

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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Цели и задачи работы

Цель лабораторной работы

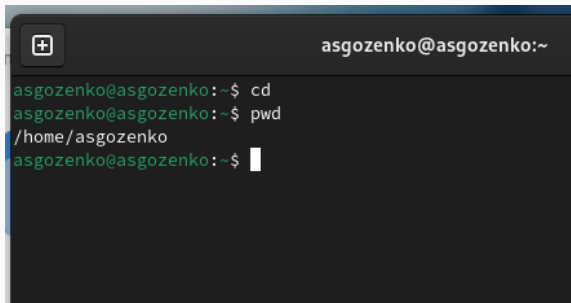
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

A terminal window with a dark background. The title bar shows a window icon and the text "asgozenko@asgozenko:~". The terminal content shows a user running the 'cd' command, then the 'pwd' command, which outputs "/home/asgozenko". The prompt returns to the shell.

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
asgozenko@asgozenko:~$ cd /tmp
asgozenko@asgozenko:/tmp$ ls
dbus-2QjjL6LR
dbus-8UYKqYWW
systemd-private-999390a62b7a440facdddc8156855177-chronyd.service-ecKHix
systemd-private-999390a62b7a440facdddc8156855177-colord.service-oI5smc
systemd-private-999390a62b7a440facdddc8156855177-dbus-broker.service-44HEsc
systemd-private-999390a62b7a440facdddc8156855177-fwupd.service-ph32BH
systemd-private-999390a62b7a440facdddc8156855177-low-memory-monitor.service-VvwDX6
systemd-private-999390a62b7a440facdddc8156855177-ModemManager.service-MxC5zL
systemd-private-999390a62b7a440facdddc8156855177-polkit.service-yFBzrQ
systemd-private-999390a62b7a440facdddc8156855177-power-profiles-daemon.service-k0Jv8Z
systemd-private-999390a62b7a440facdddc8156855177-rtkit-daemon.service-jV976y
systemd-private-999390a62b7a440facdddc8156855177-switcheroo-control.service-7fiUkQ
systemd-private-999390a62b7a440facdddc8156855177-systemd-hostnamed.service-EU0T0H
systemd-private-999390a62b7a440facdddc8156855177-systemd-logind.service-mxGjUE
systemd-private-999390a62b7a440facdddc8156855177-systemd-oomd.service-CacGiv
systemd-private-999390a62b7a440facdddc8156855177-systemd-resolved.service-sSnpHF
systemd-private-999390a62b7a440facdddc8156855177-upower.service-flsgIW
vmware-root_921-3980298495
asgozenko@asgozenko:/tmp$
```

Рис. 2: Команда ls

Опции команды ls

```
asgozenko@asgozenko:~/tmp$ ls -la
ls
..
dbus-2QjJL6LR
dbus-8UYKqYWW
.font-unix
.ICE-unix
systemd-private-999398a62b7a440facdddc8156855177-chronyd.service-ecKHix
systemd-private-999398a62b7a440facdddc8156855177-colord.service-oI5smc
systemd-private-999398a62b7a440facdddc8156855177-dbus-broker.service-44HEsc
systemd-private-999398a62b7a440facdddc8156855177-fwupd.service-ph32BH
systemd-private-999398a62b7a440facdddc8156855177-low-memory-monitor.service-VvwDX6
systemd-private-999398a62b7a440facdddc8156855177-ModemManager.service-MxCSzL
systemd-private-999398a62b7a440facdddc8156855177-polkit.service-yFBzrQ
systemd-private-999398a62b7a440facdddc8156855177-power-profiles-daemon.service-k0Jv8Z
systemd-private-999398a62b7a440facdddc8156855177-rtkit-daemon.service-jv976y
systemd-private-999398a62b7a440facdddc8156855177-switcheroo-control.service-7fiUkQ
systemd-private-999398a62b7a440facdddc8156855177-systemd-logind.service-mxGjUE
systemd-private-999398a62b7a440facdddc8156855177-systemd-oomd.service-CacGIv
systemd-private-999398a62b7a440facdddc8156855177-systemd-resolved.service-sSnPHF
systemd-private-999398a62b7a440facdddc8156855177-upower.service-flsgIw
vmware-root_921-3980298495
.X0-lock
```

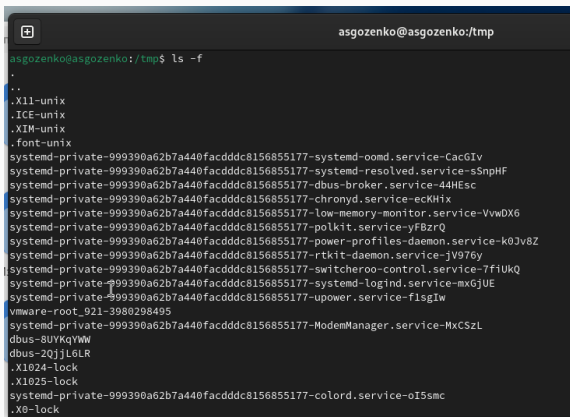
Рис. 3: Команда ls -la

Опции команды ls

