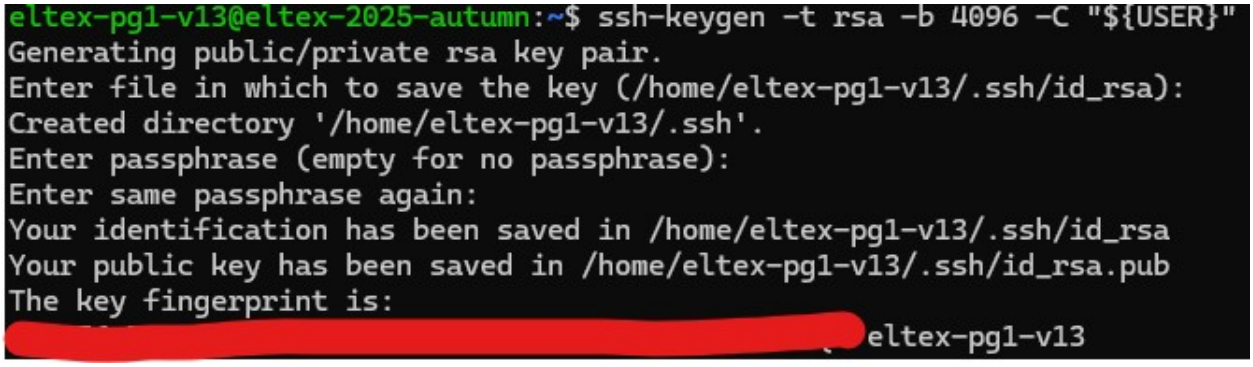
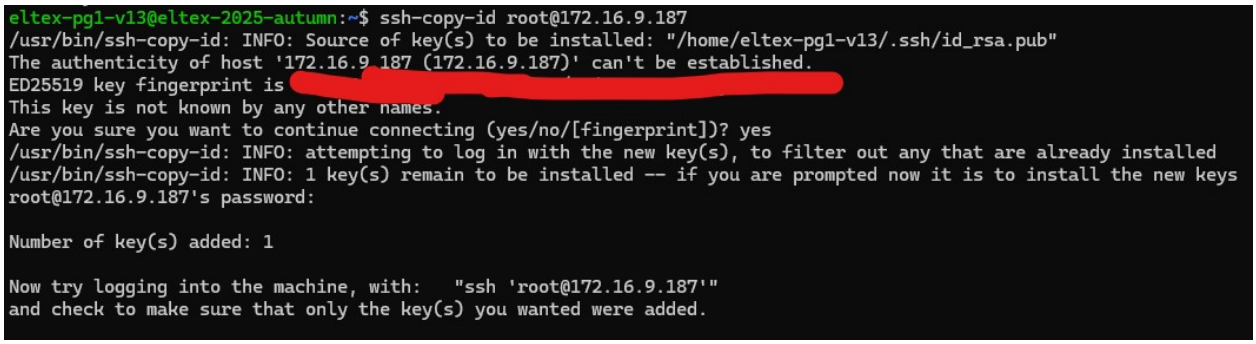
Практика 2, Каршиганова Азиза

Часть 1

1) Создайте на сервере для 1 практики ключ ssh при помощи программы ssh-keygen



2) Скопируйте созданный ключ на сервер для 2 практики для пользователя root при помощи программы ssh-copy-id



3) Подключитесь к серверу для 2 практики под пользователем root и сравните содержимое файла открытого ключа на сервере 1 ~/.ssh/*.pub и файла ~/.ssh/authorized_keys на сервере для 2 практики, а так же права доступа для каждого из файлов

```
eltex-pg1-v13@eltex-2025-autumn:~$ ssh root@172.16.9.187
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-55-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Fri Oct 17 03:54:24 PM UTC 2025

  System load:  0.02               Processes:             111
  Usage of /:   40.8% of 14.66GB   Users logged in:       0
  Memory usage: 11%                IPv4 address for ens18: 172.16.9.187
  Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

83 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


*** System restart required ***
root@eltex-practice2-pg1-v13:~#
```

