

Операционные системы

Командная оболочка Midnight Commander

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Цели и задачи 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.

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

Процесс выполнения лабораторной работы

Работа с Midnight Commander

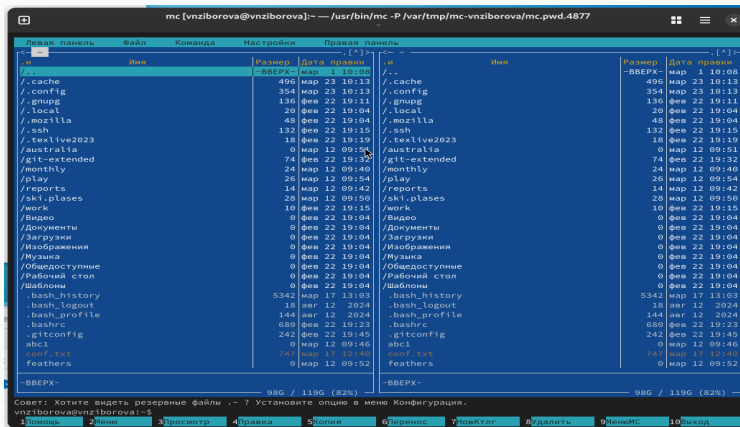


Рис. 1: Запуск mc

Работа с Midnight Commander

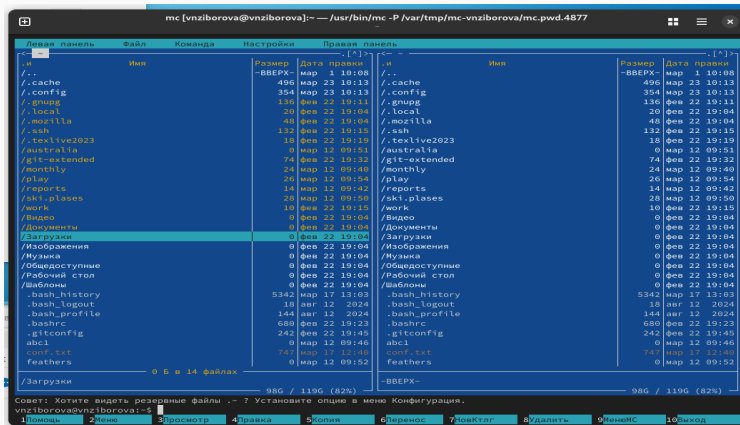


Рис. 2: Выделение

Работа с Midnight Commander

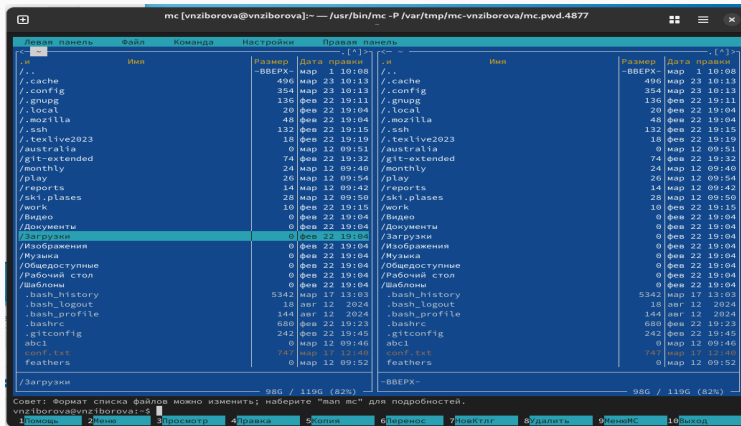


Рис. 3: Отмена

Работа с Midnight Commander

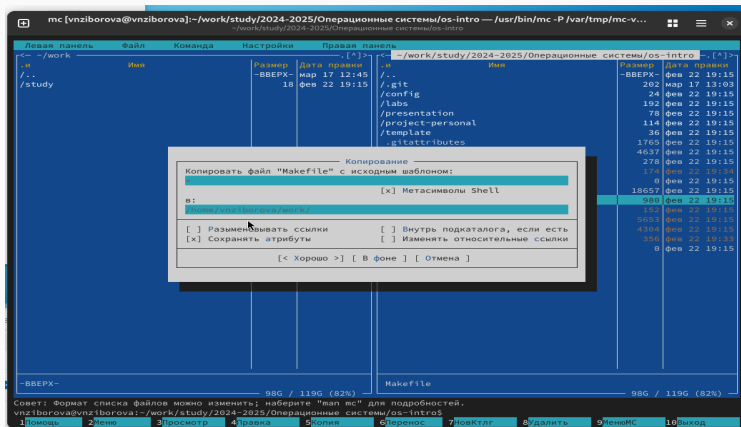


Рис. 4: Копирование

Работа с Midnight Commander