```
asgozenk@asgozenko:~/tmp$ ls -lt
total 0
srwxrwxrwx. 1 root root 0 nap 10 12:49 dbus-20jjiL4LR
srwxrwxrwx. 1 root root 0 nap 10 12:49 dbus-BUYKqYVM
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-chronyd.service-ecKHix
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-colorctl.service-oISunc
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-dbus-broker.service-4AH8ac
drwx----- 3 root root 60 nap 10 12:50 systemd-private-999398a62b7a440facddd8156855177-fuupd.service-ph32BN
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-low-memory-monitor.service-VwDX6
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-MadameManager.service-MaC52L
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-polkit.service-yf82rQ
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-power-profiles-daemon.service-k02v8Z
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-rtkit-daemon.service-jV976y
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-switcheroo-control.service-7f10uQ
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-systemd-logind.service-mGjUE
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-systemd-oomd.service-CacG1v
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-systemd-resolved.service-sSnPHf
drwx----- 3 root root 60 nap 10 12:49 systemd-private-999398a62b7a440facddd8156855177-upower.service-flaglw
drwx----- 2 root root 40 nap 10 12:49 vmware-root_921-3986294495
```

Рис. 4: Команда ls -l

Опции команды ls

A terminal window with a dark background and light blue text. The title bar shows a window icon and the text 'asgozenko@asgozenko:/tmp'. The prompt is 'asgozenko@asgozenko:/tmp\$'. The command 'ls -f' has been entered, and the output is a list of files and directories. The output is as follows:

```
asgozenko@asgozenko:/tmp$ ls -f
.
..
.X11-unix
.ICE-unix
.XIM-unix
.font-unix
systemd-private-999390a62b7a440facdddc8156855177-systemd-oomd.service-CacGIv
systemd-private-999390a62b7a440facdddc8156855177-systemd-resolved.service-sSnpHF
systemd-private-999390a62b7a440facdddc8156855177-dbus-broker.service-44HEsc
systemd-private-999390a62b7a440facdddc8156855177-chronyd.service-ecKHix
systemd-private-999390a62b7a440facdddc8156855177-low-memory-monitor.service-VvwDX6
systemd-private-999390a62b7a440facdddc8156855177-polkit.service-yFBzrQ
systemd-private-999390a62b7a440facdddc8156855177-power-profiles-daemon.service-k0Jv8Z
systemd-private-999390a62b7a440facdddc8156855177-rtkit-daemon.service-jV976y
systemd-private-999390a62b7a440facdddc8156855177-switcheroo-control.service-7fiUkQ
systemd-private-999390a62b7a440facdddc8156855177-systemd-logind.service-mxGjUE
systemd-private-999390a62b7a440facdddc8156855177-upower.service-f1sgIw
vmware-root_921-3980298495
systemd-private-999390a62b7a440facdddc8156855177-ModemManager.service-MxCsZL
dbus-8UYKqYWW
dbus-2QjjL6LR
.X1024-lock
.X1025-lock
systemd-private-999390a62b7a440facdddc8156855177-colord.service-oI5smc
.X0-lock
```

Рис. 5: Команда ls -f

```
asgozenko@asgozenko:/tmp$ cd
asgozenko@asgozenko:~$ cd /var/spool/
asgozenko@asgozenko:/var/spool$ ls
abrt  abrt-upload  cups  lpd  mail  plymouth
asgozenko@asgozenko:/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 1510 мар 10 12:45 abrt
drwx-----. 1 abrt abrt   0 июл 19  2023 abrt-upload
drwx--x---. 1 root lp    6 фев 16 03:00 cups
drwxr-xr-x. 1 root root   0 июл 21  2023 lpd
drwxrwxr-x. 1 root mail 1222 мар  8 17:40 mail
drwxr-xr-x. 1 root root   0 июл 21  2023 plymouth
asgozenko@asgozenko:/var/spool$
```

Рис. 6: Каталог /var/spool

