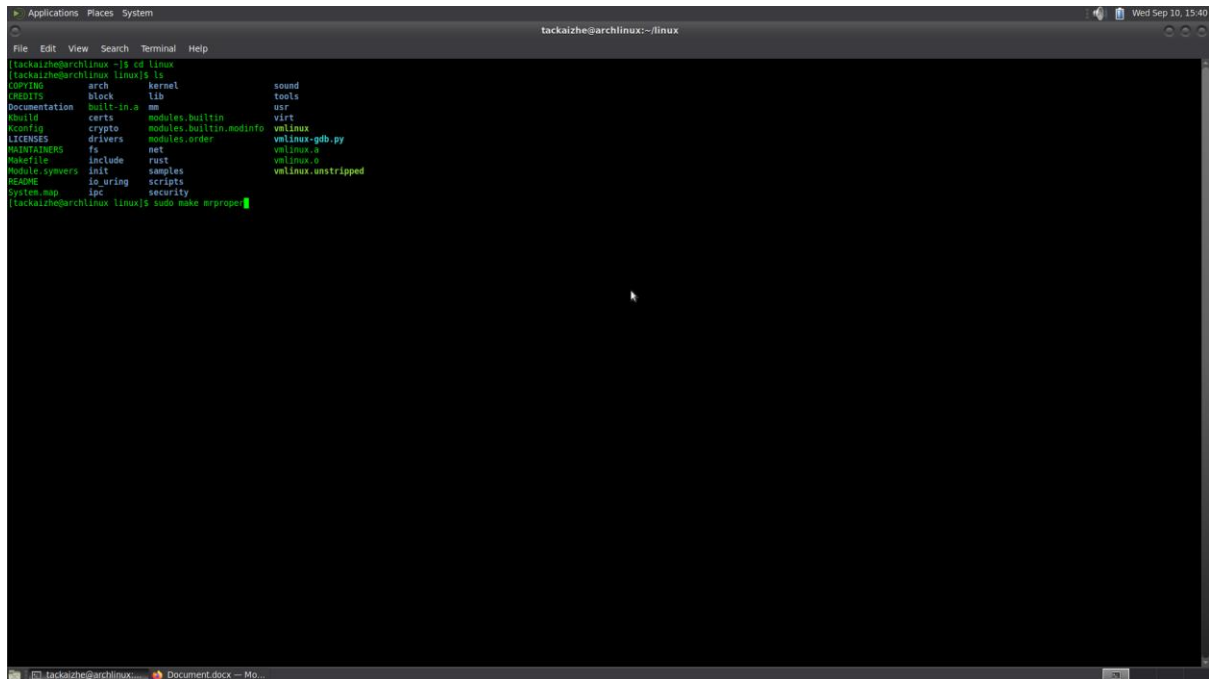


## Задание по ядру линукс №1

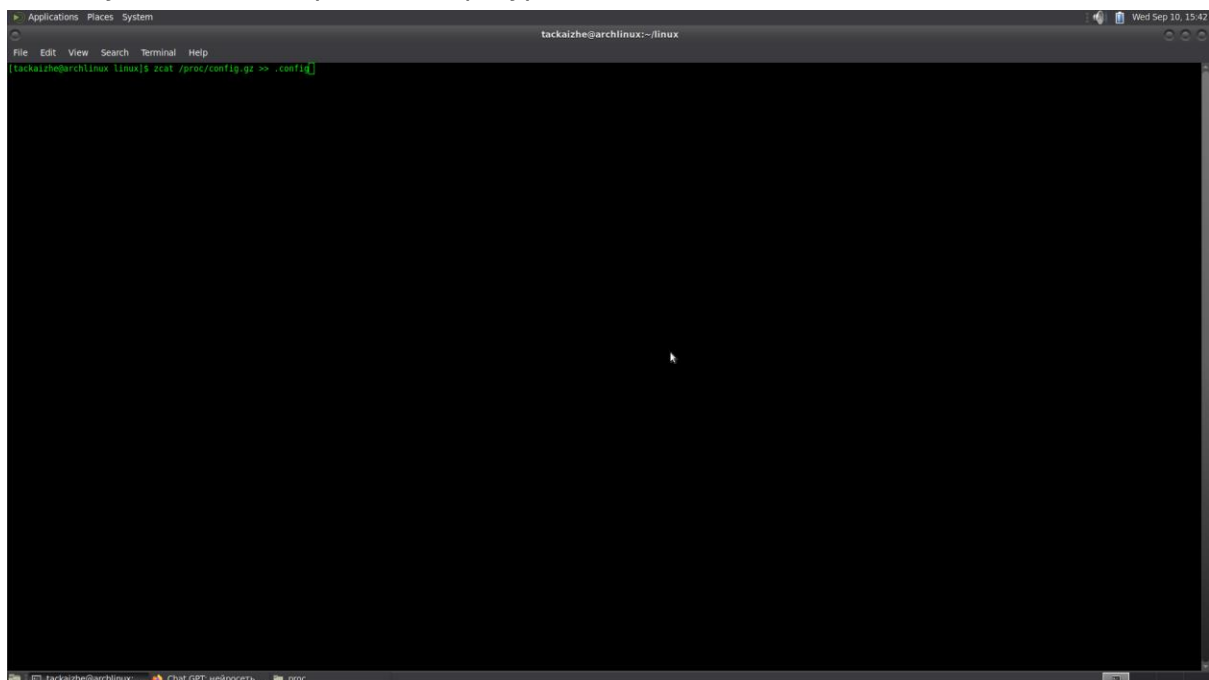
### Компиляция ядра для персонального компьютера