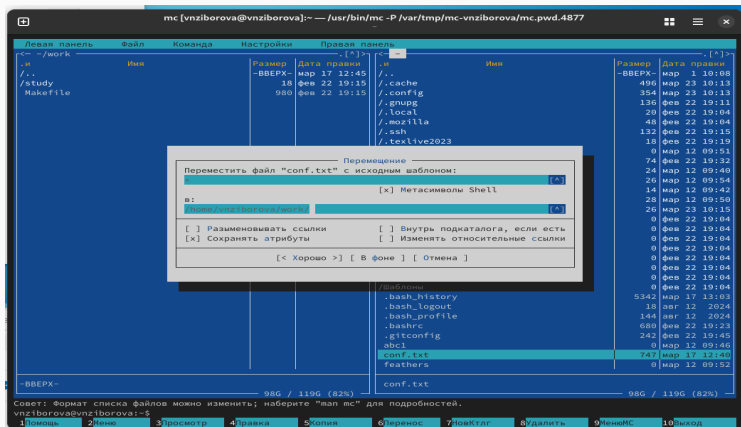


Рис. 5: Перемещение

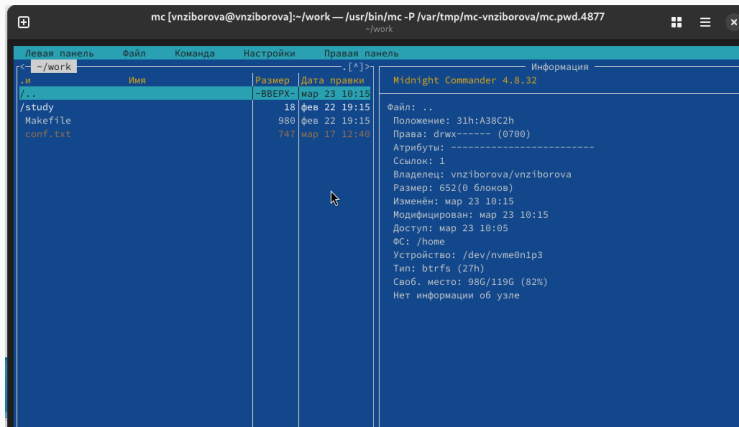


Рис. 6: Информация

Работа с Midnight Commander

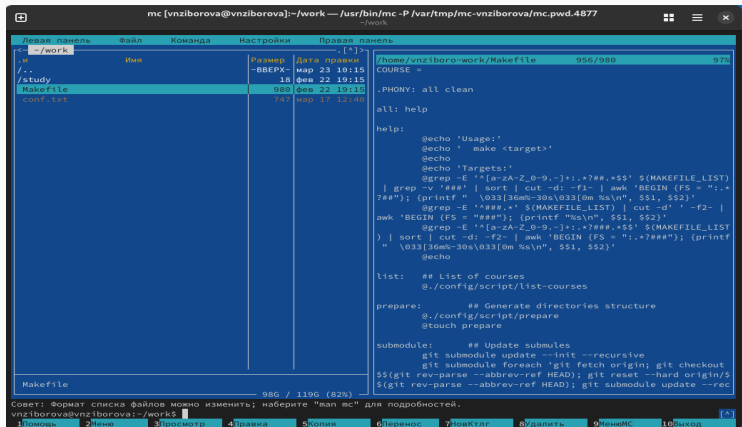


Рис. 7: Быстрый просмотр

Работа с Midnight Commander

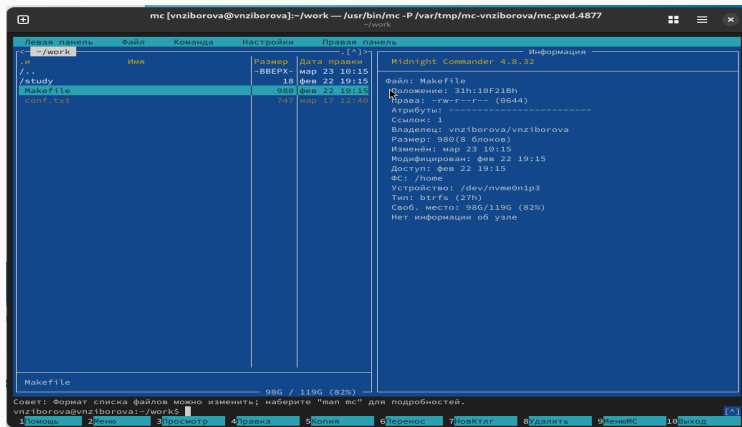


Рис. 8: Информация

Работа с Midnight Commander

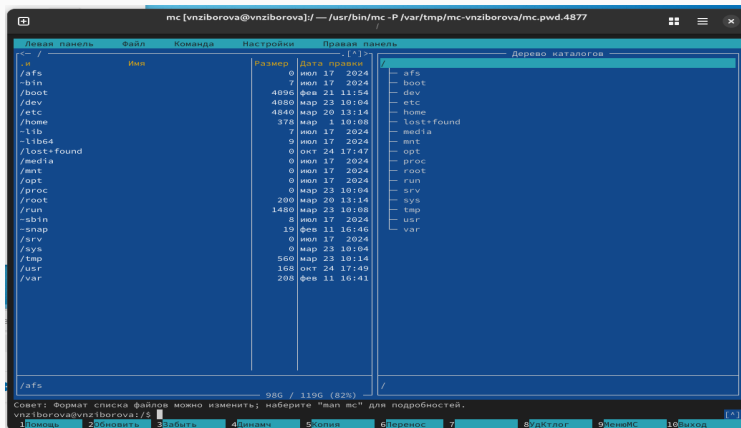
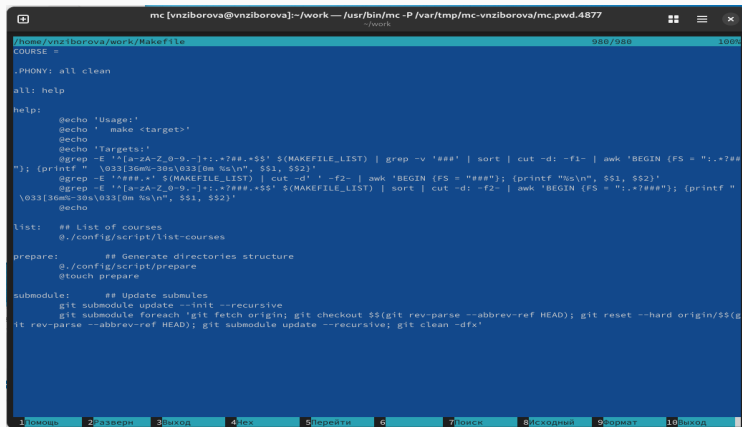


Рис. 9: Дерево каталогов

Работа с Midnight Commander



The screenshot shows the Midnight Commander interface. The title bar indicates the user is 'mc [vnziborova@vnziborova]:~/work' and the current directory is '/work'. The top status bar shows