Сравнение содержимого файлов:

На сервере 1

```
eltex-pg1-v13@eltex-2025-autumn:~$ cat ~/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQCr8KuPb1iV59VETAyNRt5Mx45h3PCmvI//w0Aj3AFQ4mTp2EfEJ4VuhF0jo3Y6fJVy4qTiWUZPeP7aABYk
Rnowonx4KGYTzaITu59glA8SE3u2U/qLT80RwPh18WI5+WUmChrxHDxIyC1ct1rqPfzj8S+6eN2ubMXrHz1LOZRTdUVdpT6+hHlF4K2Y6+qdATR1l398UPNR
fnxo1FMvrIt2ICWGgEOa/BDfn6d6DmoXb4QF2kbXBytH0Yg14gdTwZYfX2pmGsm0YWvHYZxg8vQ93LRJOAR8jnDwUuq24z7o7u8H3D0JrpvRuNNMo75MNM8N
svJi9lMj96fdlWTKjvIUHWhcEe8NwMbkgken2wVj6O6odJ2aLdsh0suAN9l/W5MGEtWBYz08hXzlWWzZ6Gr8K0zm8EZWtCsHFfK6i6Olk0DDznqdDWY//qNA
vahWN2PXwwKu4BAns1JUKTHQJfyJDHAA2eYliOs6SjAInp3EmNCb4c/Hssfhb+KTjLGG90UmIYeIPphkABSW99qSbVjvwCF/DHyzMLRRFOfNq0DTqJaTA0H6
XIpSZEegQq8nqMTocEor/bdWfwfTcTgQo8rASaYypaLHXWYwWCB2jOTyFuMk64lwI1LtvJ+Zs8Y9vNY7OThsnfNv3RFepY2cXUj7y898SS5WS5pt2iQ6V2WM
Ow== eltex-pg1-v13
```

На сервере 2

```
root@eltex-practice2-pg1-v13:~# cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQCr8KuPb1iV59VETAyNRt5Mx45h3PCmvI//w0Aj3AFQ4mTp2EfEJ4VuhF0jo3Y6fJVy4qTiWUZPeP7aABYk
Rnowonx4KGYTzaITu59glA8SE3u2U/qLT80RwPh18WI5+WUmChrxHDxIyC1ct1rqPfzj8S+6eN2ubMXrHz1LOZRTdUVdpT6+hHlF4K2Y6+qdATR1l398UPNR
fnxo1FMvrIt2ICWGgEOa/BDfn6d6DmoXb4QF2kbXBytH0Yg14gdTwZYfX2pmGsm0YWvHYZxg8vQ93LRJOAR8jnDwUuq24z7o7u8H3D0JrpvRuNNMo75MNM8N
svJi9lMj96fdlWTKjvIUHWhcEe8NwMbkgken2wVj6O6odJ2aLdsh0suAN9l/W5MGEtWBYz08hXzlWWzZ6Gr8K0zm8EZWtCsHFfK6i6Olk0DDznqdDWY//qNA
vahWN2PXwwKu4BAns1JUKTHQJfyJDHAA2eYliOs6SjAInp3EmNCb4c/Hssfhb+KTjLGG90UmIYeIPphkABSW99qSbVjvwCF/DHyzMLRRFOfNq0DTqJaTA0H6
XIpSZEegQq8nqMTocEor/bdWfwfTcTgQo8rASaYypaLHXWYwWCB2jOTyFuMk64lwI1LtvJ+Zs8Y9vNY7OThsnfNv3RFepY2cXUj7y898SS5WS5pt2iQ6V2WM
Ow== eltex-pg1-v13
```

Права доступа файлов:

На сервере 1

```
eltex-pg1-v13@eltex-2025-autumn:~$ ls -l ~/.ssh/id_rsa.pub
-rw-r--r-- 1 eltex-pg1-v13 eltex-pg1-v13 739 Oct 17 22:30 /home/eltex-pg1-v13/.ssh/id_rsa.pub
```

