMwareDnD  
snap-private-tnp  
config-err-Vo1cxP  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-logind.service-oCyyfh  
Temp-1db29789-11df-4815-862d-4cabb6b0dcda  
.Test-unix  
..  
vmware-root_798-2999657446  
systemd-private-985641ffb36342a48dc6d05d8f931b17-apache2.service-70Fadg  
tracker-extract-files.1006  
systemd-private-985641ffb36342a48dc6d05d8f931b17-ModemManager.service-zn8YFh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-timesyncd.service-TrW0P  
f  
systemd-private-985641ffb36342a48dc6d05d8f931b17-systemd-resolved.service-N5dMYh  
systemd-private-985641ffb36342a48dc6d05d8f931b17-colord.service-3MFvoh  
..  
.X11-unix
```

Рис. 5: Команда ls -f

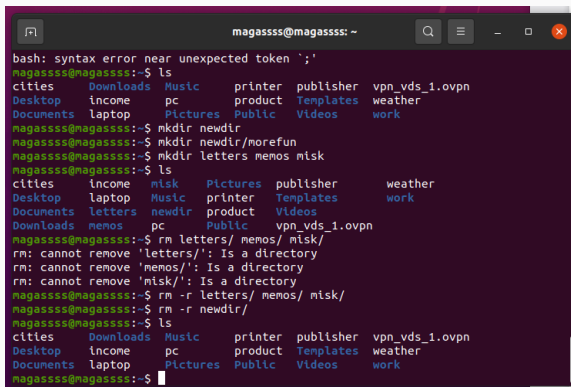
```
magassss@magassss:/tmp$  
magassss@magassss:/tmp$ cd /var/spool/  
magassss@magassss:/var/spool$ ls -l  
total 20  
drwxr-xr-x 2 root   root 4096 Nov 29  2021 anacron  
drwxr-xr-x 3 root   root 4096 Aug 19  2021 cron  
drwx--x-- 3 root   lp    4096 Aug 19  2021 cups  
drwxr-xr-x 3 root   root 4096 Aug 19  2021 libreoffice  
lrwxrwxrwx 1 root   root    7 Nov 29  2021 mail -> ../mail  
drwx----- 2 syslog adm  4096 Feb 11  2020 rsyslog  
magassss@magassss:/var/spool$
```

Рис. 6: Каталог /var/spool



```
magassss@magassss: ~  
magassss@magassss:~$  
magassss@magassss:~$ ls -al  
total 140  
drwxr-xr-x 20 magassss magassss 4096 Feb 28 01:52 .  
drwxr-xr-x 19 root      root      4096 Feb 24 23:17 ..  
-rw-r----- 1 magassss magassss 3319 Feb 28 01:41 .bash_history  
-rw-r--r-- 1 magassss magassss 220 Oct 28 05:02 .bash_logout  
-rw-r--r-- 1 magassss magassss 3771 Oct 28 05:02 .bashrc  
drwxr-xr-x 17 magassss magassss 4096 Feb 15 02:46 .cache  
-rw-rw-r-- 1 magassss magassss 22 Jan 2 23:43 cities  
drwx----- 18 magassss magassss 4096 Feb 15 02:32 .config  
drwxr-xr-x 2 magassss magassss 4096 Oct 28 05:49 Desktop  
drwxr-xr-x 2 magassss magassss 4096 Oct 28 05:49 Documents  
drwxr-xr-x 5 magassss magassss 4096 Feb 28 01:45 Downloads  
-rw-rw-r-- 1 magassss magassss 205 Feb 15 02:29 .gitconfig  
drwx----- 4 magassss magassss 4096 Feb 21 03:37 .gnupg  
-rw-rw-r-- 1 magassss magassss 0 Jan 2 23:44 income  
-rw-rw-r-- 1 magassss magassss 214 Jan 2 23:45 laptop  
drwxr-xr-x 4 magassss magassss 4096 Feb 15 02:46 .local
```

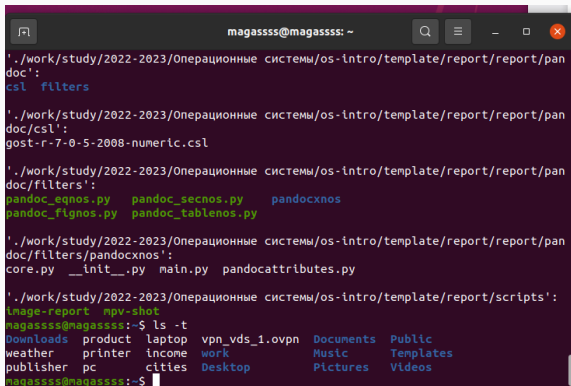
Рис. 7: Файлы в домашнем каталоге

A terminal window with a dark purple background and white text. The window title is 'magassss@magassss: ~'. The terminal shows a series of commands and their outputs. It starts with a 'bash: syntax error' message, followed by 'ls' showing a list of directories. Then 'mkdir newdir' is executed. Next, 'mkdir newdir/morefun' and 'mkdir letters memos misk' are run. Another 'ls' command shows the updated directory list. Then, 'rm letters/ memos/ misk/' is attempted, resulting in three 'rm: cannot remove' errors because they are directories. Finally, 'rm -r letters/ memos/ misk/' is executed successfully, followed by 'rm -r newdir/'. A final 'ls' command shows the directory list after these deletions.

