

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

Дурдалыев Максат¹

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¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

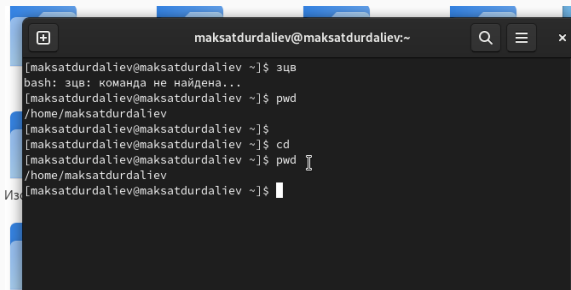
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



A terminal window titled 'maksatdurdaliev@maksatdurdaliev:~' with search, menu, and close buttons. The terminal shows the following commands and output:

```
[maksatdurdaliev@maksatdurdaliev ~]$ эцв
bash: эцв: команда не найдена...
[maksatdurdaliev@maksatdurdaliev ~]$ pwd
/home/maksatdurdaliev
[maksatdurdaliev@maksatdurdaliev ~]$
[maksatdurdaliev@maksatdurdaliev ~]$ cd
[maksatdurdaliev@maksatdurdaliev ~]$ pwd
/home/maksatdurdaliev
[maksatdurdaliev@maksatdurdaliev ~]$
```

The text 'Из' is partially visible on the left side of the terminal window.

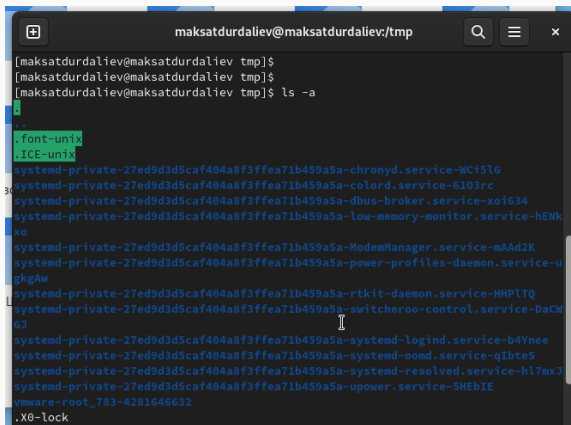
Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
[maksatdurdaliev@maksatdurdaliev ~]$ cd /tmp
[maksatdurdaliev@maksatdurdaliev tmp]$ ls
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-chrond.service-WC15L6
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-colord.service-6103rc
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-dbus-broker.service-xoi634
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-low-memory-monitor.service-hENK
xo
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-ModemManager.service-mAAd2K
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-power-profiles-daemon.service-u
gkgAw
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-rtkit-daemon.service-HHPLTQ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-switcheroo-control.service-DaCW
GJ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-logind.service-b4Ynee
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-oomd.service-qIbteS
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-resolved.service-hl7mxJ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-upower.service-SHEbIE
vmware-root_783-4281646632
[maksatdurdaliev@maksatdurdaliev tmp]$
```

Рис. 2: Команда ls

Опции команды ls

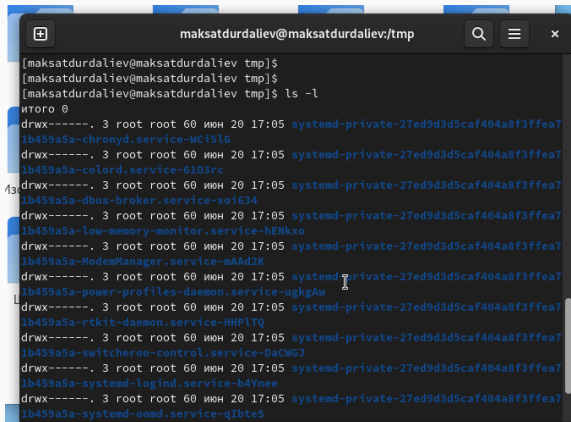


A terminal window titled 'maksatdurdaliev@maksatdurdaliev/tmp' with search, menu, and close icons. The command '[maksatdurdaliev@maksatdurdaliev tmp]\$ ls -a' has been executed. The output lists hidden files and system services. The first two lines, '.font-unix' and '.ICE-unix', are highlighted in green. The rest of the output is as follows:

