

Командная оболочка Midnight Commander

Павел Межинский¹

25 марта, 2024, Москва, Россия

¹Российский Университет Дружбы Народов

Цели и задачи работы

Цель лабораторной работы

Ознакомление с файловой системой Linux, её структурой, именами и содержанием каталогов. Приобретение практических навыков по применению команд для работы с файлами и каталогами, по управлению процессами, по проверке использования диска и обслуживанию файловой системы.

Задачи лабораторной работы

- 1 Изучить возможности Midnight Commander
- 2 Изучить редактор Midnight Commander

Процесс выполнения лабораторной работы

Работа с Midnight Commander

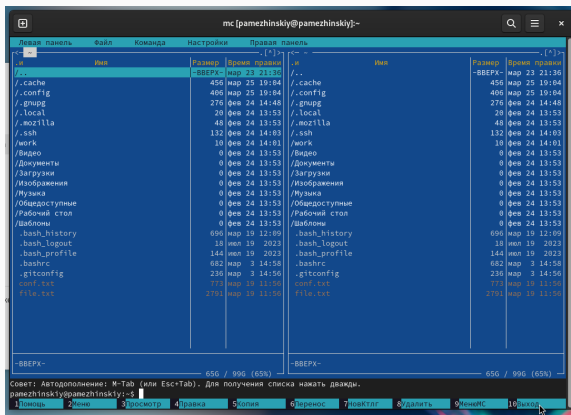


Рис. 1: Запуск mc

