

# 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.

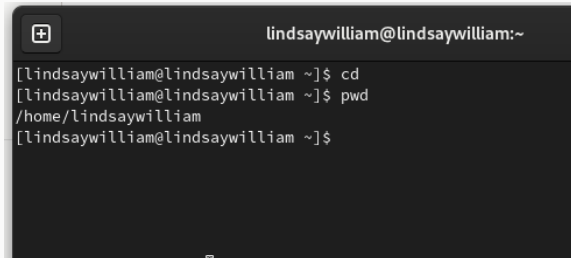
# Задачи лабораторной работы

- 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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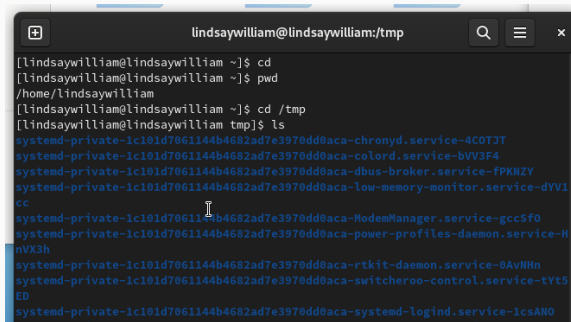
# Имя и путь к домашнему каталогу



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

**Рис. 1:** Путь к домашнему каталогу

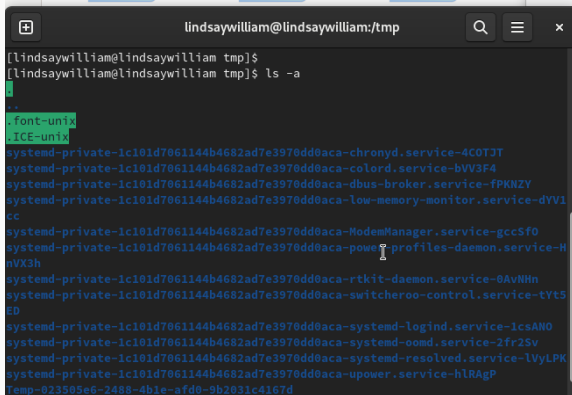
# Опции команды ls



```
lindsaywilliam@lindsaywilliam:~/tmp
[~]$ cd
[~]$ pwd
/home/lindsaywilliam
[~]$ cd /tmp
[tmp]$ ls
systemd-private-1c101d7061144b4682ad7e3970dd0aca-chronyd.service-4COTJT
systemd-private-1c101d7061144b4682ad7e3970dd0aca-colord.service-bVV3F4
systemd-private-1c101d7061144b4682ad7e3970dd0aca-dbus-broker.service-fPKNZY
systemd-private-1c101d7061144b4682ad7e3970dd0aca-low-memory-monitor.service-dVYV1
cc
systemd-private-1c101d7061144b4682ad7e3970dd0aca-ModemManager.service-gccSf0
systemd-private-1c101d7061144b4682ad7e3970dd0aca-power-profiles-daemon.service-H
nVX3h
systemd-private-1c101d7061144b4682ad7e3970dd0aca-rtkit-daemon.service-0AvNHn
systemd-private-1c101d7061144b4682ad7e3970dd0aca-switcheroo-control.service-tYt5
ED
systemd-private-1c101d7061144b4682ad7e3970dd0aca-systemd-logind.service-lcsANO
```

Рис. 2: Команда ls

# Опции команды ls

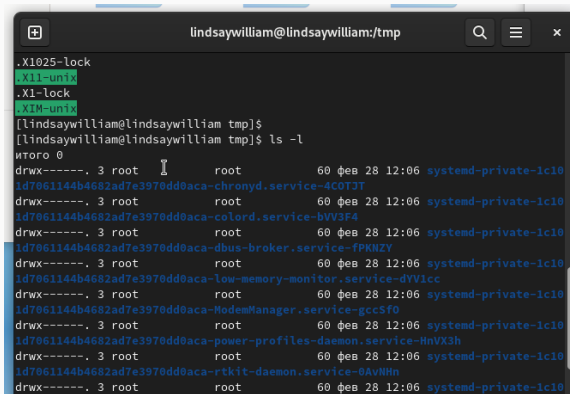
A terminal window titled 'lindsaywilliam@lindsaywilliam:/tmp' with search, menu, and close icons in the title bar. The prompt is '[lindsaywilliam@lindsaywilliam tmp]\$'. The command 'ls -a' has been entered, and the output is displayed. The first two lines of output, '.font-unix' and '.ICE-unix', are highlighted in green. The rest of the output lists various system services and files with their full paths.

```
[lindsaywilliam@lindsaywilliam tmp]$  
[lindsaywilliam@lindsaywilliam tmp]$ ls -a  
.  
..  
.font-unix  
.ICE-unix  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-chronyd.service-4C0TJT  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-colord.service-bVV3F4  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-dbus-broker.service-fPKNZY  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-low-memory-monitor.service-dYV1  
cc  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-ModemManager.service-gccSf0  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-powertop-profiles-daemon.service-H  
nVX3h  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-rtkit-daemon.service-0AvNHn  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-switcheroo-control.service-tYt5  
ED  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-systemd-logind.service-lcsANO  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-systemd-oomd.service-2fr2Sv  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-systemd-resolved.service-lVyLPK  
systemd-private-1c101d7061144b4682ad7e3970dd0aca-upower.service-hlRAgP  
Temp-023505e6-2488-4b1e-afd0-9b2031c4167d
```