the file path '/home/vnziborova/work/MakeFile', the file size '980/980', and the progress '100%'. The main pane displays the contents of the Makefile, which includes comments and instructions for building a project. The bottom status bar shows a menu with 10 items: 1Помощь, 2Разверн, 3Выход, 4Нек, 5Перейти, 6, 7Поиск, 8Исходный, 9Формат, 10Выход.

```
mc [vnziborova@vnziborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~/work

/home/vnziborova/work/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

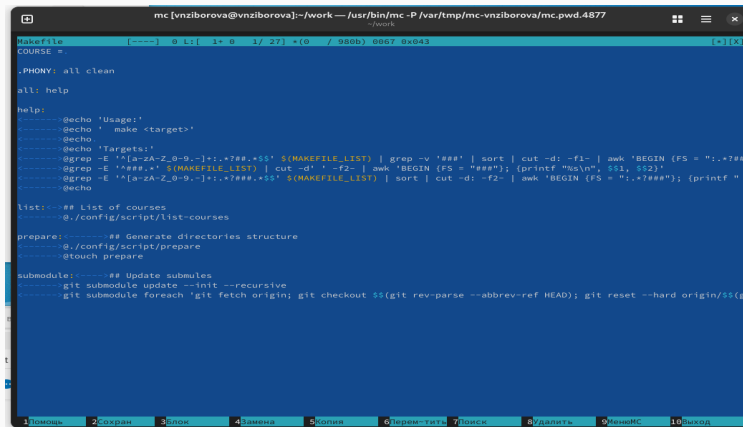
list: ## List of courses
    @./config/script/list-courses

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



