

Основы интерфейса взаимодействия пользователя с системой Unix на уровне командной строки

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11 марта, 2024, Москва, Россия

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Цели и задачи работы

Цель лабораторной работы

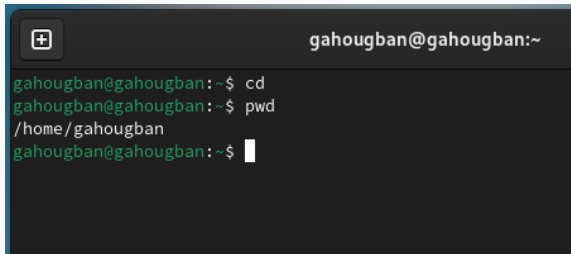
Приобретение практических навыков взаимодействия пользователя с системой посредством командной строки.

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



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

Рис. 1: Путь к домашнему каталогу

Опции команды ls

```
gahougban@gahougban:~$  
gahougban@gahougban:~$ cd /tmp  
gahougban@gahougban:/tmp$ ls  
dbus-dqEDmWMX  
dbus-Torhc7tP  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-chrond.service-cYEGUw  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-colord.service-5oeIM2  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-dbus-broker.service-epUAln  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-fwupd.service-9ocTdH  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-low-memory-monitor.service-Uqac  
wR  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-ModemManager.service-lpQ7kh  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-polkit.service-apAmu6  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-power-profiles-daemon.service-H  
5iibL  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-rtkit-daemon.service-Yknu9w  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-switcheroo-control.service-SdMp  
cw  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-hostnamed.service-3ifK8  
u  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-logind.service-nrkbcy  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-oom.service-PskssU  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-resolved.service-u99HNE
```

Рис. 2: Команда ls

Опции команды ls

```
gahougban@gahougban: /tmp$ ls -a
.
..
dbus-dqEDmWMX
dbus-Torhc7tP
.font-unix
.ICE-unix
systemd-private-d463fb3b46cb4c57a6920e04548146ba-chrond.service-cYEGUw
systemd-private-d463fb3b46cb4c57a6920e04548146ba-colord.service-5oe1N2
systemd-private-d463fb3b46cb4c57a6920e04548146ba-dbus-broker.service-epUAln
systemd-private-d463fb3b46cb4c57a6920e04548146ba-fwupd.service-9ocTdH
systemd-private-d463fb3b46cb4c57a6920e04548146ba-low-memory-monitor.service-UqaCwR
systemd-private-d463fb3b46cb4c57a6920e04548146ba-ModemManager.service-lpQ7kh
systemd-private-d463fb3b46cb4c57a6920e04548146ba-polkit.service-apAmu6
systemd-private-d463fb3b46cb4c57a6920e04548146ba-power-profiles-daemon.service-H5iibl
systemd-private-d463fb3b46cb4c57a6920e04548146ba-rtkit-daemon.service-Yknu9w
systemd-private-d463fb3b46cb4c57a6920e04548146ba-switcheroo-control.service-SdMpcw
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-logind.service-nrkbcy
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-oond.service-PskssU
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-resolved.service-u99HHE
```

Рис. 3: Команда ls -a

Опции команды ls

```
gahougbang@gahougban: /tmp$  
gahougbang@gahougban: /tmp$ ls -l  
итого 8  
srw-rw-rw-. 1 root root 8 map 11 17:49 dbus-dqEDwW0X  
srw-rw-rw-. 1 root root 8 map 11 17:49 dbus-Torhc7EP  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-chromyd.service-cYEG0w  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-color.service-5e18K2  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-dbus-broker.service-epUAln  
drwx----- 3 root root 60 map 11 17:51 systemd-private-d463fb3b46cb4c57a692be04548146ba-fwupd.service-9acTDH  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-low-memory-monitor.service-UqaCuM  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-ModemManager.service-lpQ7kh  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-polkit.service-apAmu6  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-power-profiles-daemon.service-H5i1bL  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-rtkit-daemon.service-Yknubw  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-switcheroo-control.service-5DRpcw  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-systemd-logind.service-nakby  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-systemd-oomd.service-PkxSb  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-systemd-resolved.service-u99HME  
drwx----- 3 root root 60 map 11 17:49 systemd-private-d463fb3b46cb4c57a692be04548146ba-upower.service-n3ojrE  
drwx----- 2 root root 40 map 11 17:49 vmware-root_916-2689078442  
gahougbang@gahougban: /tmp$
```