#### #1 отчистка репозитория



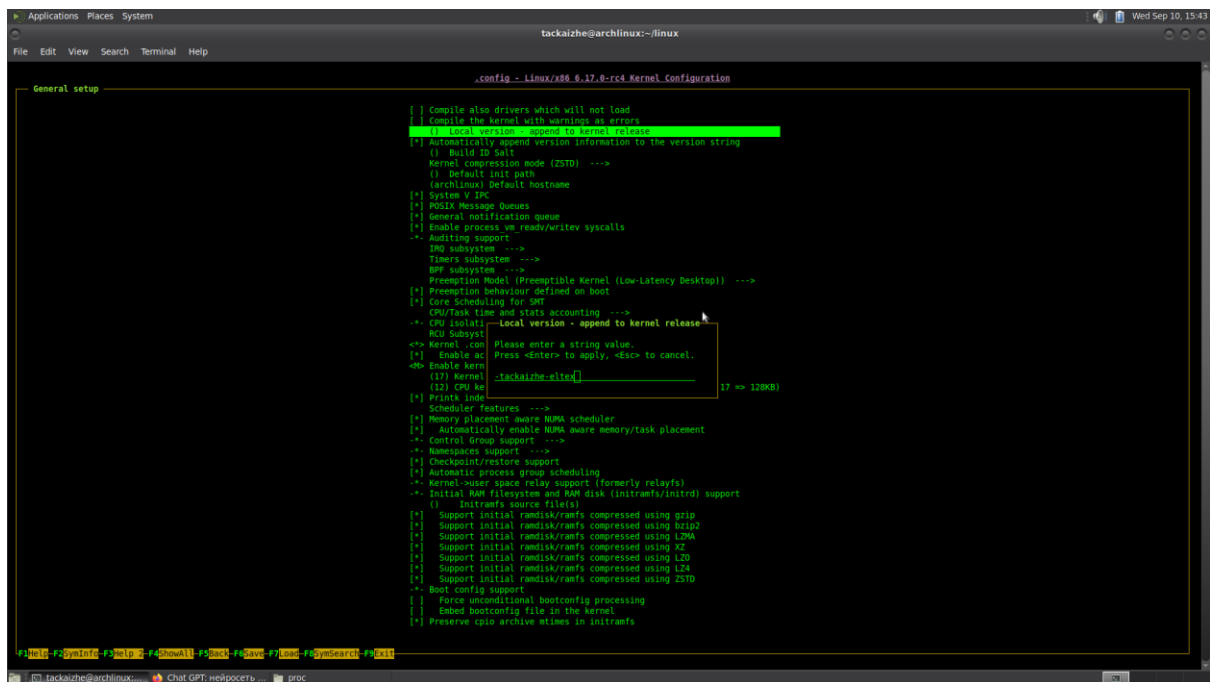
```
tackaizhe@archlinux: ~$ cd linux
tackaizhe@archlinux: linux$ ls
COPYING  arch      kernel    sound
CREDITS  block    lib       tools
Documentation  built-in.a  mm       usr
Makefile  certs    modules.builtin  virt
LICENSES  drivers  modules.builtin.modinfo  vmlinux-gdb.py
MAINTAINERS  fs       net        vmlinux.a
Module.symvers  include  rust       vmlinux.unstripped
modules      init     samples
modules.builtin  is_uring  scripts
system.map      ipc       security
tackaizhe@archlinux: linux$ sudo make mrproper
```

#### #2 Получение стандартной конфигурации



```
tackaizhe@archlinux: ~$ cd /proc/config.gz >> .config
tackaizhe@archlinux: /proc$
```