Работа с Midnight Commander

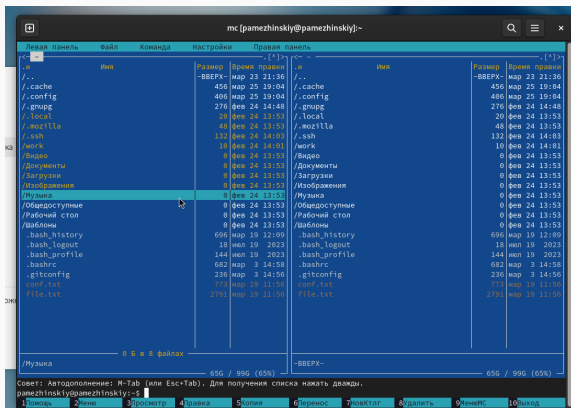


Рис. 2: Выделение

Работа с Midnight Commander

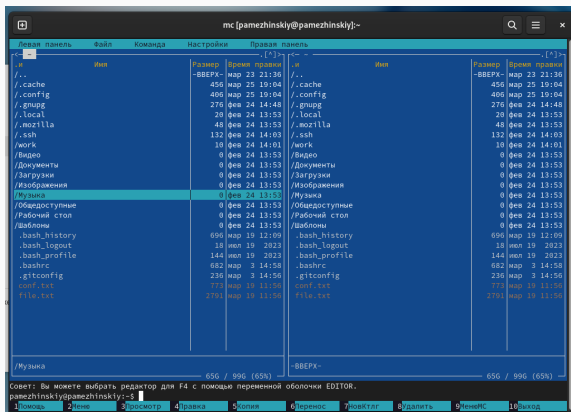


Рис. 3: Отмена

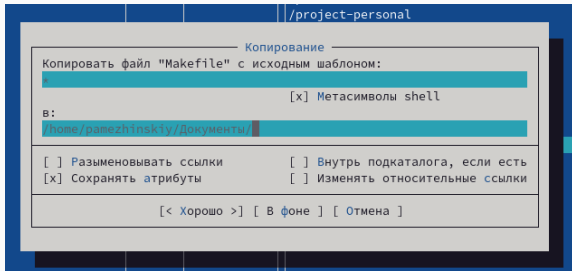


Рис. 4: Копирование

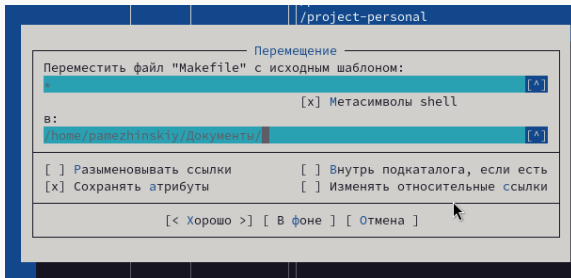


Рис. 5: Перемещение

Работа с Midnight Commander

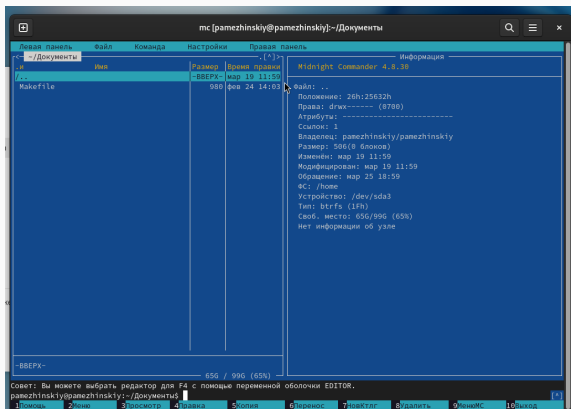


Рис. 6: Информация

Работа с Midnight Commander

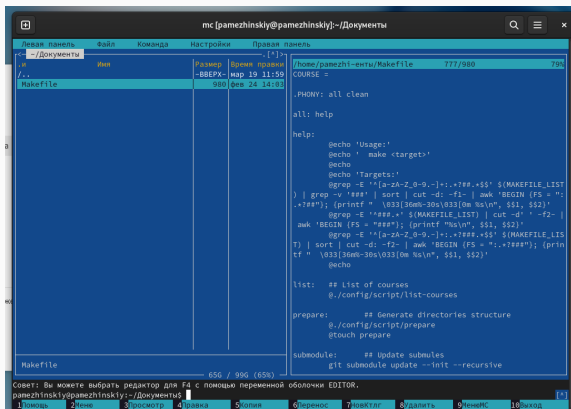


Рис. 7: Быстрый просмотр

Работа с Midnight Commander

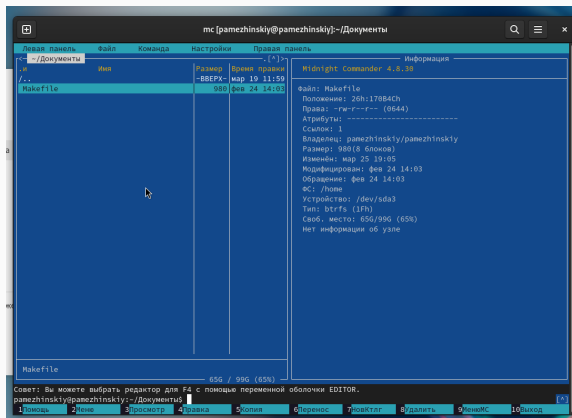


Рис. 8: Информация

Работа с Midnight Commander

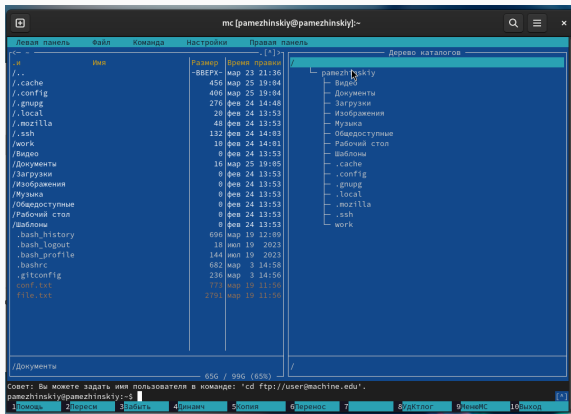
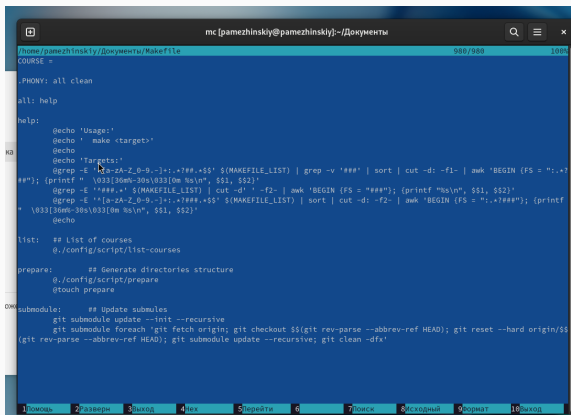