```
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$ ls -a  
.  
..  
.font-unix  
.ICE-unix  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-chronyd.service-WCt5LG  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-colord.service-6103rc  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-dbus-broker.service-xoi634  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-low-memory-monitor.service-hENk  
xo  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-ModemManager.service-mAAd2K  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-power-profiles-daemon.service-u  
gkgAw  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-rtkit-daemon.service-MHP1TQ  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-switcheroo-control.service-DaCW  
GJ  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-logind.service-b4Ynee  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-oomd.service-qIbteS  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-resolved.service-hl7mxJ  
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-upower.service-5HEBIE  
vmware-root_783-4281646632  
.X0-lock
```

Рис. 3: Команда ls -a

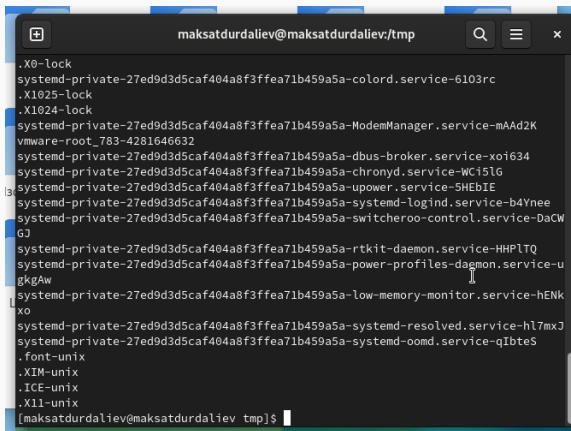
Опции команды ls

A terminal window titled 'maksatdurdaliev@maksatdurdaliev:/tmp' with search, menu, and close icons. The terminal shows the execution of 'ls -l' in a directory named 'tmp'. The output lists 13 files, each with permissions, owner, group, size, date, and filename. The filenames are systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-chronyd.service-WCi5LG, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-colord.service-6103rc, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-dbus-broker.service-xo1634, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-low-memory-monitor.service-hENkxo, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-ModemManager.service-mAAAd2K, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-power-profiles-daemon.service-ugkgAw, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-rtkit-daemon.service-MHPLTQ, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-switcheroo-control.service-DaCW63, systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-systemd-logind.service-b4Ynee, and systemd-private-27ed9d3d5caf404a8f3ffea7-1b459a5a-systemd-ooomd.service-qIbtes.

```
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$ ls -l  
итого 0  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-chronyd.service-WCi5LG  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-colord.service-6103rc  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-dbus-broker.service-xo1634  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-low-memory-monitor.service-hENkxo  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-ModemManager.service-mAAAd2K  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-power-profiles-daemon.service-ugkgAw  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-rtkit-daemon.service-MHPLTQ  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-switcheroo-control.service-DaCW63  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-systemd-logind.service-b4Ynee  
drwx-----, 3 root root 60 июн 20 17:05 systemd-private-27ed9d3d5caf404a8f3ffea7-  
1b459a5a-systemd-ooomd.service-qIbtes
```

Рис. 4: Команда ls -l

Опции команды ls

A terminal window with a dark background and light text. The title bar shows the user 'maksatdurdaliev' and the current directory 'tmp'. The terminal displays the output of the 'ls -f' command, listing various system files and directories. The output is as follows:

```

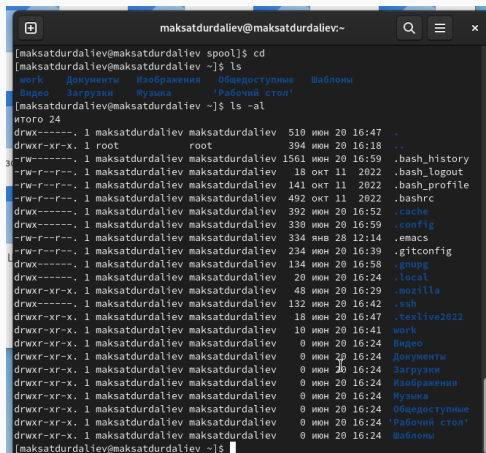
.X0-lock
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-color.service-6103rc
.X1025-lock
.X1024-lock
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-ModemManager.service-mAAd2K
vmware-root_783-4281646632
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-dbus-broker.service-xoi634
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-chronyd.service-WCi5lG
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-upower.service-5HEbIE
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-logind.service-b4Ynee
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-switcheroo-control.service-DaCW
GJ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-rtkit-daemon.service-HHPLTQ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-power-profiles-daemon.service-u
gkgAw
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-low-memory-monitor.service-hENk
xo
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-resolved.service-hl7mxJ
systemd-private-27ed9d3d5caf404a8f3ffea71b459a5a-systemd-oomd.service-qIbteS
.font-unix
.XIM-unix
.ICE-unix
.X11-unix
[maksatdurdaliev@maksatdurdaliev tmp]$
```

Рис. 5: Команда ls -f