```
mc [vzniborova@vzniborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vzniborova/mc.pwd.4877
~/work
Makefile  [----]  0 L: 1+ 0 1/ 27) *(0 / 980b) 0067 0x043 [*][x]
COURSE =
.PHONY: all clean
all: help
help:
-----@echo 'Usage:'
-----@echo ' make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '[a-zA-Z_0-9.-]+:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1~ | awk 'BEGIN {FS = ".*?##"} {printf "%s\n", $$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 "%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)'
-----@echo
```

Рис. 11: Отредактируем содержимое текстового файла без сохранения результатов

Работа с Midnight Commander

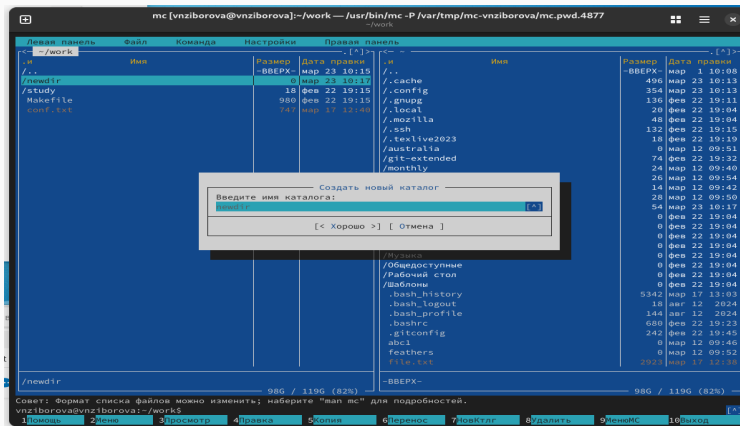


Рис. 12: Создание каталога

Работа с Midnight Commander

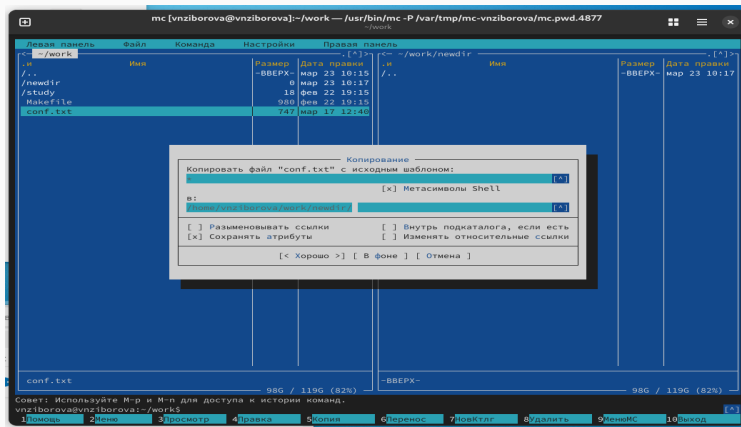


Рис. 13: Копирование в файлов в созданный каталог

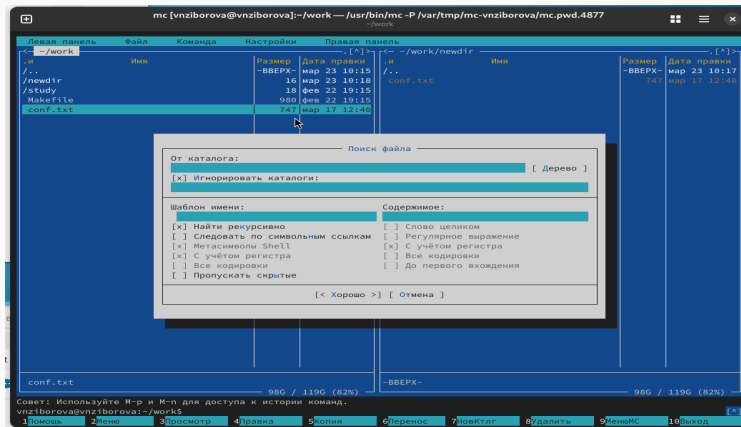


Рис. 14: Поиск файлов

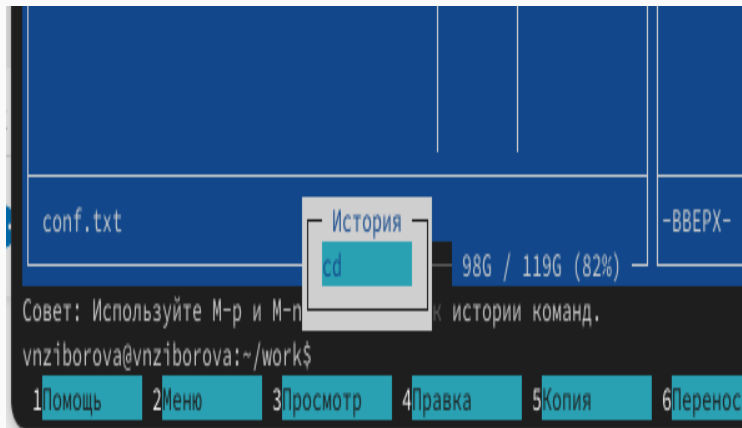


Рис. 15: История команд

Работа с Midnight Commander

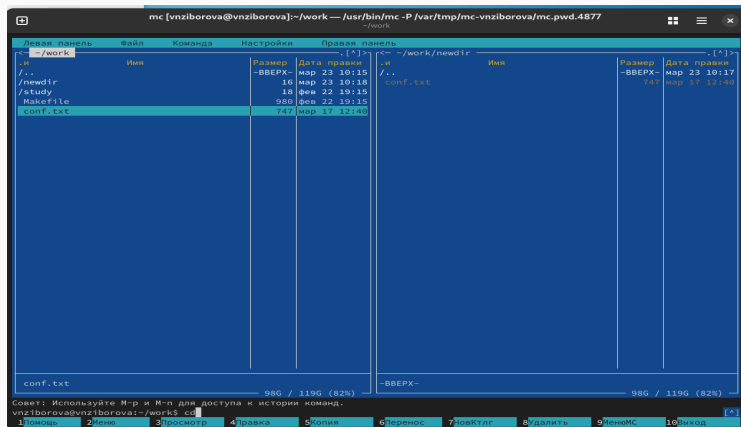


Рис. 16: Переход в домашний каталог



```
mc.ext.ini [----] 0 L: [ 1+ 0 1/1136] *(0 /26909b) 0035 0x023 [*][X]
# Midnight Commander 4.0 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 (F9-c-e). If you edit this file in any other way
# while mc is running, you will need to press F9-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/xxxxx
# 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