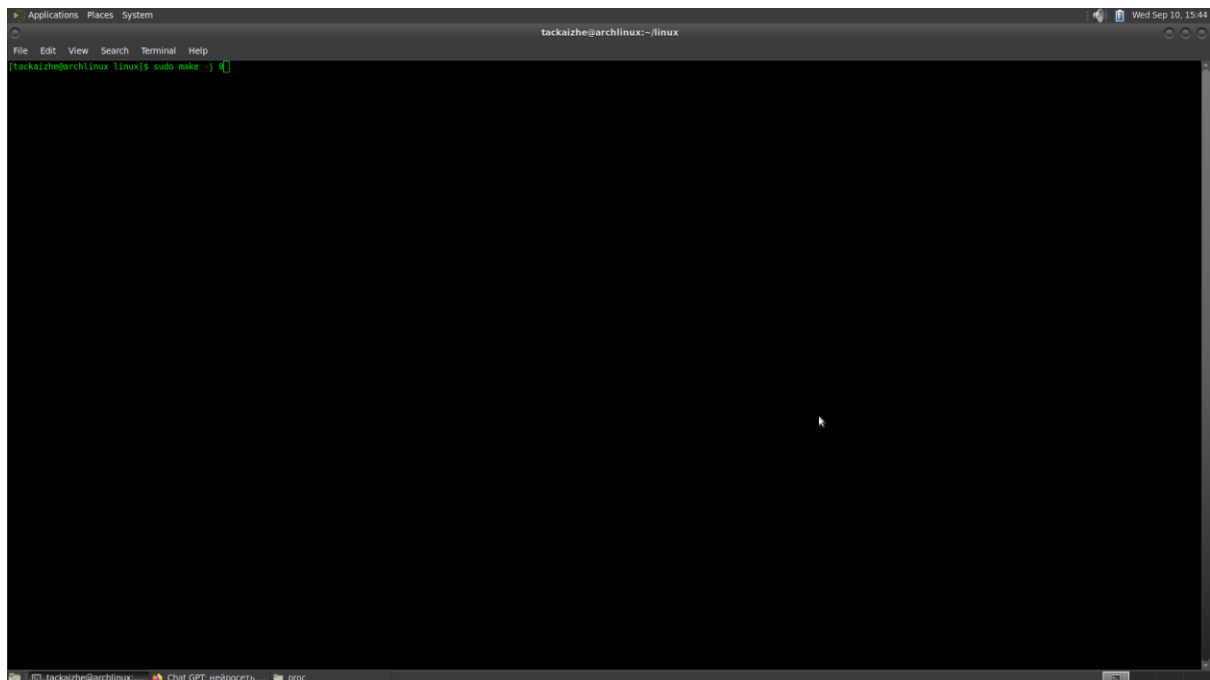
### #3 Установка префикса версии



```
.config - Linux/x86_64/6.12.0-rc4 Kernel Configuration

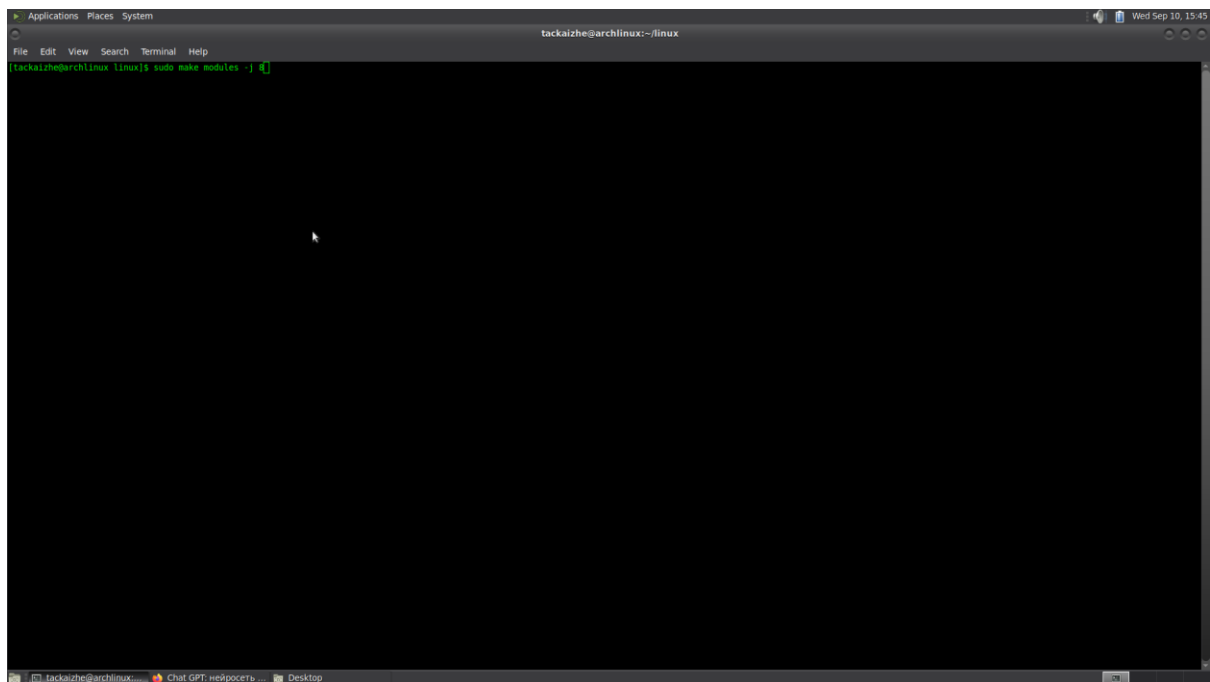
General setup
[*] Compile also drivers which will not load
[*] Compile the kernel with warnings as errors
[*] Local version - append to kernel release
[*] Automatically append version information to the version string
[*] Build ID Salt
Kernel compression mode (ZSTD) --->
[*] Default init path
(archlinux) Default hostname
[*] System V IPC
[*] POSIX Message Queues
[*] General notification queue
[*] Enable process_vm_readv/writev syscalls
-- Auditing support --
IMQ subsystem --->
Timers subsystem --->
BPF subsystem --->
Preemption Model (Preemptible Kernel (Low-Latency Desktop)) --->
[*] Preemption behaviour defined on boot
[*] Core Scheduling for SMP
CPU/Task time and stats accounting --->
-- CPU isolation --
Local version - append to kernel release
--> Kernel .conf Please enter a string value.
[*] Enable ac Press <Enter> to apply, <Esc> to cancel.
--> Enable kern
(17) Kernel .tackaizhe-elted
(12) CPU ke 17 => 128KB
[*] Printk index
Scheduler Features --->
[*] Memory placement aware NUMA scheduler
[*] Automatically enable NUMA aware memory/task placement
-- Control Group support --->
-- Namespaces support --->
[*] Checkpoint/restart support
[*] Automatic process group scheduling
-- Kernel->user space relay support (formerly relays) --
-- Initial RAM filesystem and RAM disk (initramfs/initrd) support --
[*] Initramfs source file(s)
[*] Support initial ramdisk/ramfs compressed using gzip
[*] Support initial ramdisk/ramfs compressed using bzip2
[*] Support initial ramdisk/ramfs compressed using LZMA
[*] Support initial ramdisk/ramfs compressed using XZ
[*] Support initial ramdisk/ramfs compressed using LZ4
[*] Support initial ramdisk/ramfs compressed using ZSTD
-- Boot config support --
[*] Force unconditional bootconfig processing
[*] Embed bootconfig file in the kernel
[*] Preserve cpio archive mtimes in initramfs
```

### #4 Компиляция ядра

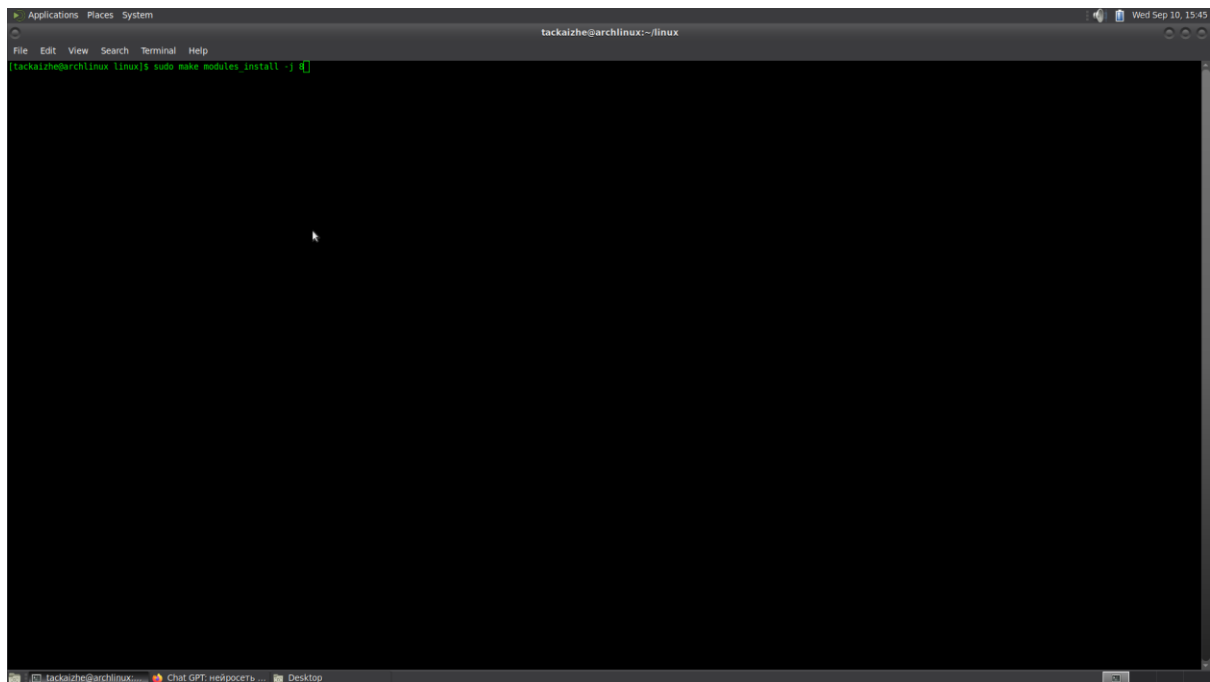


```
tackaizhe@archlinux:~$ sudo make
```