Рис. 3: Команда ls -a



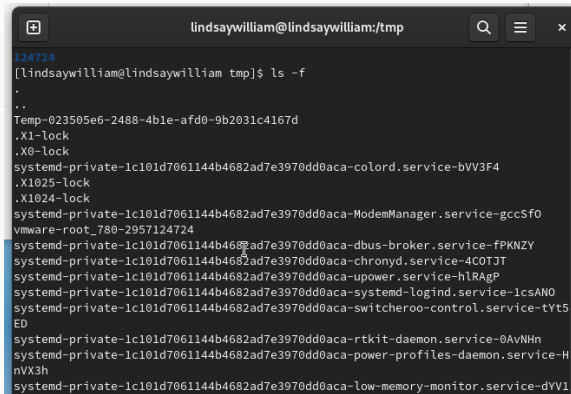
# Опции команды ls



```
lindsaywilliam@lindsaywilliam:/tmp
.X1025-lock
.X11-unix
.X1-lock
.XIM-unix
[lindsaywilliam@lindsaywilliam tmp]$
[lindsaywilliam@lindsaywilliam tmp]$ ls -l
итого 0
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-chronyd.service-4C0TJT
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-color.service-BVV3F4
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-dbus-broker.service-fPKNZY
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-low-memory-monitor.service-dYV1cc
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-ModemManager.service-gccSf0
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-power-profiles-daemon.service-HnVX3h
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-rtkit-daemon.service-0AvNNh
drwx-----, 3 root root 60 фев 28 12:06 systemd-private-1c10-1d7061144b4682ad7e3970dd0aca-rtkit-daemon.service-0AvNNh
...
```

Рис. 4: Команда ls -l

# Опции команды ls

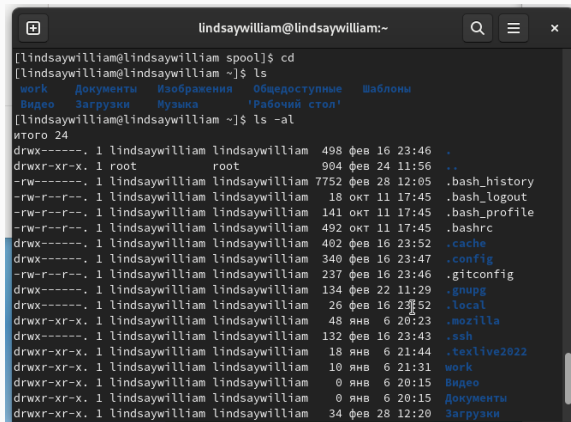
A terminal window with a dark background. The title bar shows 'lindsaywilliam@lindsaywilliam:/tmp'. The prompt is '[lindsaywilliam@lindsaywilliam tmp]\$'. The command 'ls -f' has been entered, and its output is displayed below. The output lists various files and directories, including systemd services and a VMware root directory. The file 'systemd-private-1c101d7061144b4682ad7e3970dd0aca-dbus-broker.service-fPKNZY' is highlighted with a blue background.

```
lindsaywilliam@lindsaywilliam:/tmp
124724
[lindsaywilliam@lindsaywilliam tmp]$ ls -f
.
..
Temp-023505e6-2488-4b1e-afd0-9b2031c4167d
.X1-lock
.X0-lock
systemd-private-1c101d7061144b4682ad7e3970dd0aca-colord.service-bVV3F4
.X1025-lock
.X1024-lock
systemd-private-1c101d7061144b4682ad7e3970dd0aca-ModemManager.service-gccSf0
vmware-root_780-2957124724
systemd-private-1c101d7061144b4682ad7e3970dd0aca-dbus-broker.service-fPKNZY
systemd-private-1c101d7061144b4682ad7e3970dd0aca-chronyd.service-4COTJT
systemd-private-1c101d7061144b4682ad7e3970dd0aca-upower.service-hlRagP
systemd-private-1c101d7061144b4682ad7e3970dd0aca-systemd-logind.service-lcsANO
systemd-private-1c101d7061144b4682ad7e3970dd0aca-switcheroo-control.service-tYt5
ED
systemd-private-1c101d7061144b4682ad7e3970dd0aca-rtkit-daemon.service-0AvNHn
systemd-private-1c101d7061144b4682ad7e3970dd0aca-power-profiles-daemon.service-H
nVX3h
systemd-private-1c101d7061144b4682ad7e3970dd0aca-low-memory-monitor.service-dYV1
```