A screenshot of the Midnight Commander file manager's menu system. The window has a title bar with the text "menu" and a standard window control icon. The main area is a blue terminal window displaying the menu options. At the top, it shows "shell_patterns=0". The menu is divided into two sections by a line of asterisks. The first section lists various macros like %%, %f, %p, %d, %s, %t, %u, %view, and %f, each with a brief description. The second section contains two options: "+ ! t t" and "+ t t", each followed by a description and a command prompt. At the bottom, there is a status bar with ten numbered buttons: 1.Помощь, 2.Сохранить, 3.Блок, 4.Замена, 5.Копия, 6.Перем-тить, 7.Поиск, 8.Удалить, 9.МенюМС, 10.Выход.

```
menu [=====] 1 L: [ 1*16 17/370 ] *(732 /11821b) 0010 0x00A [ * ] [ X ]
shell_patterns=0

#####
# %% 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)
# %view Runs the commands and pipes standard output to the view command
# If %view 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
# %0f don't quote expanded macro
#####

+ ! t t
@ Do something on the current file
  CMD=%{Enter command}
  $CMD %f

+ t t
@ Do something on the tagged files
  CMD=%{Enter command}
  for i in %t ; do
```

Рис. 18: Просмотр файла меню



Рис. 19: Конфигурация



Рис. 20: Внешний вид



Рис. 21: Настройки панелей



Рис. 22: Подтверждение

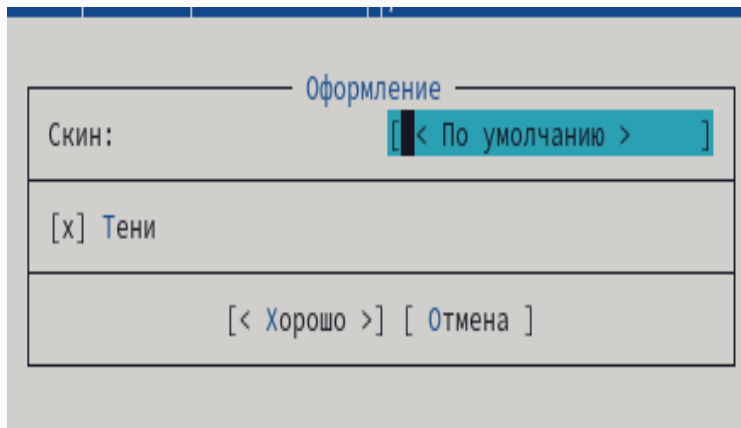


Рис. 23: Оформление

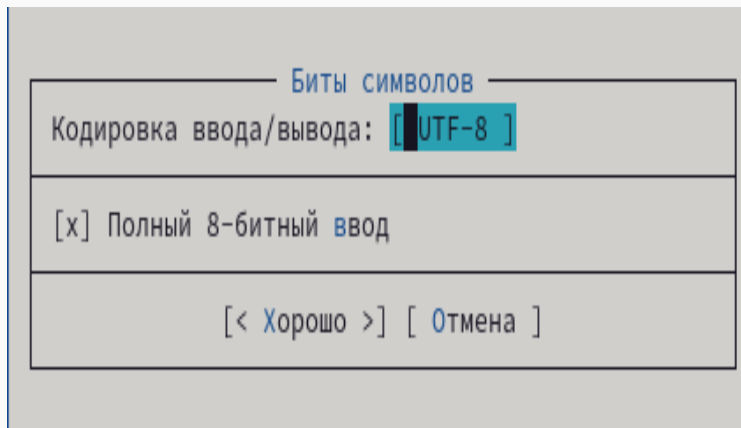
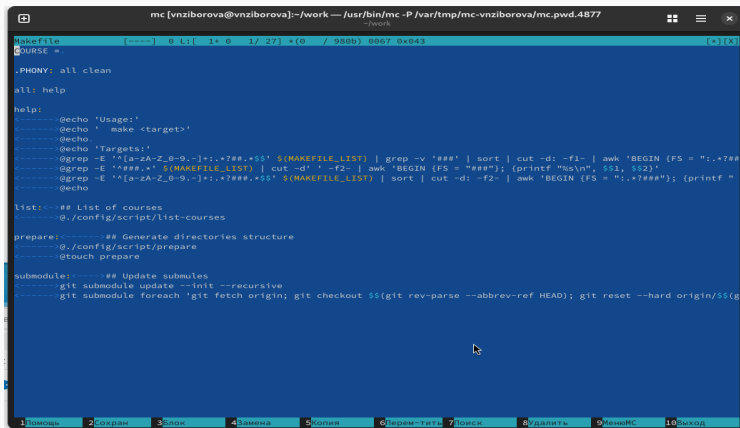