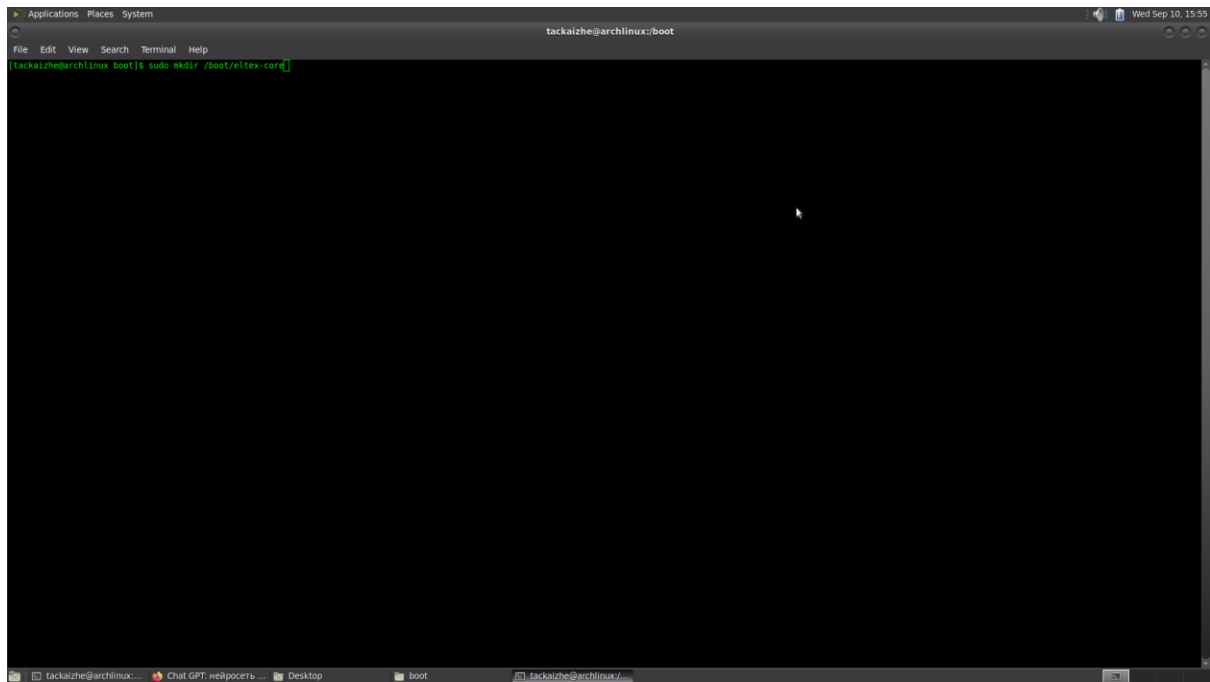
## #5 Компиляция модулей



## #6 Установка модулей



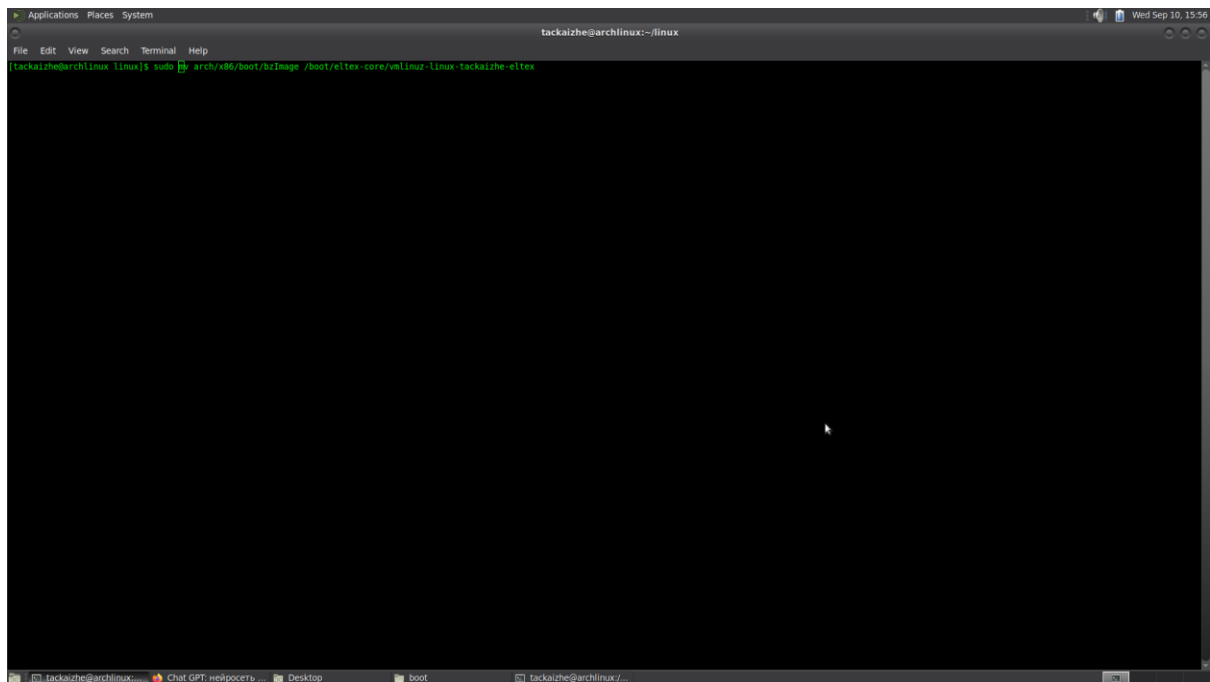
## #7 Создание папки для ядра



A terminal window titled 'tackaizhe@archlinux:boot' with a menu bar (Applications, Places, System) and a toolbar (File, Edit, View, Search, Terminal, Help). The terminal shows the command `mkdir /boot/eltex-core` being executed. The window has a dark theme and a status bar at the bottom showing the current directory as `/boot`.

```
tackaizhe@archlinux:boot]$ sudo mkdir /boot/eltex-core
```