Рис. 9: Дерево каталогов

Работа с Midnight Commander



The screenshot shows the Midnight Commander interface with a terminal window open. The terminal displays the contents of a file named 'Makefile' located at '/home/pamezhinskiy/Документы/Makefile'. The file content includes a 'COURSE =' line, a '.PHONY: all clean' declaration, a 'help:' target with usage and targets information, a 'list:' target for listing courses, a 'prepare:' target for generating directory structure, and a 'submodule:' target for updating submodules. The interface has a dark blue background with a light blue header bar showing the file path and a status bar at the bottom with navigation buttons.

```
mc [pamezhinskiy@pamezhinskiy:~/Документы]
/home/pamezhinskiy/Документы/Makefile 980/980 100%
COURSE =

.PHONY: all clean

all: help

help:
    @echo 'Usage:'
    @echo ' make <target>'
    @echo
    @echo 'Targets:'
    @grep -E '[a-zA-Z_0-9-]*:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '##' | sort | cut -d: -f1- | awk 'BEGIN {FS = ".*?";}
##"; (printf "\033[36m%-30s\033[0m %s\n", $$1, $$2)'
    @grep -E '####.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN {FS = "##";} (printf "%s\n", $$1, $$2)'
    @grep -E '[a-zA-Z_0-9-]*:.*?##.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN {FS = ".*?##";} (printf
" \033[36m%-30s\033[0m %s\n", $$1, $$2)'
    @echo

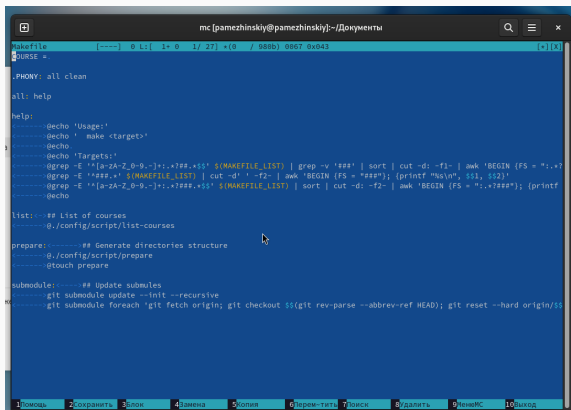
list: ## List of courses
    @./config/script/list-courses

prepare: ## Generate directories structure
    @./config/script/prepare
    @touch prepare

submodule: ## Update submodules
    git submodule update --init --recursive
    git submodule foreach 'git fetch origin; git checkout $$git rev-parse --abbrev-ref HEAD; git reset --hard origin/$$
(git rev-parse --abbrev-ref HEAD); git submodule update --recursive; git clean -dfx'
```

Рис. 10: Просмотр содержимого текстового файла

Работа с Midnight Commander



The screenshot shows the Midnight Commander (MC) interface. The title bar indicates the user is 'pamezhinskiy@pamezhinskiy' in the '~/.Документы' directory. The main window displays a Makefile with the following content:

```
Makefile [----] 0 L: [ 1+ 0 1/ 27] * (0 / 958b) 0867 0x043 [v] [X]
COURSE =

.PHONY: all clean

all: help

help:
-----@echo 'Usage:'
-----@echo ' make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '[a-zA-Z_0-9-]+:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '##' | sort | cut -d: -f1- | awk 'BEGIN {FS = ".*?";}
-----@grep -E '##.*?' $(MAKEFILE_LIST) | cut -d: -f2- | awk 'BEGIN {FS = "##?";} {printf "%s\n", $$1, $$2}'
-----@grep -E '[a-zA-Z_0-9-]+:.*?##.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN {FS = ".*?##?";} {printf
-----@echo

list:--## List of courses
-----@./config/script/list-courses

prepare:-----## Generate directories structure
-----@./config/script/prepare
-----@touch prepare

submodule:-----## Update submodules
-----git submodule update --init --recursive
-----git submodule foreach 'git fetch origin; git checkout $$ (git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'
```

The bottom status bar shows various actions: 1.Помощь, 2.Сохранить, 3.Вектор, 4.Замена, 5.Копия, 6.Перем-титы, 7.Поиск, 8.Удалить, 9.ВнеMC, 10.Выход.