Рис. 5: Команда ls -f

```
[lindsaywilliam@lindsaywilliam tmp]$  
[lindsaywilliam@lindsaywilliam tmp]$ cd /var/spool/  
[lindsaywilliam@lindsaywilliam spool]$ ls  
abrt abrt-upload cups lpd mail plymouth  
[lindsaywilliam@lindsaywilliam spool]$ ls -al  
итого 0  
drwxr-xr-x. 1 root root 68 авг 9 2022 .  
drwxr-xr-x. 1 root root 200 окт 1 11:36 ..  
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  
[lindsaywilliam@lindsaywilliam spool]$
```

Рис. 6: Каталог /var/spool



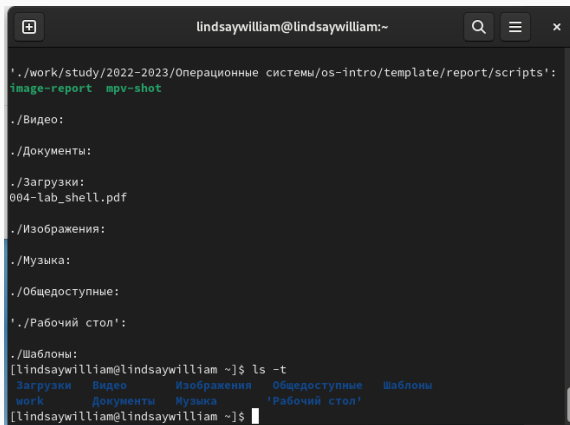
```
lindsaywilliam@lindsaywilliam:~  
[lindsaywilliam@lindsaywilliam spool]$ cd  
[lindsaywilliam@lindsaywilliam ~]$ ls  
work  Документы  Изображения  Общедоступные  Шаблоны  
Видео  Загрузки  Музыка  'Рабочий стол'  
[lindsaywilliam@lindsaywilliam ~]$ ls -al  
итого 24  
drwx-----. 1 lindsaywilliam lindsaywilliam 498 фев 16 23:46 .  
drwxr-xr-x. 1 root root 904 фев 24 11:56 ..  
-rw-----. 1 lindsaywilliam lindsaywilliam 7752 фев 28 12:05 .bash_history  
-rw-r--r--. 1 lindsaywilliam lindsaywilliam 18 окт 11 17:45 .bash_logout  
-rw-r--r--. 1 lindsaywilliam lindsaywilliam 141 окт 11 17:45 .bash_profile  
-rw-r--r--. 1 lindsaywilliam lindsaywilliam 492 окт 11 17:45 .bashrc  
drwx-----. 1 lindsaywilliam lindsaywilliam 402 фев 16 23:52 .cache  
drwx-----. 1 lindsaywilliam lindsaywilliam 340 фев 16 23:47 .config  
-rw-r--r--. 1 lindsaywilliam lindsaywilliam 237 фев 16 23:46 .gitconfig  
drwx-----. 1 lindsaywilliam lindsaywilliam 134 фев 22 11:29 .gnupg  
drwx-----. 1 lindsaywilliam lindsaywilliam 26 фев 16 23:52 .local  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 48 янв 6 20:23 .mozilla  
drwx-----. 1 lindsaywilliam lindsaywilliam 132 фев 16 23:43 .ssh  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 18 янв 6 21:44 .texlive2022  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 10 янв 6 21:31 work  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 0 янв 6 20:15 Видео  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 0 янв 6 20:15 Документы  
drwxr-xr-x. 1 lindsaywilliam lindsaywilliam 34 фев 28 12:20 Загрузки
```