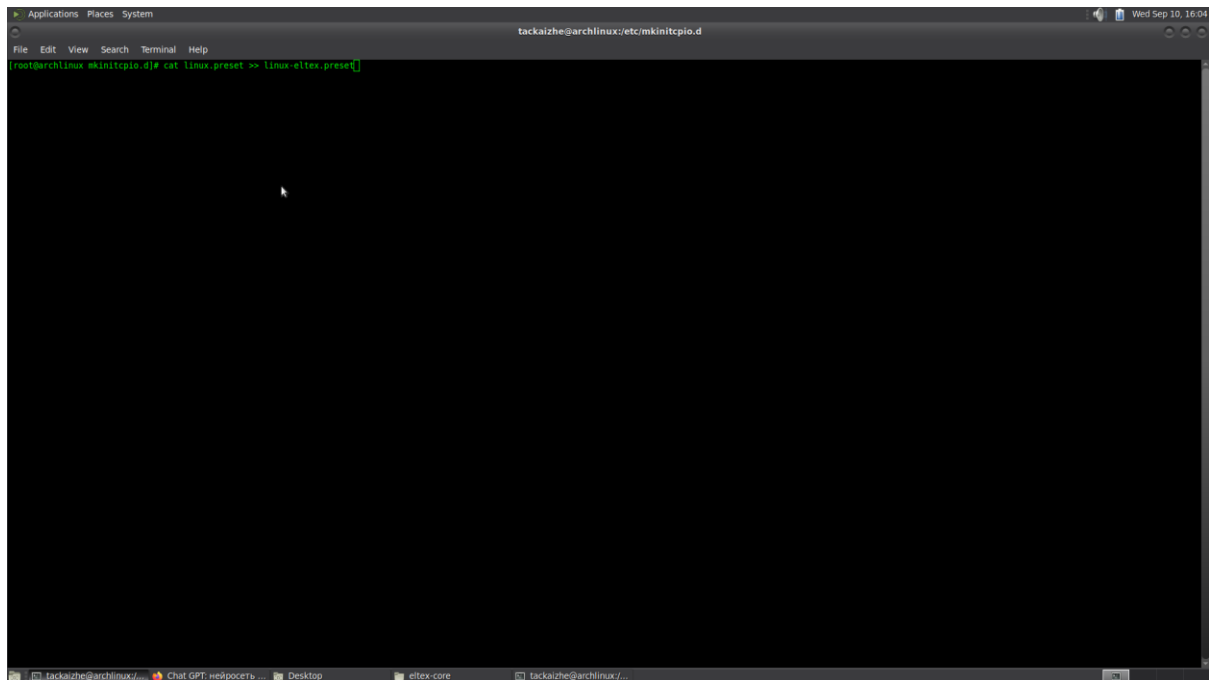
## #8 Перемешаем ядро в папку



A terminal window titled 'tackaizhe@archlinux:~linux' with a menu bar (Applications, Places, System) and a toolbar (File, Edit, View, Search, Terminal, Help). The terminal shows the command `mv arch/x86/boot/bzImage /boot/eltex-core/vmlinuz-linux-tackaizhe-eltex` being executed. The window has a dark theme and a status bar at the bottom showing the current directory as `~linux`.

```
tackaizhe@archlinux:~linux]$ mv arch/x86/boot/bzImage /boot/eltex-core/vmlinuz-linux-tackaizhe-eltex
```

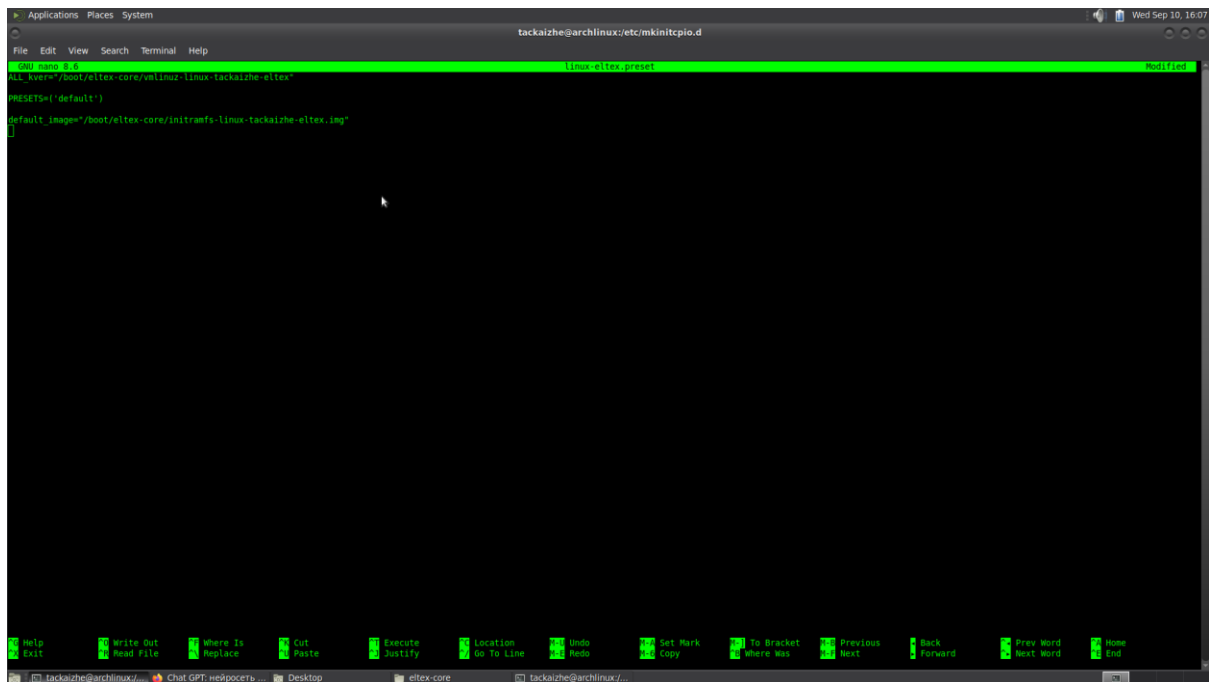
## #9 Создаём профиль для создания файла initramfs