Рис. 11: Отредактируем содержимое текстового файла без сохранения результатов

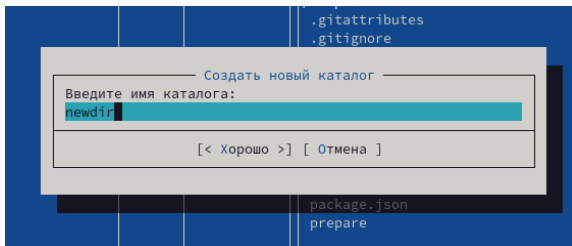


Рис. 12: Создание каталога

Работа с Midnight Commander

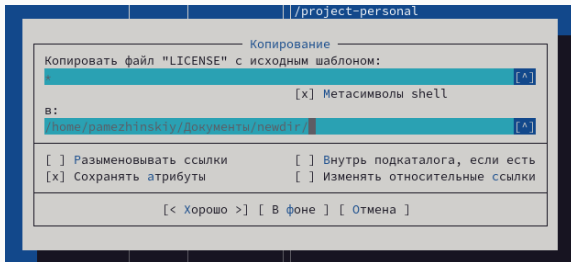


Рис. 13: Копирование в файлов в созданный каталог

Работа с Midnight Commander

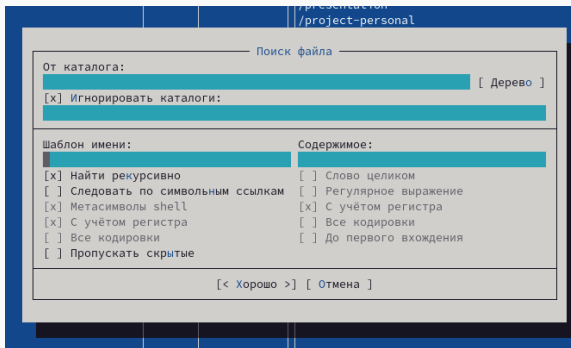


Рис. 14: Поиск файлов

Работа с Midnight Commander

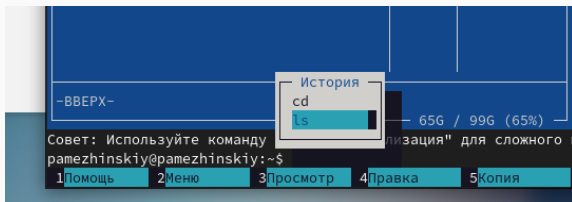


Рис. 15: История команд

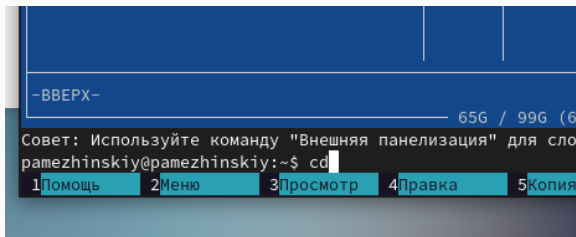


Рис. 16: Переход в домашний каталог

Работа с Midnight Commander



```
mc.ext.ini      [-----] 0 L: 1+ 0 1/1136 *0 /26909b/0035 0x023  [.*|X]
Midnight Commander 4.8 extension file
#
# Warning: The structure of this file has been completely changed with the version 4.0!
#
# All lines starting with # or empty lines are ignored.
#
# IMPORTANT: mc scans this file only upon first use or after editing it using the
# mc "Edit extension file" command (F8-c-e). If you edit this file in any other way
# while mc is running, you will need to press F8-c-e and exit the editor for your
# changes to take effect, or exit mc and start it again.
#
# Section name can be anything with following exceptions:
#   there are two reserved section names:
#       mc.ext.ini
#       Default
#   special name pattern:
#       include/xxxx
#   See below for more details.
#
# Section [mc.ext.ini] is mandatory. It contains file metadata.
# "Version" parameter is mandatory. It contains the file format version.
#
# Section [Default] is optional. It is applied only if no other match was found.
#
# Sections like [include/xxxx] can be referenced as "include=xxxx" from other sections.
# Section [include/xxxx] can be located as before as after sections that point to it.
#
# Sections are processed from top to bottom, thus the order is important.
# If there are more than one sections with the same name in this file, the first
# section will be used.
#
# [Default] should be a catch-all action and come last.
#
```

Рис. 17: Просмотр файла расширений

Работа с Midnight Commander

A screenshot of the Midnight Commander file menu. The window title is "menu" with a status bar at the bottom showing "1: Помощь 2: Сохранить 3: Поиск 4: Имена 5: Скопия 6: Перенести 7: Повтор 8: Удалить 9: НенавС 10: Выход". The menu content includes options like "shell_patterns=0", "#####", "F The % character", "f The current file", "p The current file", "d The current working directory", "s \"Selected files\"; the tagged files if any, otherwise the current file", "t Tagged files", "u Tagged files (and they are untagged on return from expand_format)", "v view Runs the commands and pipes standard output to the view command", "If vview is immediately followed by '!', recognize keywords", "ascii, hex, nroff and unform", "If the format letter is in uppercase, it refers to the other panel", "With a number followed the % character you can turn quoting on (default) and off. For example:", "f quote expanded macro", "f ditto", "f don't quote expanded macro", "#####", "t t Do something on the current file", "CMD=:(Enter command)", "SCMD f", "t t Do something on the tagged files", "CMD=:(Enter command)", "for i in \$t ; do".

```
menu [-----] 1 t: 1*16 17/378 *(732 /11821b) 0010 0x00A [x]
shell_patterns=0

#####
# F% The % character
# f The current file (if non-local vfs, file will be copied locally and
# %f will be full path to it)
# p The current file
# d The current working directory
# s "Selected files"; the tagged files if any, otherwise the current file
# t Tagged files
# u Tagged files (and they are untagged on return from expand_format)
# v view Runs the commands and pipes standard output to the view command
# If vview is immediately followed by '!', recognize keywords
# ascii, hex, nroff and unform
#
# If the format letter is in uppercase, it refers to the other panel
#
# With a number followed the % character you can turn quoting on (default)
# and off. For example:
# %f quote expanded macro
# %f ditto
# %f don't quote expanded macro
#####

+ t t
| Do something on the current file
| CMD=:(Enter command)
| SCMD f

+ t t
| Do something on the tagged files
| CMD=:(Enter command)
| for i in $t ; do
```