Рис. 7: Файлы в домашнем каталоге

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

Рис. 8: Действия с каталогами

# Опции команды ls



A terminal window titled 'lindsaywilliam@lindsaywilliam:~' with search, menu, and close icons. The terminal shows a directory listing of a path: `'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':`. The listing includes `image-report` and `mpv-shot` in green. Below this, several directories are listed: `./Видео:`, `./Документы:`, `./Загрузки:` (containing `004-lab_shell.pdf`), `./Изображения:`, `./Музыка:`, `./Общедоступные:`, `'./Рабочий стол':`, and `./Шаблоны:`. The command `[lindsaywilliam@lindsaywilliam ~]$ ls -t` is entered, resulting in a table-like listing of the directories. The terminal prompt is `[lindsaywilliam@lindsaywilliam ~]$`.

```
'./work/study/2022-2023/Операционные системы/os-intro/template/report/scripts':
image-report  mpv-shot

./Видео:

./Документы:

./Загрузки:
004-lab_shell.pdf

./Изображения:

./Музыка:

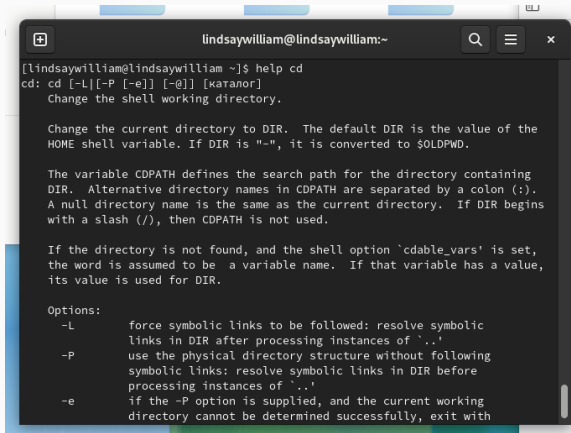
./Общедоступные:

'./Рабочий стол':

./Шаблоны:
[lindsaywilliam@lindsaywilliam ~]$ ls -t
Загрузки  Видео      Изображения  Общедоступные  Шаблоны
work      Документы  Музыка      'Рабочий стол'
```

Рис. 9: Команда `ls -R` и `ls -t`

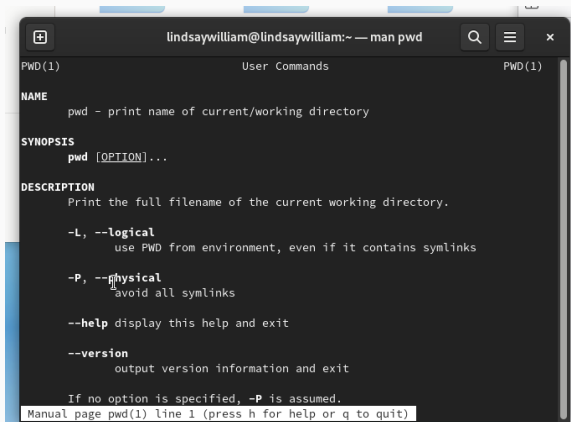
# Справка по командам



```
lindsaywilliam@lindsaywilliam:~  
[lindsaywilliam@lindsaywilliam ~]$ 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
```

Рис. 10: Справка по команде cd

# Справка по командам



The screenshot shows a terminal window titled "lindsaywilliam@lindsaywilliam:~ — man pwd". The window displays the manual page for the 'pwd' command. The content is as follows:

```
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

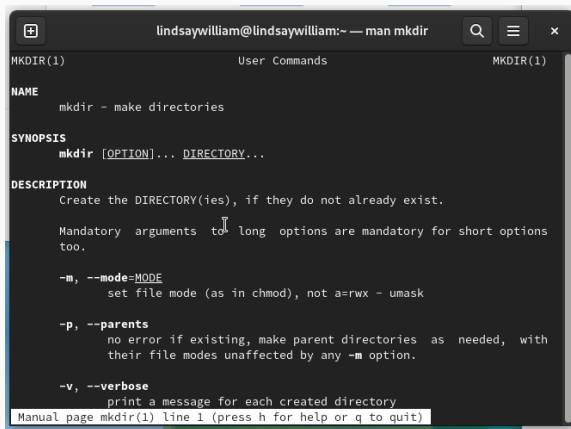
    --version
        output version information and exit

    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



```
lindsaywilliam@lindsaywilliam:~ — 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.