```
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$  
[maksatdurdaliev@maksatdurdaliev tmp]$ cd /var/spool/  
[maksatdurdaliev@maksatdurdaliev spool]$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 650 мая 8 11:54 abrt  
drwx-----. 1 abrt abrt 0 мар 11 2022 abrt-upload  
drwx--x---. 1 root lp 6 окт 3 2022 cups  
drwxr-xr-x. 1 root root 0 авг 9 2022 lpd  
drwxrwxr-x. 1 root mail 400 июн 20 16:18 mail  
drwxr-xr-x. 1 root root 0 мар 7 2022 plymouth  
[maksatdurdaliev@maksatdurdaliev spool]$
```

Рис. 6: Каталог /var/spool

Домашний каталог



A terminal window titled 'maksatdurdaliev@maksatdurdaliev:~' showing the output of the 'ls' and 'ls -al' commands. The window has a search bar, a menu icon, and a close button in the top right corner. The output of 'ls' shows a directory listing with icons and names. The output of 'ls -al' shows a detailed listing with permissions, owner, group, size, date, and filename.

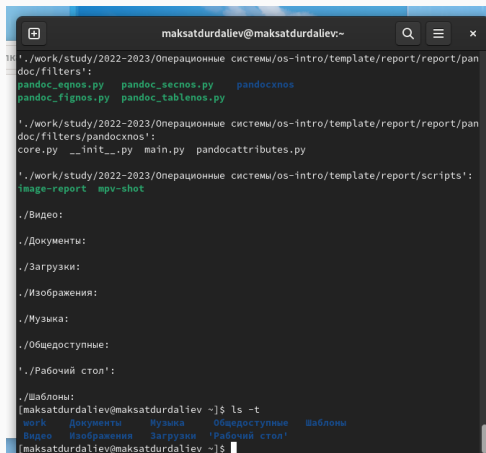
```
[maksatdurdaliev@maksatdurdaliev spool]$ cd
[maksatdurdaliev@maksatdurdaliev ~]$ ls
work  Документы  Изображения  Общедоступные  Шаблоны
Видео  Загрузки  Музыка  'Рабочий стол'
[maksatdurdaliev@maksatdurdaliev ~]$ ls -al
итого 24
drwx----- 1 maksatdurdaliev maksatdurdaliev 510 июн 20 16:47 .
drwxr-xr-x 1 root root 394 июн 20 16:18 ..
-rw----- 1 maksatdurdaliev maksatdurdaliev 1561 июн 20 16:59 .bash_history
-rw-r--r-- 1 maksatdurdaliev maksatdurdaliev 18 окт 11 2022 .bash_logout
-rw-r--r-- 1 maksatdurdaliev maksatdurdaliev 141 окт 11 2022 .bash_profile
-rw-r--r-- 1 maksatdurdaliev maksatdurdaliev 492 окт 11 2022 .bashrc
drwx----- 1 maksatdurdaliev maksatdurdaliev 392 июн 20 16:52 .cache
drwx----- 1 maksatdurdaliev maksatdurdaliev 330 июн 20 16:59 .config
-rw-r--r-- 1 maksatdurdaliev maksatdurdaliev 334 янв 28 12:14 .emacs
-rw-r--r-- 1 maksatdurdaliev maksatdurdaliev 234 июн 20 16:39 .gitconfig
drwx----- 1 maksatdurdaliev maksatdurdaliev 134 июн 20 16:58 .gnupg
drwx----- 1 maksatdurdaliev maksatdurdaliev 20 июн 20 16:24 .local
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 48 июн 20 16:29 .mozilla
drwx----- 1 maksatdurdaliev maksatdurdaliev 132 июн 20 16:42 .ssh
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 18 июн 20 16:47 .texlive2022
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 10 июн 20 16:41 work
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Видео
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Документы
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Загрузки
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Изображения
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Музыка
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Общедоступные
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 'Рабочий стол'
drwxr-xr-x 1 maksatdurdaliev maksatdurdaliev 0 июн 20 16:24 Шаблоны
[maksatdurdaliev@maksatdurdaliev ~]$
```

Рис. 7: Файлы в домашнем каталоге

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

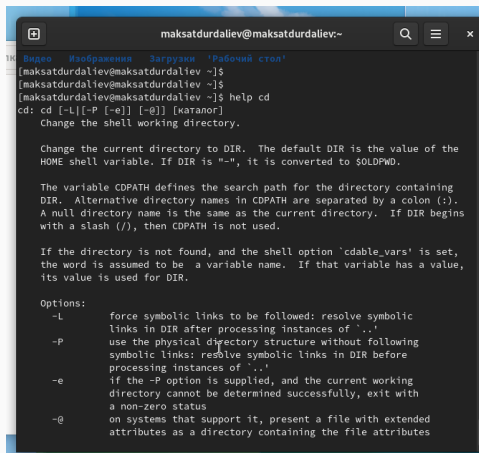
Рис. 8: Действия с каталогами

Опции команды ls



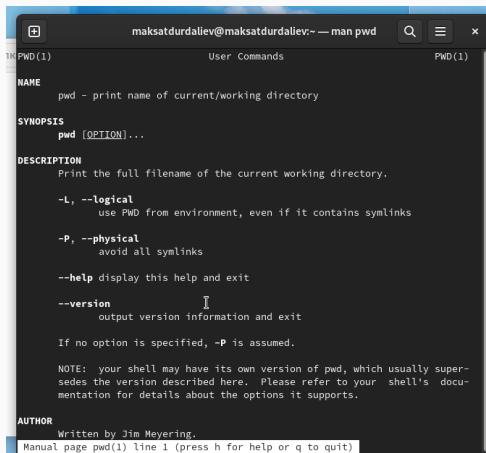
```
maksatdurdaliev@maksatdurdaliev:~  
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pandoc/filters':  
pandoc_eqnos.py  pandoc_secnos.py  pandocxnos  
pandoc_fgnos.py  pandoc_tablenos.py  
  