```
magassss@magassss: ~  
bash: syntax error near unexpected token `;'  
magassss@magassss:~$ ls  
cities      Downloads  Music      printer    publisher  vpn_vds_1.ovpn  
Desktop     income    pc         product    Templates  weather_  
Documents   laptop    Pictures   Public     Videos     work  
magassss@magassss:~$ mkdir newdir  
magassss@magassss:~$ mkdir newdir/morefun  
magassss@magassss:~$ mkdir letters memos misk  
magassss@magassss:~$ ls  
cities      income    misk       Pictures   publisher   weather_  
Desktop     laptop    Music      printer    Templates   work  
Documents   letters  newdir     product    Videos  
Downloads   memos    pc         Public     vpn_vds_1.ovpn  
magassss@magassss:~$ 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  
magassss@magassss:~$ rm -r letters/ memos/ misk/  
magassss@magassss:~$ rm -r newdir/  
magassss@magassss:~$ ls  
cities      Downloads  Music      printer    publisher  vpn_vds_1.ovpn  
Desktop     income    pc         product    Templates  weather_  
Documents   laptop    Pictures   Public     Videos     work  
magassss@magassss:~$
```

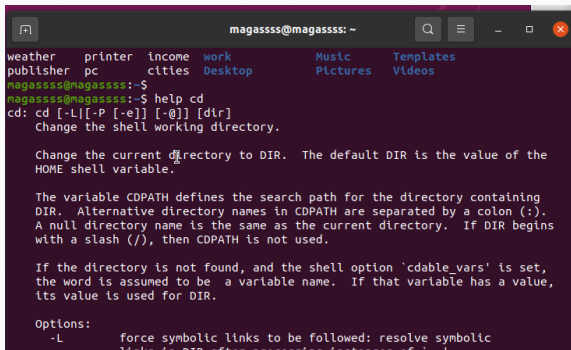
Рис. 8: Действия с каталогами

Опции команды ls



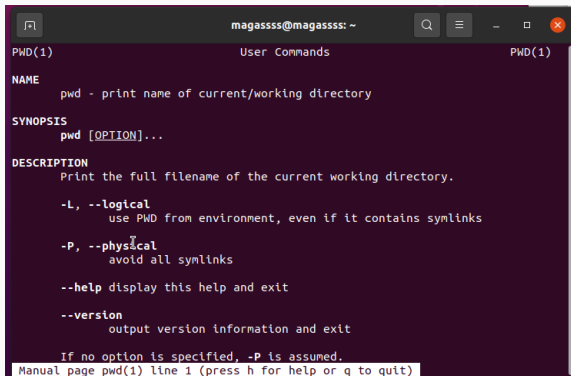
```
magassss@magassss: ~  
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc':  
csl filters  
  
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc/csl':  
gost-r-7-0-5-2008-numeric.csl  
  
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pan  
doc/filters':  
pandoc_eqnos.py  pandoc_secnos.py  pandocxnos  
pandoc_fignos.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  
magassss@magassss:~$ ls -t  
Downloads  product  laptop  vpn_vds_1.ovpn  Documents  Public  
weather    printer  income  work            Music      Templates  
publisher  pc       cities  Desktop        Pictures   Videos  
magassss@magassss:~$
```

Рис. 9: Команда ls -R и ls -t



```
magasssss@magasssss: ~  
weather printer income work Music Templates  
publisher pc cities Desktop Pictures Videos  
magasssss@magasssss:~$  
magasssss@magasssss:~$ 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 '~'
```

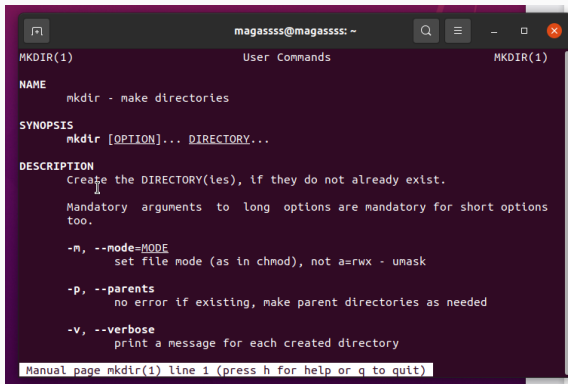
Рис. 10: Справка по команде cd