Рис. 24: Кодировка символов



Рис. 25: Распознавание клавиш

Работа с редактором Midnight Commander



```
mc [vnziborova@vnziborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~/.work
#Makefile [-----] 0 L: [ 1+ 0 1/ 27] + (0 / 980b) 0067 0x043 [*] [X]
#COURSE =.
.PHONY: all clean
all: help
help:
<----->@echo 'Usage:'
<----->@echo ' make <target>'
<----->@echo.
<----->@echo 'Targets:'
<----->@grep -E '^^[a-zA-Z_0-9.-]+:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN {FS = ".*?##";} {printf "%s\n", $1, $2}'
<----->@grep -E '^###.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN {FS = "###";} {printf "%s\n", $1, $2}'
<----->@grep -E '^^[a-zA-Z_0-9.-]+:.*?##.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN {FS = ".*?##";} {printf "%s\n", $1, $2}'
<----->@echo

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

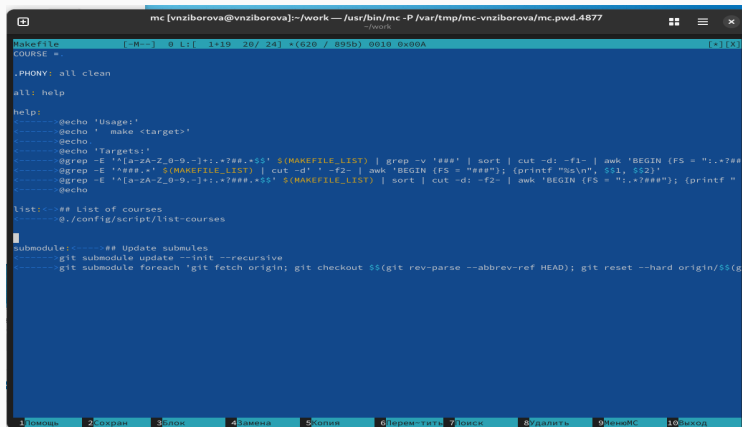
prepare:<----->## Generate directories structure
<----->@./config/script/prepare
<----->@touch prepare

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

1Помощь 2Сохран 3Блок 4Замена 5Копия 6Перем-тить 7Поиск 8Удалить 9МенюMC 10Выход
```

Рис. 26: Файл с текстом

Работа с редактором Midnight Commander



```
mc [vnziborova@vnziborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~/.work
Makefile  [-M~]  0 L:  1+19  20/ 24]  *(620 / 895b)  0010 0x00A  [+][X]
COURSE =.

.PHONY: all clean

all: help

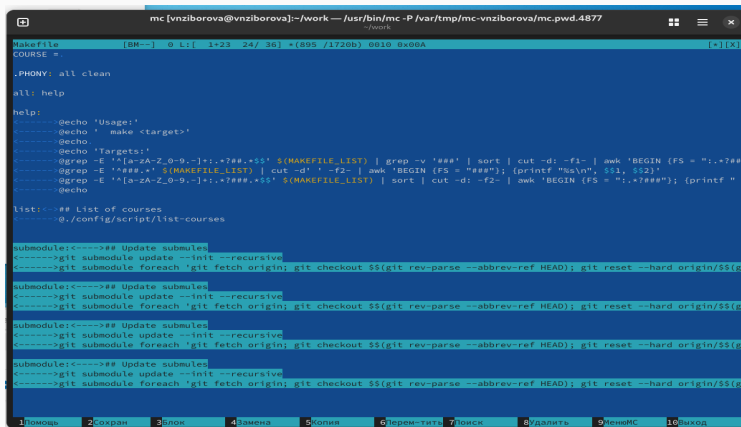
help:
----->@echo 'Usage:'
----->@echo '  make <target>'
----->@echo
----->@echo 'Targets:'
----->@grep -E '^[a-zA-Z_0-9-]+:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = ".*?##"); (printf "%s\n", $1, $2)'
----->@grep -E '###.*' $(MAKEFILE_LIST) | cut -d' ' -f2-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

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

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

Рис. 27: Файл с текстом

Работа с редактором Midnight Commander



```
mc [vnziborova@vnziborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~/work
Makefile [BM--] 0 L: 1+23 24/ 36] +(895 /1720b) 0010 8x00A [*)(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