Рис. 18: Просмотр файла меню

Работа с Midnight Commander



Рис. 19: Конфигурация

Работа с Midnight Commander



Рис. 20: Внешний вид

Работа с Midnight Commander



Рис. 21: Настройки панелей



Рис. 22: Подтверждение



Рис. 23: Оформление



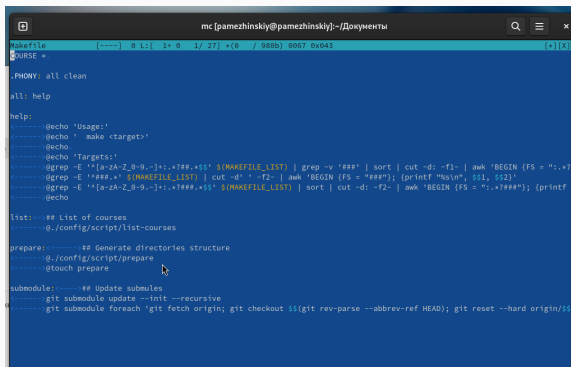
Рис. 24: Кодировка символов

Работа с Midnight Commander



Рис. 25: Распознавание клавиш

Работа с редактором Midnight Commander



```
mc [pamezhinskiy@pamezhinskiy:~/Документы]
Makefile [----] 0 L: 1+ 0 1/ 27 * (0 / 980b) 8067 0x043 [~][X]
# Makefile
#
# COURSE =
#
.PHONY: all clean
all: help
help:
#####@echo 'Usage:'
#####@echo ' make <target>'
#####@echo
#####@echo 'Targets:'
#####@grep -E '[a-zA-Z_0-9-]+\.[789].+$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN {FS = ":[^?"; }
#####@grep -E '###.+' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN {FS = "###"; } {printf "%s\n", $51, $52}'
#####@grep -E '[a-zA-Z_0-9-]+\.[789].+$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN {FS = ":[^?"; } {printf
#####@echo

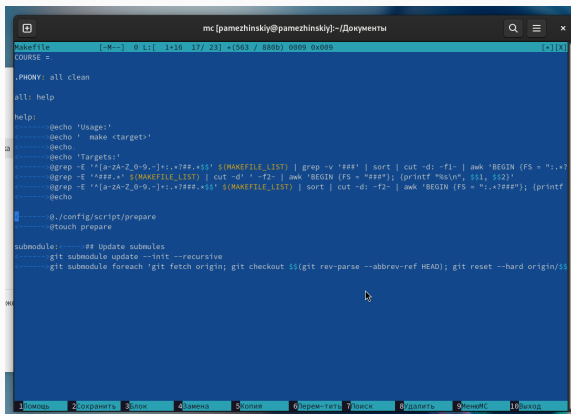
list:##### List of courses
#####@./config/script/list-courses

prepare:##### # Generate directories structure
#####@./config/script/prepare
#####@touch prepare

submodule:##### # Update submodules
#####@git submodule update --init --recursive
#####@git submodule foreach 'git fetch origin; git checkout $(git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'
```

Рис. 26: Файл с текстом

Работа с редактором Midnight Commander



The screenshot shows the Midnight Commander (MC) file editor interface. The title bar indicates the user is pamezhinskiy@pamezhinskiy in the ~/Документы directory. The editor is displaying a file named Makefile. The content of the Makefile is as follows:

```
Makefile
COURSE =

.PHONY: all clean

all: help

help:
-----@echo 'Usage:'
-----@echo ' make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '^[a-zA-Z_0-9-]+\.[x]?#.*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = ":[x]?"); {print "%s\n", $$1, $$2}'
-----@grep -E '###.*' $(MAKEFILE_LIST) | cut -d: -f2- | awk 'BEGIN (FS = "###"); {print "%s\n", $$1, $$2}'
-----@grep -E '^[a-zA-Z_0-9-]+\.[x]?#.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN (FS = ":[x]?###"); {print "%s\n", $$1, $$2}'
-----@echo

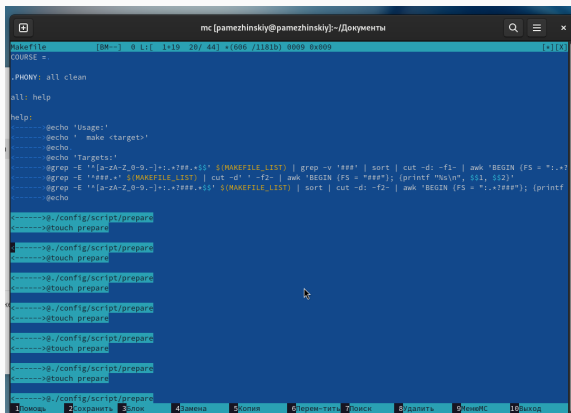
-----@./config/script/prepare
-----@touch prepare

submodule:-----# Update submodules
-----git submodule update --init --recursive
-----git submodule foreach 'git fetch origin; git checkout $(git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'
```