```
asgozenko@asgozenko: /var/spool$ cd
asgozenko@asgozenko:~$ ls
git-extended  work  Видео  Документы  Загрузки  Изображения  Музыка  Общ
asgozenko@asgozenko:~$ ls -al
итого 20
drwx-----, 1 asgozenko asgozenko 498 мар  4 12:00 .
drwxr-xr-x, 1 root      root      1216 мар  8 17:40 ..
-rw-----, 1 asgozenko asgozenko 213 мар  4 12:08 .bash_history
-rw-r--r--, 1 asgozenko asgozenko  18 июл 19 2023 .bash_logout
-rw-r--r--, 1 asgozenko asgozenko 144 июл 19 2023 .bash_profile
-rw-r--r--, 1 asgozenko asgozenko 679 мар  4 11:59 .bashrc
drwx-----, 1 asgozenko asgozenko 452 мар 10 12:50 .cache
drwx-----, 1 asgozenko asgozenko 402 мар  4 12:01 .config
-rw-r--r--, 1 asgozenko asgozenko 237 мар  4 11:58 .gitconfig
drwxr-xr-x, 1 asgozenko asgozenko  74 мар  4 12:04 git-extended
drwx-----, 1 asgozenko asgozenko 136 фев 26 19:30 .gnupg
drwx-----, 1 asgozenko asgozenko  20 фев 26 19:09 .local
drwxr-xr-x, 1 asgozenko asgozenko  48 фев 26 19:10 .mozilla
drwx-----, 1 asgozenko asgozenko 132 фев 26 19:33 .ssh
drwxr-xr-x, 1 asgozenko asgozenko  10 фев 26 19:33 work
drwxr-xr-x, 1 asgozenko asgozenko   0 фев 26 19:09 Видео
drwxr-xr-x, 1 asgozenko asgozenko   0 фев 26 19:09 Документы
drwxr-xr-x, 1 asgozenko asgozenko   0 фев 26 19:09 Загрузки
```

Рис. 7: Файлы в домашнем каталоге

Работа с каталогами

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

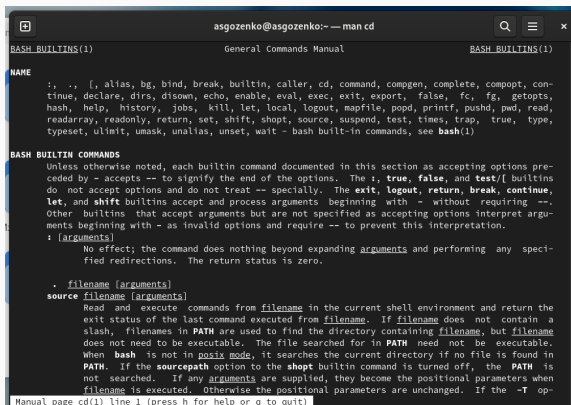
Рис. 8: Действия с каталогами

Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters':  
pandoc_eqnos.py  pandoc_fignos.py  pandoc_secnos.py  pandoc_tablenos.py  pandocxnos  
./work/study/2023-2024/Операционные системы/os-intro/template/report/report/pandoc/filters/pandocxnos':  
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:  
asgozenko@asgozenko:~$ ls -t  
git-extended  Видео  Документы  Музыка  'Рабочий стол'  
work  Изображения  Загрузки  Общедоступные  Шаблоны  
asgozenko@asgozenko:~$
```

Рис. 9: Команда ls -R и ls -t

Справка по командам



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

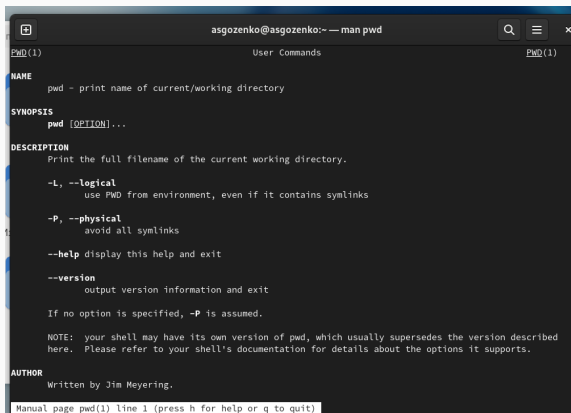
NAME
:  ., [, alias, bg, bind, break, builtin, caller, cd, command, compgen, complete, compopt, continue, declare, dirs, disown, echo, enable, eval, exec, exit, export, false, fc, fg, getopts, hash, help, history, jobs, kill, let, local, logout, mapfile, popd, printf, pushd, pwd, read, readarray, readonly, return, set, shift, shopt, source, suspend, test, times, trap, true, type, typeset, ulimit, umask, unalias, unset, wait - bash built-in commands, see bash(1)