На сервере 2

```
root@eltex-practice2-pg1-v13:~# ls -l ~/.ssh/authorized_keys
-rw------- 1 root root 739 Oct 17 15:52 /root/.ssh/authorized_keys
```

Лог работы – команды и результаты в записать в файл practice2_${MYUSER}_part1.log, где MYUSER – переменная с именем пользователя практики 1

```
eltex-pg1-v13@eltex-2025-autumn:~$ export MYUSER=$USER
eltex-pg1-v13@eltex-2025-autumn:~$ TERM=dumb script --flush -q -a practice2_${MYUSER}_part1.log
```

4) Создайте пользователя user1 при помощи команды useradd, укажите необходимость создания домашнего каталога и shell /bin/bash. Создайте пароль пользователю user1

```
root@eltex-practice2-pg1-v13:~# useradd -m -s /bin/bash user1
root@eltex-practice2-pg1-v13:~# passwd user1
New password:
Retype new password:
passwd: password updated successfully
```

5) Создайте пользователя user2 и user3 при помощи команды adduser

```
root@eltex-practice2-pg1-v13:~# adduser user2
info: Adding user `user2' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `user2' (1002) ...
info: Adding new user `user2' (1002) with group `user2 (1002)' ...
info: Creating home directory `/home/user2' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user2
Enter the new value, or press ENTER for the default
        Full Name []: USER2
        Room Number []: 2
        Work Phone []: 123
        Home Phone []: 321
        Other []: 123321
Is the information correct? [Y/n] y
info: Adding new user `user2' to supplemental / extra groups `users' ...
info: Adding user `user2' to group `users' ...
root@eltex-practice2-pg1-v13:~#
```

```
root@eltex-practice2-pg1-v13:~# adduser user3
info: Adding user `user3' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `user3' (1003) ...
info: Adding new user `user3' (1003) with group `user3 (1003)' ...
info: Creating home directory `/home/user3' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for user3
Enter the new value, or press ENTER for the default
        Full Name []: USER3
        Room Number []: 3
        Work Phone []: 321
        Home Phone []: 123
        Other []: 321123
Is the information correct? [Y/n] y
info: Adding new user `user3' to supplemental / extra groups `users' ...
info: Adding user `user3' to group `users' ...
```

6) Для пользователя user3 смените shell на /usr/sbin/nologin (man usermod), выполните вход под этим пользователем при помощи утилиты su, сначала без дополнительных параметров, затем с явным указанием shell /bin/bash в параметрах su. Выполните logout

```
root@eltex-practice2-pg1-v13:~# usermod -s /usr/sbin/nologin user3
root@eltex-practice2-pg1-v13:~# su user3
This account is currently not available.
root@eltex-practice2-pg1-v13:~# su -s /bin/bash user3
user3@eltex-practice2-pg1-v13:/root$ logout
bash: logout: not login shell: use `exit'
user3@eltex-practice2-pg1-v13:/root$ exit
exit
```

7) Создайте новую группу и добавьте её для всех пользователей user* как дополнительную, посмотрите список групп всех пользователей user*

```
root@eltex-practice2-pg1-v13:~# groupadd my_users
root@eltex-practice2-pg1-v13:~# usermod -a -G my_users user1
root@eltex-practice2-pg1-v13:~# usermod -a -G my_users user2
root@eltex-practice2-pg1-v13:~# usermod -a -G my_users user3
```

8) Создайте каталог /opt/share и назначьте группу из предыдущего пункта его владельцем, установите на этот каталог бит SGID, права для группы rwx.

```
root@eltex-practice2-pg1-v13:~# mkdir -p /opt/share
root@eltex-practice2-pg1-v13:~# chown :my_users /opt/share
root@eltex-practice2-pg1-v13:~# chmon 2770 /opt/share
Command 'chmon' not found, did you mean:
  command 'chmod' from deb coreutils (9.4-3ubuntu6.1)
  command 'chcon' from deb coreutils (9.4-3ubuntu6.1)
Try: apt install <deb name>
root@eltex-practice2-pg1-v13:~# chmod 2770 /opt/share
root@eltex-practice2-pg1-v13:~# ls -ld /opt/share
drwxrws--- 2 root my_users 4096 Oct 17 20:05 /opt/share
```