'./work/study/2022-2023/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':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

Рис. 9: Команда ls -R и ls -t



```
maksatdurdaliev@maksatdurdaliev:~  
Видео  Изображения  Загрузки  'Рабочий стол'  
[maksatdurdaliev@maksatdurdaliev ~]$  
[maksatdurdaliev@maksatdurdaliev ~]$  
[maksatdurdaliev@maksatdurdaliev ~]$ help cd  
cd: cd [-L][[-P [-e]] [-@]] [karanor]  
    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
```

Рис. 10: Справка по команде cd



The image shows a terminal window with a dark background. The title bar at the top reads 'maksatdurdaliev@maksatdurdaliev:~ — man pwd'. The terminal content displays the manual page for the 'pwd' command, organized into sections: NAME, SYNOPSIS, DESCRIPTION, and AUTHOR. The NAME section states 'pwd - print name of current/working directory'. The SYNOPSIS section shows 'pwd [OPTION]...'. The DESCRIPTION section explains that 'Print the full filename of the current working directory.' and lists options: '-L, --logical' (use PWD from environment, even if it contains symlinks), '-P, --physical' (avoid all symlinks), '--help' (display this help and exit), and '--version' (output version information and exit). A note mentions that if no option is specified, -P is assumed. The AUTHOR section credits 'Written by Jim Meyering.' At the bottom, a status bar indicates 'Manual page pwd(1) line 1 (press h for help or q to quit)'.

```
maksatdurdaliev@maksatdurdaliev:~ — man pwd
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

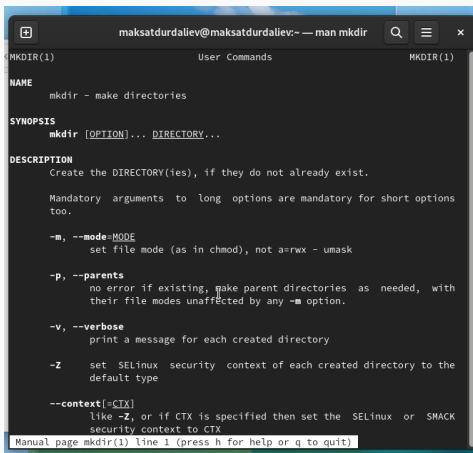
  If no option is specified, -P is assumed.

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

AUTHOR
  Written by Jim Meyering.

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

Рис. 11: Справка по команде pwd



```
maksatdurdaliev@maksatdurdaliev:~ — 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.