BASH_BUILTIN_COMMANDS
Unless otherwise noted, each builtin command documented in this section as accepting options preceded by - accepts -- to signify the end of the options. The set, true, false, and test/[ builtins do not accept options and do not treat -- specially. The exit, logout, return, break, continue, let, and shift builtins accept and process arguments beginning 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 return 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 containing 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 arguments are supplied, they become the positional parameters when filename is executed. Otherwise the positional parameters are unchanged. If the -T option is specified, the command is executed in a subshell.

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

Рис. 10: Справка по команде cd



```
asgozenko@asgozenko:~ — 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

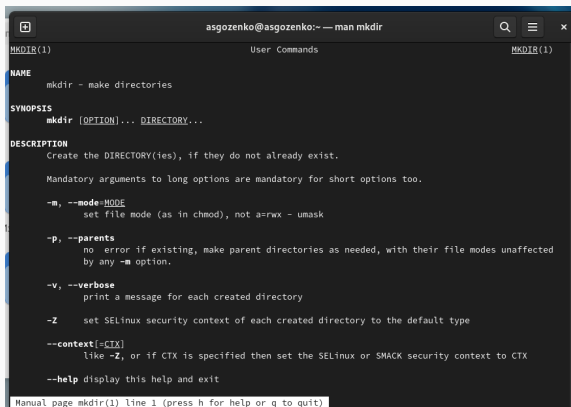
  If no option is specified, -P is assumed.

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.

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

Рис. 11: Справка по команде pwd



```
asgozenko@asgozenko:~ -- 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

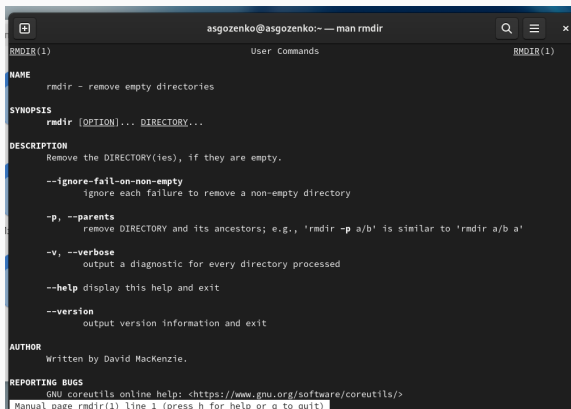
-Z
    set SELinux security context of each created directory to the default type

--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

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

Рис. 12: Справка по команде mkdir



```
asgozenko@asgozenko:~ — 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

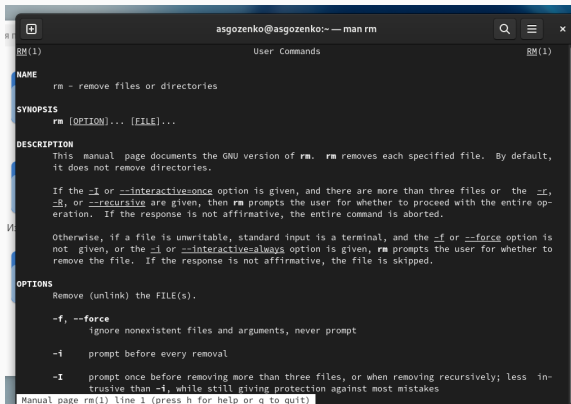
    --version
        output version information and exit

AUTHOR
    Written by David MacKenzie.

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

Рис. 13: Справка по команде rmdir

Справка по командам



```
asgozenko@asgozenko:~ -- 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

  -I
        prompt once before removing more than three files, or when removing recursively; less intrusive than -i, while still giving protection against most mistakes

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

Рис. 14: Справка по команде rm

История командной строки

```
И: 33 mkdir newdir/morefun
    34 mkdir letters memos misk
    35 ls
    36 rm letters/ memos/ misk/
    37 rm -r letters/ memos/ misk/
    38 rm -r newdir/
    39 ls
    40 ls -R
    41 ls -t
    42 man cd
    43 man pwd
    44 man mkdir
    45 man rmdir
    46 man rm
    47 history
asgozenko@asgozenko:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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