At the bottom of the window, there is a toolbar with icons and labels for various actions: 1. Помощь (Help), 2. Сохранить (Save), 3. Блок (Block), 4. Замена (Replace), 5. Скопировать (Copy), 6. Вставить (Paste), 7. Поиск (Find), 8. Удалить (Delete), 9. Меню (Menu), 10. Выход (Exit).

Рис. 27: Файл с текстом

Работа с редактором Midnight Commander



```
mc [pamezhinskiy@pamezhinskiy]: ~/Документы
Makefile [BM--] 0 L: 1*19 20/ 44) * (606 /1181b) 0009 0x009 [*)(X)
COURSE = .

.PHONY: all clean

all: help

help:
-----@echo 'Usage:'
-----@echo ' make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '[a-zA-Z_0-9-]+\.[a-z]*.x$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = ":[a-z]*.x$$") {print $1}'
-----@grep -E '[a-z]*.x$$' $(MAKEFILE_LIST) | cut -d: -f2- | awk 'BEGIN (FS = "###"); (printf "%s\n", $0, $0)'
-----@grep -E '[a-zA-Z_0-9-]+\.[a-z]*.x$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN (FS = ":[a-z]*.x$$"); (printf "%s\n", $0, $0)'
-----@echo

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

<----->./config/script/prepare
<----->@touch prepare

1: Помощь 2: Сохранить 3: Слов 4: Замена 5: Копия 6: Переименовать 7: Поиск 8: Удалить 9: Меню 10: Выход
```

Рис. 28: Копирование фрагмента

Работа с редактором Midnight Commander

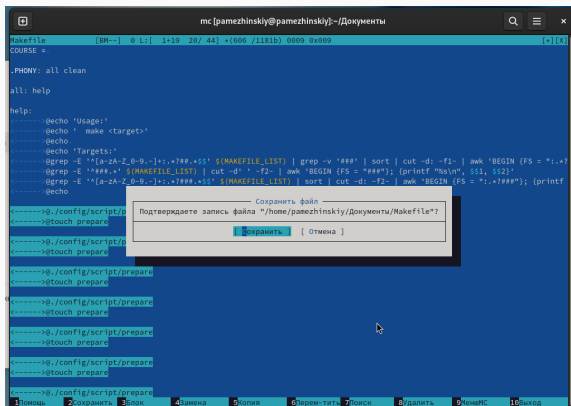
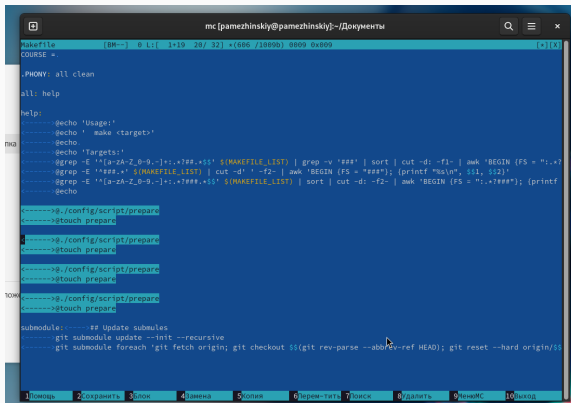