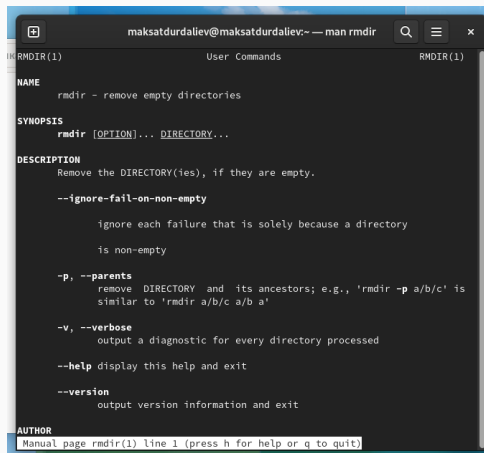
    -v, --verbose
        print a message for each created directory

    -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

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

Рис. 12: Справка по команде mkdir



```
maksatdurdaliev@maksatdurdaliev:~ — 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'

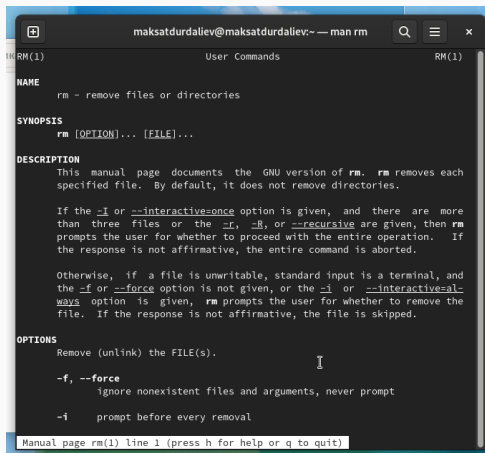
    -v, --verbose
        output a diagnostic for every directory processed

    --help display this help and exit

    --version
        output version information and exit

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

Рис. 13: Справка по команде rmdir



```
maksatdurdaliev@maksatdurdaliev:~ — 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=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).

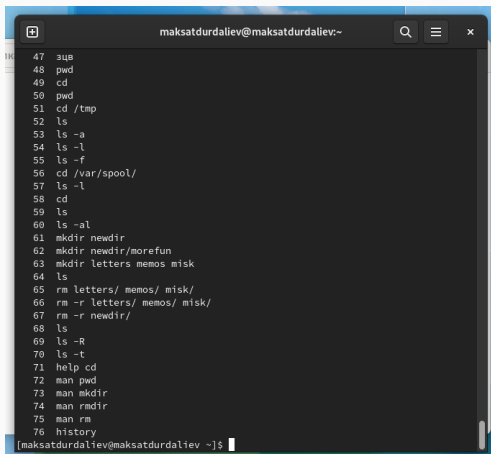
-f, --force
ignore nonexistent files and arguments, never prompt

-i
prompt before every removal

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 titled 'maksatdurdaliev@maksatdurdaliev:~' with search, menu, and close icons. It displays a list of 10 commands numbered 47 to 76, which are the contents of the system's command history. The commands include directory navigation, file listing, directory creation, and removal. The prompt at the bottom is '[maksatdurdaliev@maksatdurdaliev ~]\$'.

```
47  зцв
48  pwd
49  cd
50  pwd
51  cd /tmp
52  ls
53  ls -a
54  ls -l
55  ls -f
56  cd /var/spool/
57  ls -l
58  cd
59  ls
60  ls -al
61  mkdir newdir
62  mkdir newdir/morefun
63  mkdir letters memos misk
64  ls
65  rm letters/ memos/ misk/
66  rm -r letters/ memos/ misk/
67  rm -r newdir/
68  ls
69  ls -R
70  ls -t
71  help cd
72  man pwd
73  man mkdir
74  man rmdir
75  man rm
76  history
[maksatdurdaliev@maksatdurdaliev ~]$
```

Рис. 15: Команда history

Выводы по проделанной работе

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