9) Для user1 задайте перманентно umask, снимающий право чтения для «прочих»

```
root@eltex-practice2-pg1-v13:~# echo "umask 027" >> /home/user1/.bashrc
root@eltex-practice2-pg1-v13:~# su - user1
user1@eltex-practice2-pg1-v13:/root$ umask
0027
user1@eltex-practice2-pg1-v13:/root$ exit
exit
```

10) Создайте каждым из пользователей новые файлы в каталоге /opt/share, удалите файлы, созданные другими пользователями

```
root@eltex-practice2-pg1-v13:~# su - user1 -c "echo 'user1 file' > /opt/share/user1_file.txt"
root@eltex-practice2-pg1-v13:~# su - user2 -c "echo 'user2 file' > /opt/share/user2_file.txt"
root@eltex-practice2-pg1-v13:~# su - user3 -c "echo 'user3 file' > /opt/share/user3_file.txt"
This account is currently not available.
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 8
-rw-rw-r-- 1 user1 my_users 11 Oct 31 14:10 user1_file.txt
-rw-rw-r-- 1 user2 my_users 11 Oct 31 14:10 user2_file.txt
root@eltex-practice2-pg1-v13:~# su - user3 -s /bin/bash -c "echo 'user3 file' > /opt/share/user3_file.txt"
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 12
-rw-rw-r-- 1 user1 my_users 11 Oct 31 14:10 user1_file.txt
-rw-rw-r-- 1 user2 my_users 11 Oct 31 14:10 user2_file.txt
-rw-rw-r-- 1 user3 my_users 11 Oct 31 14:18 user3_file.txt
```

```
root@eltex-practice2-pg1-v13:~# su - user1 -c "rm /opt/share/user2_file.txt"
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 8
-rw-rw-r-- 1 user1 my_users 11 Oct 31 14:10 user1_file.txt
-rw-rw-r-- 1 user3 my_users 11 Oct 31 14:18 user3_file.txt
root@eltex-practice2-pg1-v13:~# su - user2 -c "rm /opt/share/user3_file.txt"
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 4
-rw-rw-r-- 1 user1 my_users 11 Oct 31 14:10 user1_file.txt
root@eltex-practice2-pg1-v13:~# su - user3 -c "rm /opt/share/user1_file.txt"
This account is currently not available.
root@eltex-practice2-pg1-v13:~# su - user3 -s /bin/bash -c "rm /opt/share/user1_file.txt"
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 0
```

11) Повторите предыдущий пункт, предварительно установив sticky bit на каталоге /opt/share

```
root@eltex-practice2-pg1-v13:~# chmod +t /opt/share
root@eltex-practice2-pg1-v13:~# su - user1 -s /bin/bash -c "echo 'user1 file' > /opt/share/user1_file"
root@eltex-practice2-pg1-v13:~# su - user2 -s /bin/bash -c "echo 'user2 file' > /opt/share/user2_file"
root@eltex-practice2-pg1-v13:~# su - user3 -s /bin/bash -c "echo 'user3 file' > /opt/share/user3_file"
root@eltex-practice2-pg1-v13:~# ls -l /opt/share
total 12
-rw-rw-r-- 1 user1 my_users 11 Oct 31 14:51 user1_file
-rw-rw-r-- 1 user2 my_users 11 Oct 31 14:51 user2_file
-rw-rw-r-- 1 user3 my_users 11 Oct 31 14:51 user3_file
root@eltex-practice2-pg1-v13:~# su - user1 -c "rm /opt/share/user3_file"
rm: cannot remove '/opt/share/user3_file': Operation not permitted
root@eltex-practice2-pg1-v13:~# su - user2 -c "rm /opt/share/user1_file"
rm: cannot remove '/opt/share/user1_file': Operation not permitted
root@eltex-practice2-pg1-v13:~# su - user3 -s /bin/bash -c "rm /opt/share/user2_file"
rm: cannot remove '/opt/share/user2_file': Operation not permitted
```