```
magassss@magassss: ~  
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)
```

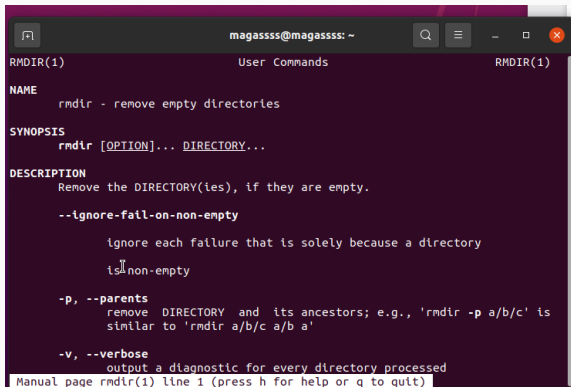
Рис. 11: Справка по команде pwd

Справка по командам



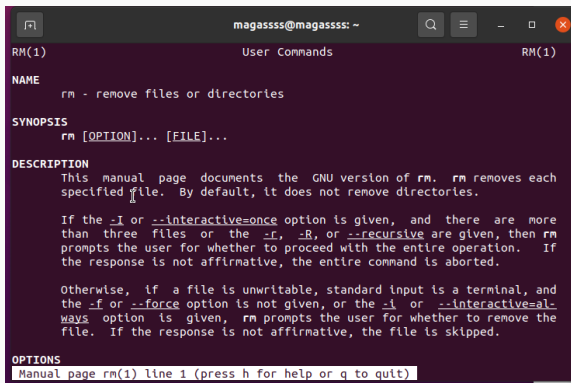
```
magassss@magassss: ~  
MKDIR(1) User Commands MKDIR(1)  
  
NAME  
    mkdir - make directories  
  
SYNOPSIS  
    mkdir [OPTION]... DIRECTORY...  
  
DESCRIPTION  
    Create the DIRECTORY(ies), if they do not already exist.  
  
    Mandatory arguments to long options are mandatory for short options too.  
  
    -n, --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



```
magassss@magassss: ~  
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)
```

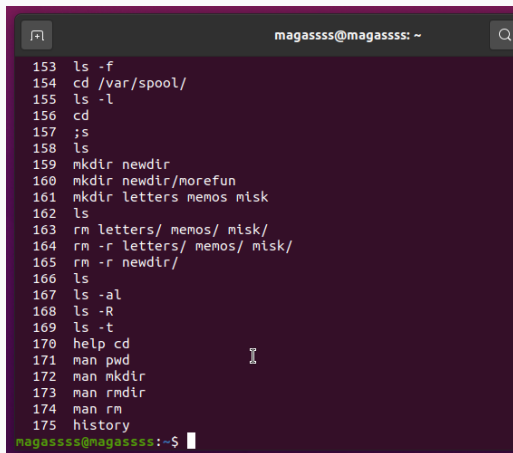
Рис. 13: Справка по команде rmdir



```
magassss@magassss: ~  
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 bar shows a window icon, the text 'magassss@magassss: ~', and a search icon. The terminal displays a list of 15 commands, each preceded by a line number from 153 to 175. The commands are: 'ls -f', 'cd /var/spool/', 'ls -l', 'cd', ';s', 'ls', 'mkdir newdir', 'mkdir newdir/morefun', 'mkdir letters memos misk', 'ls', 'rm letters/ memos/ misk/', 'rm -r letters/ memos/ misk/', 'rm -r newdir/', 'ls', 'ls -al', 'ls -R', 'ls -t', 'help cd', 'man pwd', 'man mkdir', 'man rmdir', 'man rm', and 'history'. The 'history' command is the last one entered, and the prompt 'magassss@magassss:~\$' is visible at the bottom with a cursor. A vertical cursor is also visible between the 'help cd' and 'man pwd' lines.

```
magassss@magassss: ~  
153 ls -f  
154 cd /var/spool/  
155 ls -l  
156 cd  
157 ;s  
158 ls  
159 mkdir newdir  
160 mkdir newdir/morefun  
161 mkdir letters memos misk  
162 ls  
163 rm letters/ memos/ misk/  
164 rm -r letters/ memos/ misk/  
165 rm -r newdir/  
166 ls  
167 ls -al  
168 ls -R  
169 ls -t  
170 help cd  
171 man pwd  
172 man mkdir  
173 man rmdir  
174 man rm  
175 history  
magassss@magassss:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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