Рис. 4: Команда ls -l

Опции команды ls

```
gahougban@gahougban: /tmp$  
gahougban@gahougban: /tmp$ ls -f  
.  
..  
.X11-unix  
.ICE-unix  
.XIM-unix  
.font-unix  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-oomb.service-PskssU  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-resolved.service-u99  
HHE  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-dbus-broker.service-epUAln  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-chronyd.service-cYEgUw  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-low-memory-monitor.service-U  
qaCwR  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-polkit.service-apAmu6  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-power-profiles-daemon.servic  
e-H5iibL  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-rtkit-daemon.service-Yknu9w  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-switcheroo-control.service-S  
dMpcw  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-systemd-logind.service-nrkbc  
y  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-upower.service-nJojrE  
vmware-root_916-2689078442  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-ModemManager.service-lpQ7kh  
dbus-dqEDmWMX  
dbus-Torhc7tP  
.X1024-lock  
.X1025-lock  
systemd-private-d463fb3b46cb4c57a6920e04548146ba-colord.service-5oe1M2
```

Рис. 5: Команда ls -f

```
gahougban@gahougban:/tmp$ cd /var/spool/  
gahougban@gahougban:/var/spool$ ls -l  
итого 0  
drwxr-x--x. 1 root abrt 1510 мар 11 12:08 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  
gahougban@gahougban:/var/spool$
```

Рис. 6: Каталог /var/spool

```
gahougban@gahougban: /var/spool$  
gahougban@gahougban: /var/spool$ cd  
gahougban@gahougban:~$ ls  
git-extended  Видео          Загрузки      Музыка        'Рабочий стол'  
work          Документы      Изображения   Общедоступные  Шаблоны  
gahougban@gahougban:~$ ls -al  
итого 20  
drwx-----. 1 gahougban gahougban 498 мар  5 20:20 .  
drwxr-xr-x.  1 root      root      1216 мар  8 17:40 ..  
-rw-----. 1 gahougban gahougban   81 мар  5 20:27 .bash_history  
-rw-r--r--. 1 gahougban gahougban   18 июл 19 2023 .bash_logout  
-rw-r--r--. 1 gahougban gahougban  144 июл 19 2023 .bash_profile  
-rw-r--r--. 1 gahougban gahougban  679 мар  5 20:18 .bashrc  
drwx-----. 1 gahougban gahougban  452 мар 11 17:51 .cache  
drwx-----. 1 gahougban gahougban  402 мар  5 20:20 .config  
-rw-r--r--. 1 gahougban gahougban  233 мар  5 20:20 .gitconfig  
drwxr-xr-x.  1 gahougban gahougban   74 мар  5 20:23 git-extended  
drwx-----. 1 gahougban gahougban  276 мар  5 20:19 .gnupg  
drwx-----. 1 gahougban gahougban   20 фев 24 14:42 .local  
drwxr-xr-x.  1 gahougban gahougban   48 фев 24 14:42 .mozilla  
drwx-----. 1 gahougban gahougban  132 фев 24 14:51 .ssh  
drwxr-xr-x.  1 gahougban gahougban   10 фев 24 14:51 work  
drwxr-xr-x.  1 gahougban gahougban    0 фев 24 14:42 Видео
```

Рис. 7: Файлы в домашнем каталоге

```
gahougban@gahougban:~$ mkdir newdir
gahougban@gahougban:~$ mkdir newdir/morefun
gahougban@gahougban:~$ mkdir letters memos misk
gahougban@gahougban:~$ ls
git-extended  misk      Видео      Изображения  'Рабочий стол'
letters       newdir    Документы  Музыка       Шаблоны
memos         work      Загрузки   Общедоступные

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

Рис. 8: Действия с каталогами

Опции команды ls

```
./work/study/2023-2024/Операционные системы/os-intro/template/report/scripts
':
image-report mpv-shot

./Видео:

./Документы:

./Загрузки:
004-lab_shell.pdf

./Изображения:

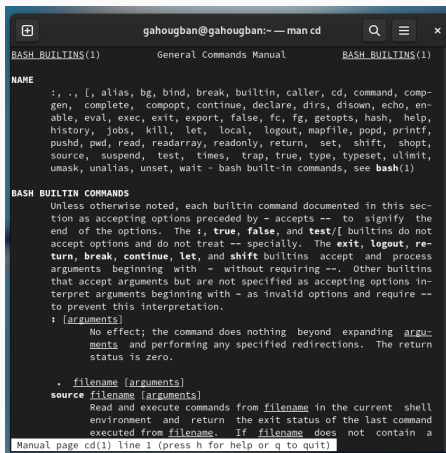
./Музыка:

./Общедоступные:

'./Рабочий стол':

./Шаблоны:
gahougban@gahougban:~$ ls -t
Загрузки      work      Документы    Музыка      Шаблоны
git-extended  Видео     Изображения  Общедоступные 'Рабочий стол'
gahougban@gahougban:~$
```

Рис. 9: Команда ls -R и ls -t