Рис. 29: Сохранение

Работа с редактором Midnight Commander



The screenshot shows the Midnight Commander (MC) interface. The title bar indicates the user is 'mc [pamezhinskiy@pamezhinskiy]~/Документы'. The main window displays a file named 'Makefile' with a size of 0 bytes and a date of 19/10/2019. The file's contents are shown in a blue background with white text. The Makefile includes a 'help' target, a 'phony' target, and a 'submodule' target. The 'submodule' target is currently selected, and its contents are displayed in the lower pane. The interface includes a menu bar at the bottom with options like 'Помощь', 'Сохранить', 'Блок', 'Данная', 'Копия', 'Взрывать', 'Линия', 'Удалить', 'Начать', and 'Выход'.

```
Makefile  [0B--]  0 L: [ 19/10/2019 ] x(606 /1000b) 0009 0x009 [+][X]
COURSE *.

.PHONY: all clean

all: help

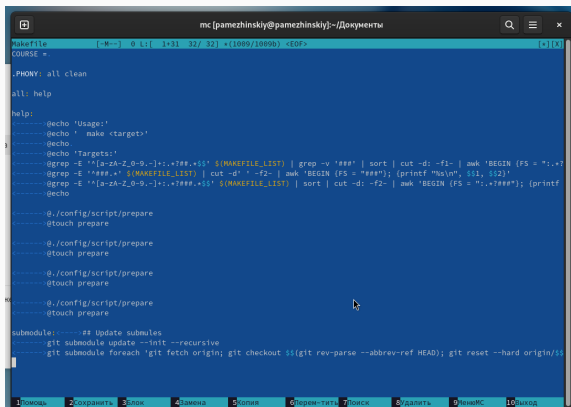
help:
-----@echo 'Usage:'
-----@echo '  make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '[a-zA-Z_0-9-]*:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '##' | sort | cut -d: -f1- | awk 'BEGIN {FS = " ";}
-----@grep -E '##.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN {FS = "##";} (printf "%s\n", $1, $2)'
-----@grep -E '[a-zA-Z_0-9-]*:.*?##.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN {FS = " ";} (printf
-----@echo

----->@./config/script/prepare
----->touch prepare
----->@./config/script/prepare
----->touch prepare
----->@./config/script/prepare
----->touch prepare
----->@./config/script/prepare
----->touch prepare

submodule:-----## Update submodules
-----git submodule update --init --recursive
-----git submodule foreach 'git fetch origin; git checkout $$ (git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'
```

Рис. 30: Отмена

Работа с редактором Midnight Commander



```
mc [pamezhinskiy@pamezhinskiy:~/Документы]
Makefile  [-M--]  0 L: 1+31 32/ 32) +(1000/1000b) <EOF>
COURSE =

.PHONY: all clean

all: help

help:
----- @echo 'Usage:'
----- @echo ' make <target>'
----- @echo
----- @echo 'Targets:'
----- @grep -E '^[a-zA-Z_0-9-]+:.*?##,##$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = ".*?")
----- @grep -E '###.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN (FS = "###"); (printf "%s\n", $1, $2)'
----- @grep -E '^[a-zA-Z_0-9-]+:.*?###,##$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN (FS = ".*?###"); (printf
----- @echo

----- @./config/script/prepare
----- @touch prepare

----- @./config/script/prepare
----- @touch prepare

----- @./config/script/prepare
----- @touch prepare

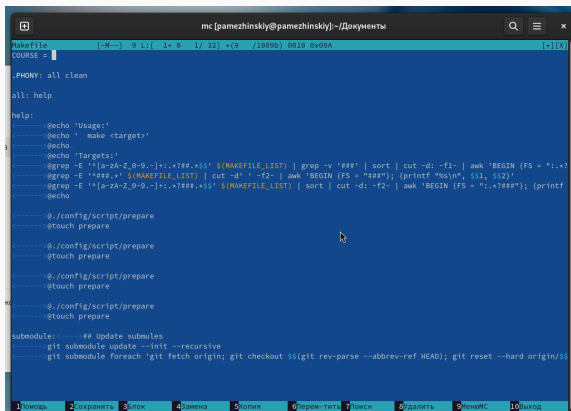
----- @./config/script/prepare
----- @touch prepare

submodule:----- ## Update submodules
----- git submodule update --init --recursive
----- git submodule foreach 'git fetch origin; git checkout $(git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'

1 Помощь  2 Сохранить  3 Выход  4 Замена  5 Копия  6 Отменить  7 Поиск  8 Вставить  9 Меню  10 Выход
```