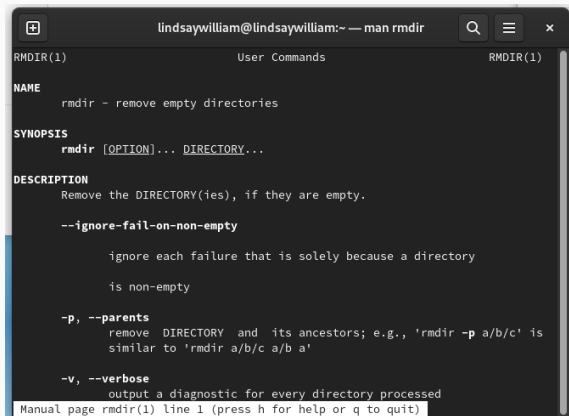
    -m, --mode=MODE
        set file mode (as in chmod), not a=rwx - umask

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

Рис. 12: Справка по команде mkdir

# Справка по командам



```
lindsaywilliam@lindsaywilliam:~ — 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

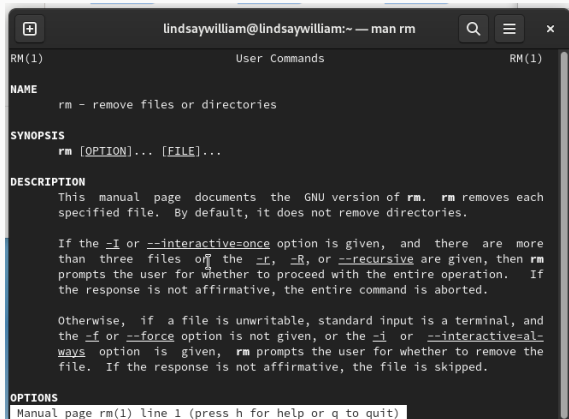
    -p, --parents
        remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is
        similar to 'rmdir a/b/c a/b a'

    -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

# Справка по командам



```
lindsaywilliam@lindsaywilliam:~ — 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.

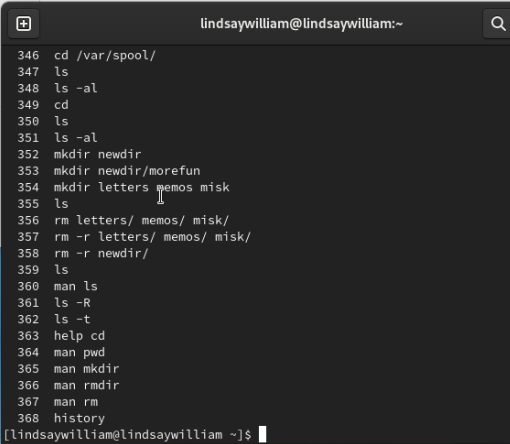
    If the -I or --interactive=once option is given, and there are more
    than three files or the -r, -R, or --recursive are given, then rm
    prompts the user for whether to proceed with the entire operation. If
    the response is not affirmative, the entire command is aborted.

    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 terminal window titled 'lindsaywilliam@lindsaywilliam:~' with a search icon in the top right. The terminal displays a list of 23 commands, each preceded by a line number from 346 to 368. The commands are: cd /var/spool/, ls, ls -al, cd, ls, ls -al, mkdir newdir, mkdir newdir/morefun, mkdir letters memos misk, ls, rm letters/ memos/ misk/, rm -r letters/ memos/ misk/, rm -r newdir/, ls, man ls, ls -R, ls -t, help cd, man pwd, man mkdir, man rmdir, man rm, and history. The prompt '[lindsaywilliam@lindsaywilliam ~]\$' is visible at the bottom.

```
lindsaywilliam@lindsaywilliam:~  
346 cd /var/spool/  
347 ls  
348 ls -al  
349 cd  
350 ls  
351 ls -al  
352 mkdir newdir  
353 mkdir newdir/morefun  
354 mkdir letters memos misk  
355 ls  
356 rm letters/ memos/ misk/  
357 rm -r letters/ memos/ misk/  
358 rm -r newdir/  
359 ls  
360 man ls  
361 ls -R  
362 ls -t  
363 help cd  
364 man pwd  
365 man mkdir  
366 man rmdir  
367 man rm  
368 history  
[lindsaywilliam@lindsaywilliam ~]$
```

Рис. 15: Команда history

## **Выводы по проделанной работе**

---

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