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

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

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

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

1Помощь 2Сохран 3Блок 4Замена 5Копия 6Перем-тить 7Поиск 8Делить 9ИмяMC 10Выход
```

Рис. 28: Копирование фрагмента

Работа с редактором Midnight Commander

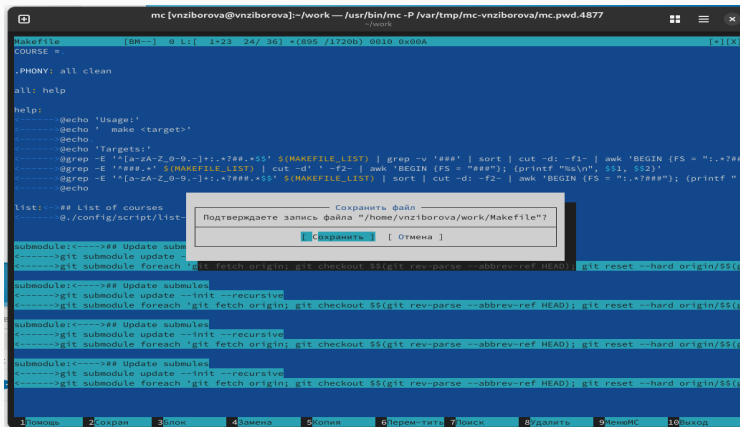
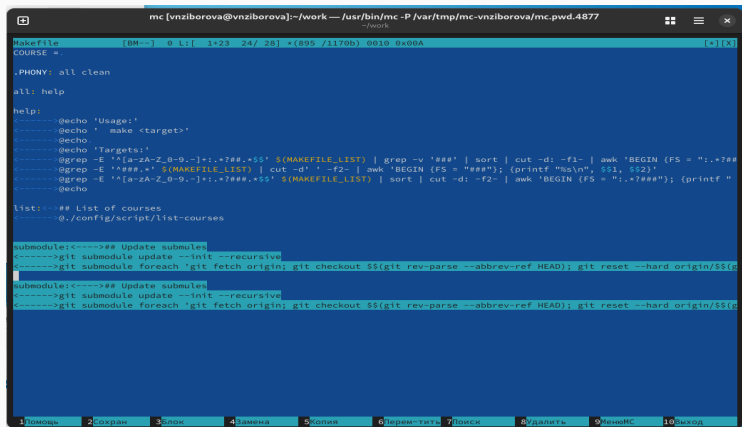


Рис. 29: Сохранение

Работа с редактором Midnight Commander



The screenshot shows the Midnight Commander interface. The top bar displays the user 'mc [vnziborova@vnziborova]~:/work' and the path '/usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877'. The main window shows a file named 'Makefile' with a size of 0 bytes and a date of 1+23 24/ 28. The file content is displayed in a terminal window, showing a Makefile with targets like 'COURSE =.', '.PHONY: all clean', and 'all: help'. The terminal also shows the output of the 'help' command, which lists the usage and targets. The bottom bar contains a menu with 10 items: 1.Помощь, 2.Сохран, 3.Блок, 4.Замена, 5.Сопия, 6.Переим-тить, 7.Поиск, 8.Удалить, 9.МенюМС, 10.Выход.

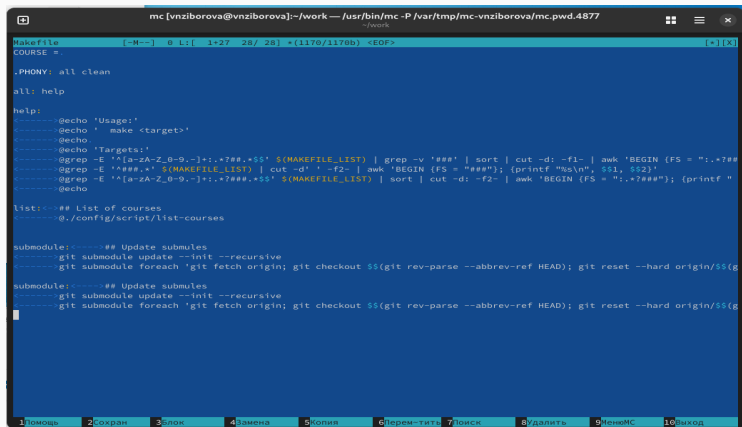
```
mc [vnziborova@vnziborova]~:/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~ /work
Makefile [BM--] 0 L: 1+23 24/ 28 *(895 /1170b) 0010 0x00A [*][X]
COURSE =.
.PHONY: all clean
all: help
help:
-----@echo 'Usage:'
-----@echo ' make <target>'
-----@echo
-----@echo 'Targets:'
-----@grep -E '^[a-zA-Z_0-9-]+:.*?##.*$$' $(MAKEFILE_LIST) | grep -v '###' | sort | cut -d: -f1- | awk 'BEGIN (FS = ":.*?##"); {printf "%s\n", $1, $2}'
-----@grep -E '###.*' $(MAKEFILE_LIST) | cut -d' ' -f2- | awk 'BEGIN (FS = "###"); {printf "%s\n", $1, $2}'
-----@grep -E '^[a-zA-Z_0-9-]+:.*?##.*$$' $(MAKEFILE_LIST) | sort | cut -d: -f2- | awk 'BEGIN (FS = ":.*?##"); {printf "%s\n", $1, $2}'
-----@echo
list:<--## List of courses
----->@./config/script/list-courses

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

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

Рис. 30: Отмена

Работа с редактором Midnight Commander



The screenshot shows the Midnight Commander (MC) interface. The title bar indicates the user is 'mc [vnziborova@vnziborova]:~/work' with the command line '/usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877'. The main window displays a file named 'Makefile' with a status bar at the top showing '[-M-] 0 L: [1+27 28/ 28] *(1170/1170b) <EOF>'. The file content is as follows:

```
COURSE = .

.PHONY: all clean

all: help

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

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

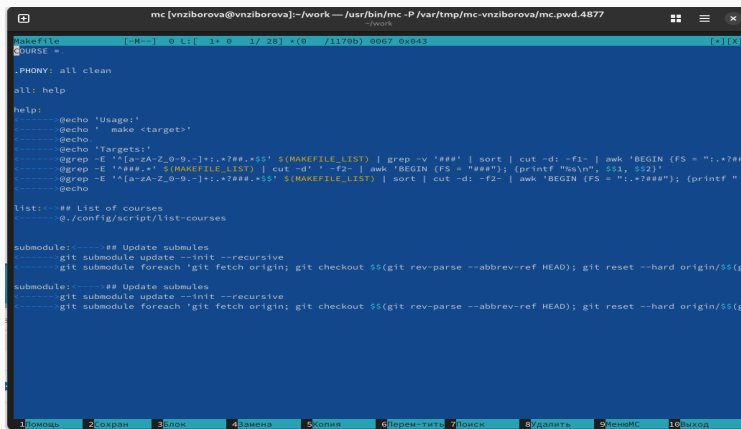
submodule:<---->## Update submules
----->git submodule update --init --recursive
----->git submodule foreach 'git fetch origin; git checkout $$ (git rev-parse --abbrev-ref HEAD); git reset --hard origin/$$(g

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

At the bottom of the window, there is a menu bar with the following options: 1Помощь, 2Сохран, 3Блок, 4Замена, 5Копия, 6Переим-тить, 7Поиск, 8Удалить, 9МенюMC, 10Выход.

Рис. 31: Переход в конец файла

Работа с редактором Midnight Commander