Рис. 31: Переход в конец файла

Работа с редактором Midnight Commander



The screenshot shows the Midnight Commander (mc) interface. The title bar indicates the user is 'pamezhinskiy@pamezhinskiy' in the directory '~/Документы'. The file being edited is 'makefile'. The content of the file includes a 'COURSE' variable, a 'PHONY' declaration, a 'help' target, and a 'submodule' section with instructions for updating submodules. The interface features a status bar at the bottom with icons for various actions like 'Помощь', 'Сохранить', 'Блок', etc.

```
mc [pamezhinskiy@pamezhinskiy]:~/Документы
makefile  [-M--]  9 L:  1+ 0  1/ 32] * (9  /1009b) 0010 0x00A  [=] [X]
COURSE =

.PHONY: all clean

all: help

help:
-----@echo 'Usage:'
-----@echo '  make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '[a-zA-Z_0-9-]+\.[789].*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = "[:.]*")
-----@grep -E '###.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN (FS = "###"); (printf "%s\n", $$1, $$2)'
-----@grep -E '[a-zA-Z_0-9-]+\.[789].*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN (FS = "[:.]*789"); (printf
-----@echo

pamezh@./config/script/prepare
pamezh@touch prepare

pamezh@./config/script/prepare
pamezh@touch prepare

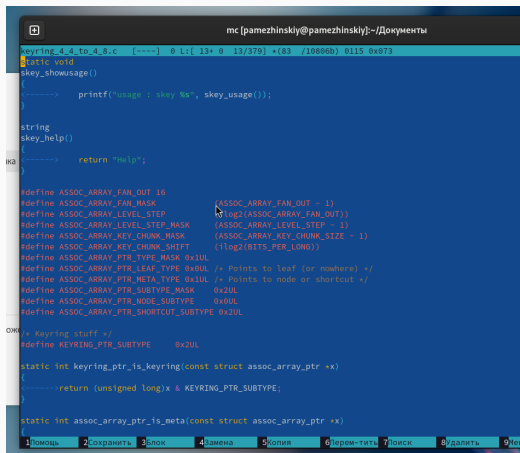
pamezh@./config/script/prepare
pamezh@touch prepare

pamezh@./config/script/prepare
pamezh@touch prepare

submodule:-----## Update submules
-----git submodule update --init --recursive
-----git submodule foreach 'git fetch origin; git checkout $$ (git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$'
```

Рис. 32: Переход в начало файла

Работа с редактором Midnight Commander



```
mc [pamezhinskiy@pamezhinskiy]:~/Документы
keyring_4_4_to_4_8.c  [----]  0 L: [ 13+ 0 13/379] *(83 /10896b) 0115 0x073
static void
skey_showusage()
{
    printf("usage : skey %s", skey_usage());
}

string
skey_help()
{
    return "Help";
}

#define ASSOC_ARRAY_FAN_OUT 16
#define ASSOC_ARRAY_FAN_MASK (ASSOC_ARRAY_FAN_OUT - 1)
#define ASSOC_ARRAY_LEVEL_STEP (ilog2(ASSOC_ARRAY_FAN_OUT))
#define ASSOC_ARRAY_LEVEL_STEP_MASK (ASSOC_ARRAY_LEVEL_STEP - 1)
#define ASSOC_ARRAY_KEY_CHUNK_MASK (ASSOC_ARRAY_KEY_CHUNK_SIZE - 1)
#define ASSOC_ARRAY_KEY_CHUNK_SHIFT (ilog2(BITS_PER_LONG))
#define ASSOC_ARRAY_PTR_TYPE_MASK 0x1UL
#define ASSOC_ARRAY_PTR_LEAF_TYPE 0x0UL /* Points to leaf (or nowhere) */
#define ASSOC_ARRAY_PTR_META_TYPE 0x1UL /* Points to node or shortcut */
#define ASSOC_ARRAY_PTR_SUBTYPE_MASK 0x2UL
#define ASSOC_ARRAY_PTR_NODE_SUBTYPE 0x0UL
#define ASSOC_ARRAY_PTR_SHORTCUT_SUBTYPE 0x2UL

/* Keyring stuff */
#define KEYRING_PTR_SUBTYPE 0x2UL

static int keyring_ptr_is_keyring(const struct assoc_array_ptr *x)
{
    return (unsigned long)x & KEYRING_PTR_SUBTYPE;
}

static int assoc_array_ptr_is_meta(const struct assoc_array_ptr *x)
```

Рис. 33: Файл с программой

Работа с редактором Midnight Commander

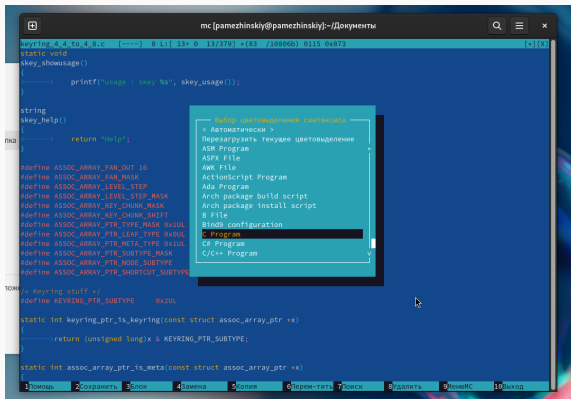


Рис. 34: Цветовыделение синтаксиса

Выводы по проделанной работе

В данной работе мы ознакомились с инструментами поиска файлов и фильтрации текстовых данных. А также приобрели практические навыки по управлению процессами.