A terminal window titled "tackaizhe@archlinux:/etc/mkinitcpio.d" showing the command `cat linux.preset >> linux-eltex.preset` being executed. The terminal output is empty, indicating the command was successful. The window has a menu bar with "Applications", "Places", and "System". The status bar at the bottom shows the date and time as "Wed Sep 10, 16:04".

```
tackaizhe@archlinux:/etc/mkinitcpio.d
File Edit View Search Terminal Help
[root@archlinux ~]# cat linux.preset >> linux-eltex.preset
```

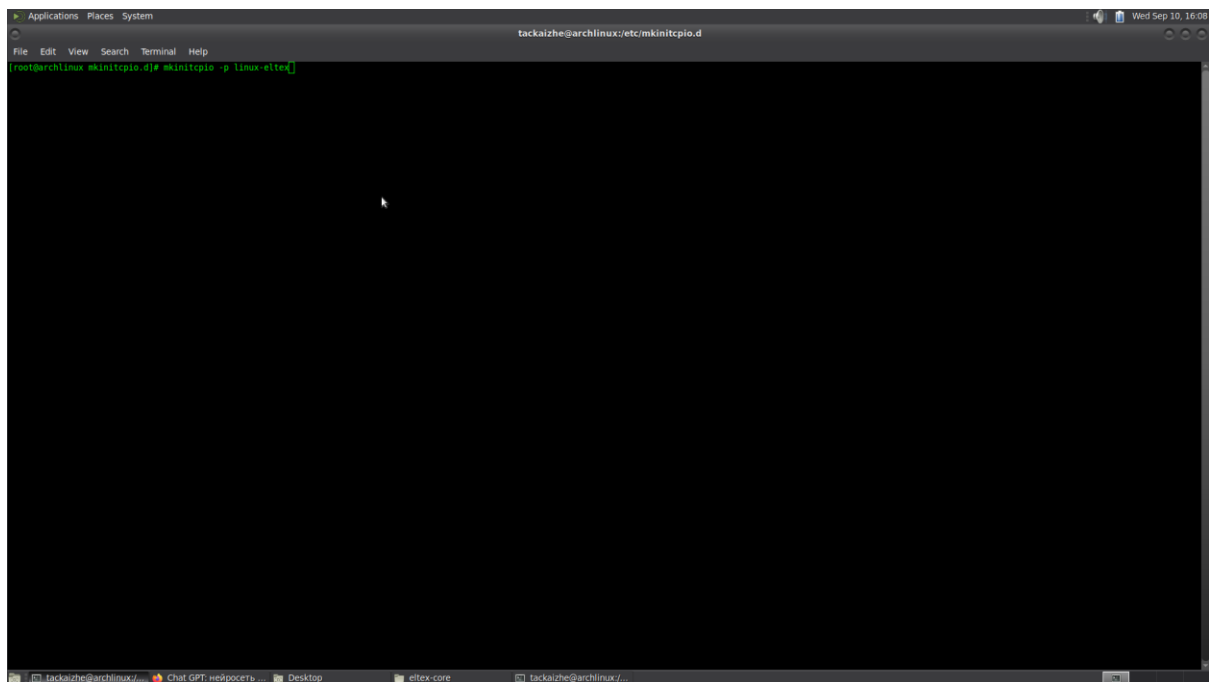
## #10 Настройка профиля



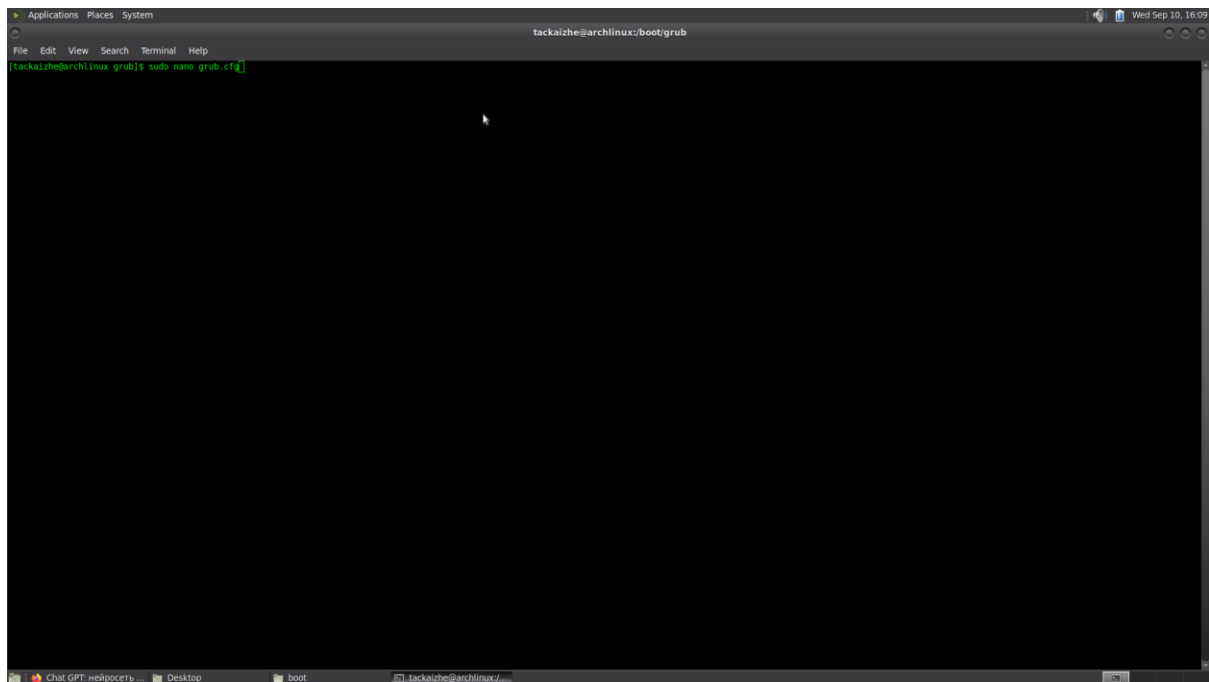
A terminal window titled "tackaizhe@archlinux:/etc/mkinitcpio.d" showing the contents of the `linux-eltex.preset` file. The file contains the following text: `linux-eltex.preset`, `ALL_kernels="/boot/eltex-core/vmlinuz-linux-tackaizhe-eltex"`, `PRESETS=("default")`, and `default_image="/boot/eltex-core/initramfs-linux-tackaizhe-eltex.img"`. The window has a menu bar with "Applications", "Places", and "System". The status bar at the bottom shows the date and time as "Wed Sep 10, 16:07".

```
tackaizhe@archlinux:/etc/mkinitcpio.d
File Edit View Search Terminal Help
linux-eltex.preset
ALL_kernels="/boot/eltex-core/vmlinuz-linux-tackaizhe-eltex"
PRESETS=("default")
default_image="/boot/eltex-core/initramfs-linux-tackaizhe-eltex.img"
```