```
mc [vnziborova@vnziborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vnziborova/mc.pwd.4877
~/.work
Makefile  [-M--]  0 L: [ 1+ 0  1/ 28]  *(0  /1170b) 0067 0x043  [*][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

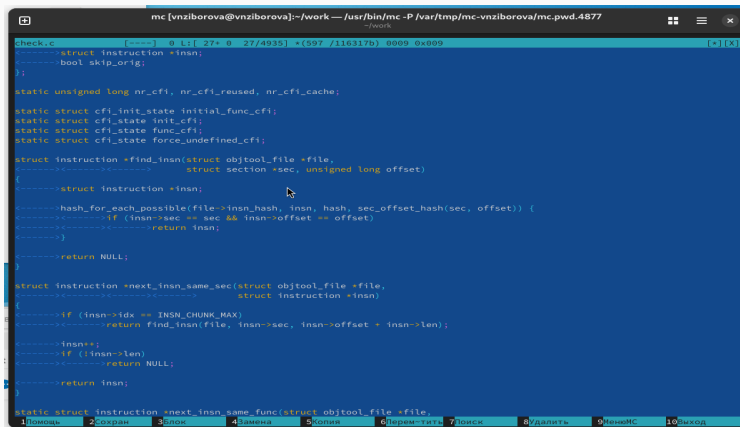
list:<--## List of courses
<-----@./config/script/list-courses

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

1Помощь  2Сохран  3Блок  4Замена  5Копия  6Перем-тить  7Поиск  8Удалить  9МенюМС  10Выход
```

Рис. 32: Переход в начало файла

Работа с редактором Midnight Commander



```
mc [vzniborova@vzniborova]:~/work — /usr/bin/mc -P /var/tmp/mc-vzniborova/mc.pwd.4877
~/.work
check.c [0 lines] 0 L: 27* 0 27/4935 *(597 /116317b) 0009 0x009 [.*][X]
----- struct instruction *insn;
----- bool skip_orig;
}

static unsigned long nr_cfi, nr_cfi_reused, nr_cfi_cache;

static struct cfi_init_state initial_func_cfi;
static struct cfi_state init_cfi;
static struct cfi_state func_cfi;
static struct cfi_state force_undefined_cfi;

struct instruction *find_insn(struct objtool_file *file,
----- struct section *sec, unsigned long offset)
{
----- struct instruction *insn;

----- hash_for_each_possible(file->insn_hash, insn, hash, sec_offset_hash(sec, offset)) {
----- if (insn->sec == sec && insn->offset == offset)
----- return insn;
-----}

----- return NULL;
}

struct instruction *next_insn_same_sec(struct objtool_file *file,
----- struct instruction *insn)
{
----- if (insn->idx == INSN_CHUNK_MAX)
----- return find_insn(file, insn->sec, insn->offset + insn->len);

----- insn++;
----- if (!insn->len)
----- return NULL;

----- return insn;
}

static struct instruction *next_insn_same_func(struct objtool_file *file,
```

1 Помощь 2 Сохран 3 Блок 4 Замена 5 Копия 6 Переименовать 7 Тоник 8 Удалить 9 Найти MC 10 Выход

Рис. 33: Файл с программой

Работа с редактором Midnight Commander

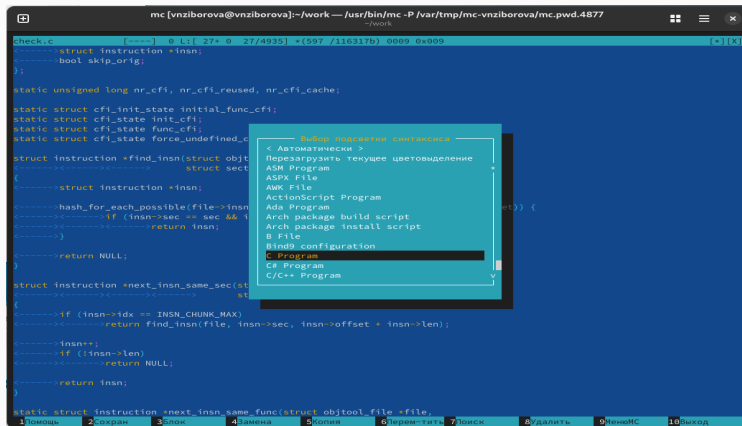


Рис. 34: Цветовыделение синтаксиса

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.