```
gahougban@gahougban:~ — man cd
BASH BUILTINS(1)      General Commands Manual      BASH BUILTINS(1)

NAME
: , . , [ , alias , bg , bind , break , builtin , caller , cd , command , comp-
gen , complete , compopt , continue , declare , dirs , disown , echo , en-
able , 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)

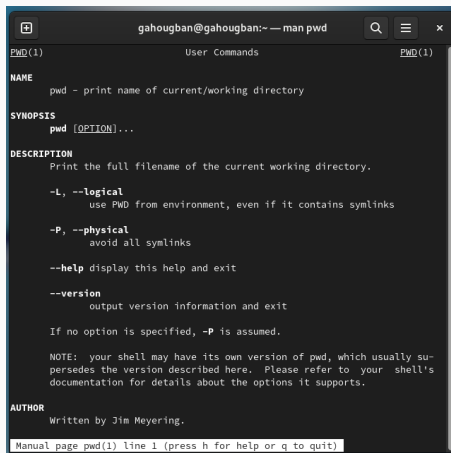
BASH BUILTIN COMMANDS
Unless otherwise noted, each builtin command documented in this sec-
tion as accepting options preceded by - accepts -- to signify the
end of the options. The :, true, false, and test/[ builtins do not
accept options and do not treat -- specially. The exit, logout, re-
turn, break, 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 in-
terpret arguments beginning with - as invalid options and require --
to prevent this interpretation.

: [arguments]
    No effect; the command does nothing beyond expanding argu-
ments 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

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

Рис. 10: Справка по команде cd



```
gahougban@gahougban:~ — 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

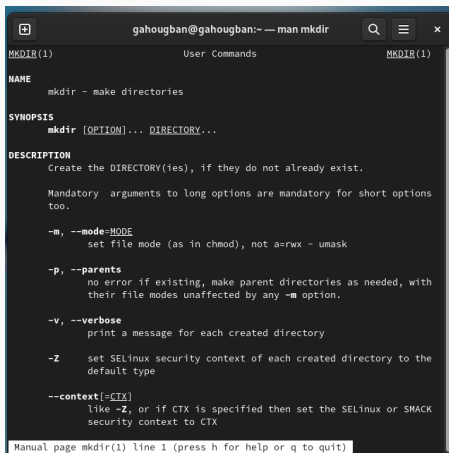
    If no option is specified, -P is assumed.

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



```
gahougban@gahougban:~ — 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

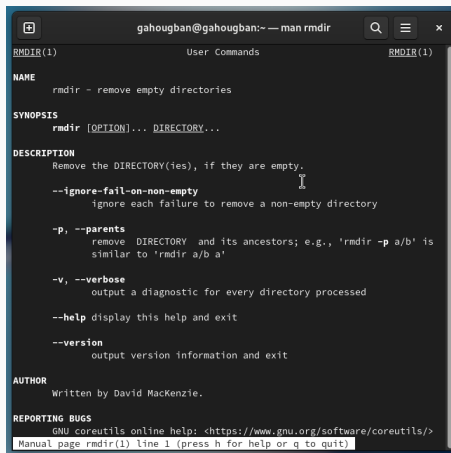
    -Z
        set SELinux security context of each created directory to the default type

    --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

Справка по командам



```
gahougban@gahougban:~ — 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

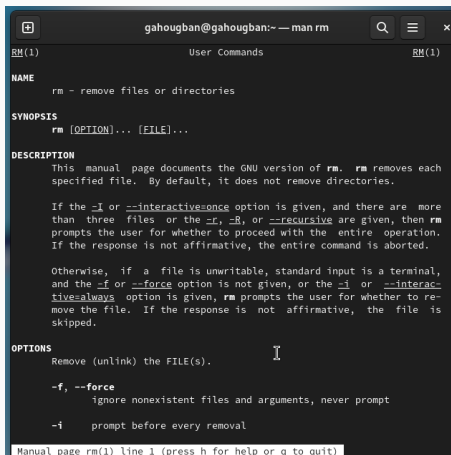
    --help
        display this help and exit

    --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



```
gahougban@gahougban:~ — 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 --interac-
tive=always option is given, rm prompts the user for whether to re-
move 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

```
21  cd
22  ls -al
23  mkdir newdir
24  mkdir newdir/morefun
25  mkdir letters memos misk
26  ls
27  rm letters/ memos/ misk/
28  rm -r letters/ memos/ misk/
29  rm -r newdir/
30  ls
31  ls -R
32  ls -t
33  man cd
34  man pwd
35  man mkdir
36  man rmdir
37  man rm
38  history
gahougban@gahougban:~$
```

Рис. 15: Команда history

Выводы по проделанной работе

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