## #11 Генерация файла initramfs



## #12 Настройка GRUB



## #13 GRUB



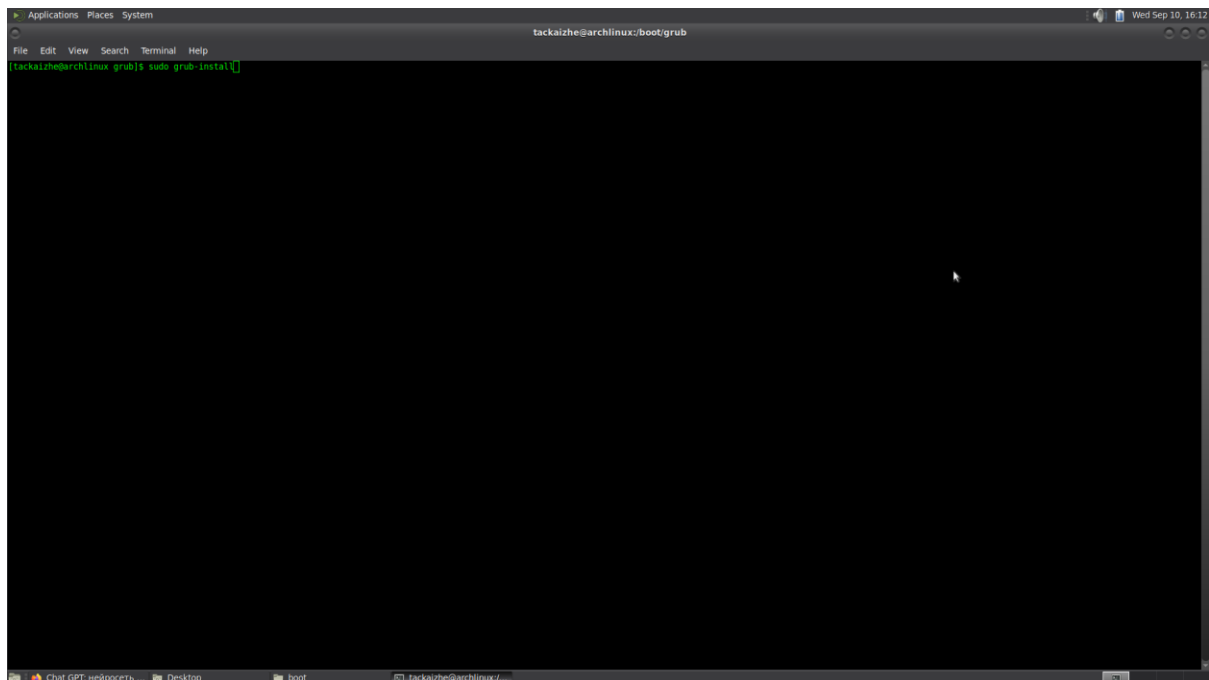
```
GNU nano 2.9.6 grub.cfg
menuentry 'etex-core' --class arch --class gnu-linux --class gnu --class os $menuentry_id_option 'gnulinux-simple-2cd1d9c7-1508-476e-aa76-293136e70c56' {
    load_video
    set gfxpayload=keep
    insmod gzio
    insmod part_gpt
    insmod btrfs
    search --no-floppy --fs-uuid --set=root 2cd1d9c7-1508-476e-aa76-293136e70c56
    echo "Loading Linux linux ..."
    linux /boot/etex-core/vmlinuz linux=tackaizhe-etex root=UUID=2cd1d9c7-1508-476e-aa76-293136e70c56 rw
    echo "Loading initial ramdisk ..."
    initrd /boot/etex-core/initramfs-linux-tackaizhe-etex.img
}

##submenu 'Advanced options for Arch Linux' $menuentry_id_option 'gnulinux-advanced-2cd1d9c7-1508-476e-aa76-293136e70c56' {
  ## menuentry 'Arch Linux, with Linux linux' --class arch --class gnu-linux --class gnu --class os $menuentry_id_option 'gnulinux-linux-advanced-2cd1d9c7-1508-476e-aa76-293136e70c56' {
    ## load_video
    ## set gfxpayload=keep
    ## insmod gzio
    ## insmod part_gpt
    ## insmod btrfs
    ## search --no-floppy --fs-uuid --set=root 2cd1d9c7-1508-476e-aa76-293136e70c56
    ## echo "Loading Linux linux ..."
    ## linux /boot/gnulinux/linux root=UUID=2cd1d9c7-1508-476e-aa76-293136e70c56 rw loglevel=3 quiet
    ## echo "Loading initial ramdisk ..."
    ## initrd /boot/initramfs-linux.img
    ##
  ## menuentry 'Arch Linux, with Linux linux (fallback initramfs)' --class arch --class gnu-linux --class gnu --class os $menuentry_id_option 'gnulinux-linux-fallback-2cd1d9c7-1508-476e-aa76-293136e70c56' {
    ## load_video
    ## set gfxpayload=keep
    ## insmod gzio
    ## insmod part_gpt
    ## insmod btrfs
    ## search --no-floppy --fs-uuid --set=root 2cd1d9c7-1508-476e-aa76-293136e70c56
    ## echo "Loading Linux linux ..."
    ## linux /boot/gnulinux/linux root=UUID=2cd1d9c7-1508-476e-aa76-293136e70c56 rw loglevel=3 quiet
    ## echo "Loading initial ramdisk ..."
    ## initrd /boot/initramfs-linux-fallback.img
    ##
  ## }
}

## EMD /etc/grub.d/10_linux ##
## BEGIN /etc/grub.d/20_linux_xen ##
## EMD /etc/grub.d/20_linux_xen ##
## BEGIN /etc/grub.d/25_bli ##
if [ "${grub_platform}" = "efi" ]; then
  insmod bli
fi
## EMD /etc/grub.d/25_bli ##

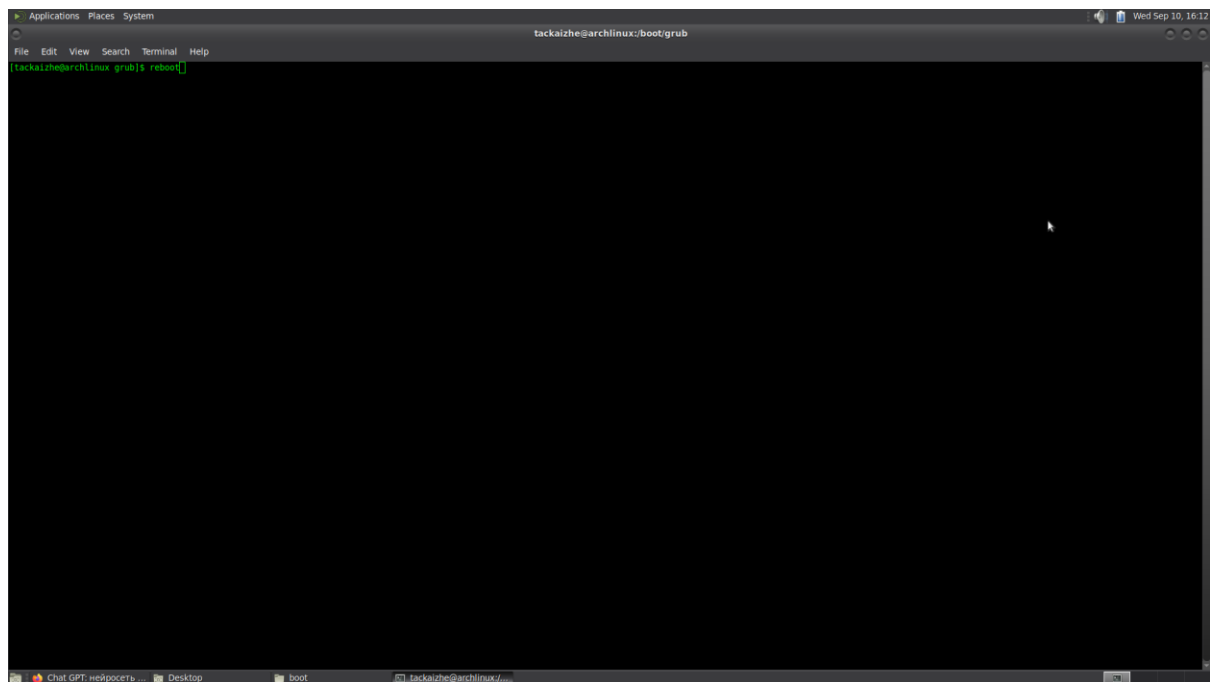
Help      Write Out  Where Is   Cut        Execute    Location   Undo       Set Mark   To Bracket Previous   Back       Prev Word  Home
Exit      Read File  Replace   Paste     Justify   Go To Line Hedo      Copy      Where Was  Next      Forward    Next Word  End
```

## #14 Применение изменений GRUB



```
tackaizhe@archlinux:boot/grub$ sudo grub-install
```

## #15 Перезагрузка

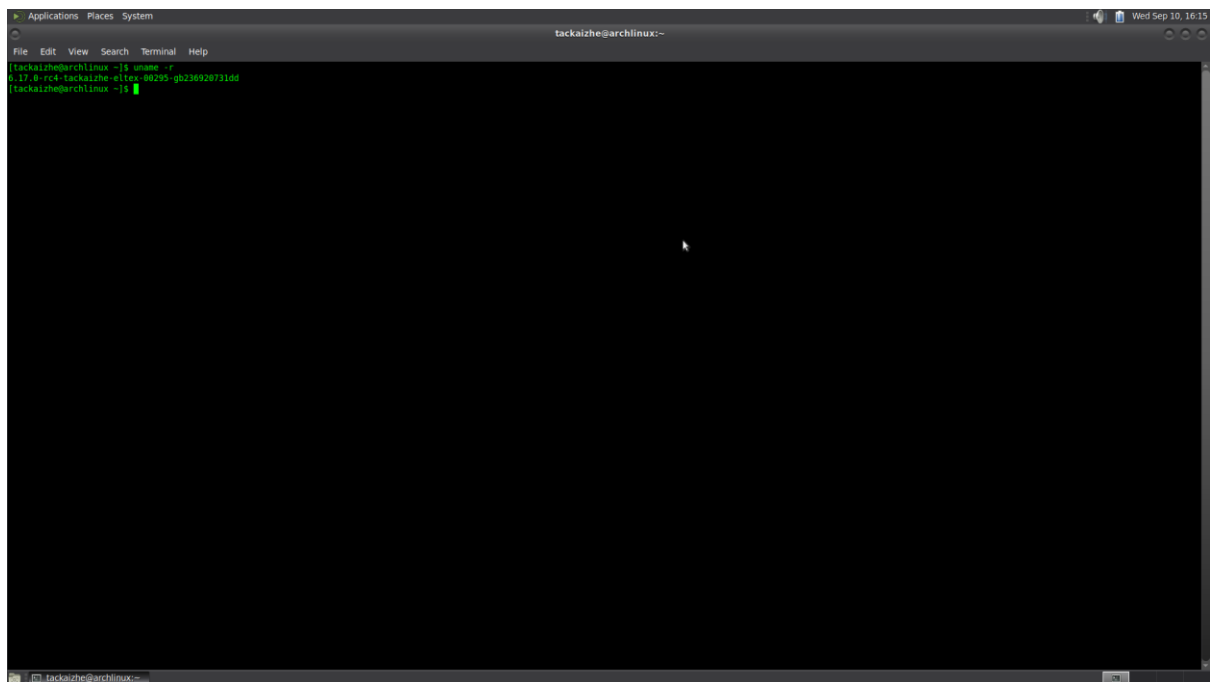


### #15.1 Проверка наличия ядра в GRUB





## #16 Проверка префикса версии ядра



The image shows a terminal window titled "Applications Places System" with the user "tackaizhe@archlinux:~". The terminal displays the output of the command "uname -r", which is "6.27.0-rc4-tackaizhe-eltor\_00295-gb236920731dd". The terminal has a dark background and a green cursor.

```
tackaizhe@archlinux:~$ uname -r
6.27.0-rc4-tackaizhe-eltor_00295-gb236920731dd
tackaizhe@archlinux:~$
```