12) Разрешите user1 выполнять привилегированную команду dmesg при помощи команды sudo, а user2 – при помощи скрипта на языке bash с установленным флагом SUID

User1

```
root@eltex-practice2-pg1-v13:~# DMESG_PATH=$(command -v dmesg)
root@eltex-practice2-pg1-v13:~# echo "user1 ALL=(root) NOPASSWD: $DMESG_PATH" > /etc/sudoers.d/allow_user1_dmesg
root@eltex-practice2-pg1-v13:~# chmod 440 /etc/sudoers.d/allow_user1_dmesg
root@eltex-practice2-pg1-v13:~# visudo -c
/etc/sudoers: parsed OK
/etc/sudoers.d/README: parsed OK
/etc/sudoers.d/allow_user1_dmesg: parsed OK
root@eltex-practice2-pg1-v13:~# su - user1 -c "sudo $DMESG_PATH | head -n 5"
[    0.000000] Linux version 6.8.0-55-generic (buildd@lcy02-amd64-095) (x86_64-linux-gnu-gcc-13 (Ubuntu 13.3.0-6ubuntu2~
24.04) 13.3.0, GNU ld (GNU Binutils for Ubuntu) 2.42) #57-Ubuntu SMP PREEMPT_DYNAMIC Wed Feb 12 23:42:21 UTC 2025 (Ubunt
u 6.8.0-55.57-generic 6.8.12)
[    0.000000] Command line: BOOT_IMAGE=/vmlinuz-6.8.0-55-generic root=/dev/mapper/ubuntu--vg-ubuntu--lv ro
[    0.000000] KERNEL supported cpus:
[    0.000000]   Intel GenuineIntel
[    0.000000]   AMD AuthenticAMD
```

User2

```
root@eltex-practice2-pg1-v13:~# cat > /usr/local/bin/dmesg_script.sh << 'BASH'
> #!/bin/bash
> exec /bin/dmesg "$@"
> BASH
root@eltex-practice2-pg1-v13:~# chown root:user2 /usr/local/bin/dmesg_script.sh
root@eltex-practice2-pg1-v13:~# chmod 4750 /usr/local/bin/dmesg_script.sh
root@eltex-practice2-pg1-v13:~# ls -l /usr/local/bin/dmesg_script.sh
-rwsr-x--- 1 root user2 33 Nov  2 12:39 /usr/local/bin/dmesg_script.sh
root@eltex-practice2-pg1-v13:~# su - user2 -c "/usr/local/bin/dmesg_script.sh | head -5"
dmesg: read kernel buffer failed: Operation not permitted
```

```
root@eltex-practice2-pg1-v13:~# echo "user2 ALL=(root) NOPASSWD: /usr/local/bin/dmesg_script.sh" | sudo tee /etc/sudoe>
user2 ALL=(root) NOPASSWD: /usr/local/bin/dmesg_script.sh
root@eltex-practice2-pg1-v13:~# sudo chmod 440 /etc/sudoers.d/allow_user2_dmesg
root@eltex-practice2-pg1-v13:~# su - user2 -c "sudo /usr/local/bin/dmesg_script.sh | head -n 5"
[    0.000000] Linux version 6.8.0-55-generic (buildd@lcy02-amd64-095) (x86_64-linux-gnu-gcc-13 (Ubuntu 13.3.0-6ubuntu2~
24.04) 13.3.0, GNU ld (GNU Binutils for Ubuntu) 2.42) #57-Ubuntu SMP PREEMPT_DYNAMIC Wed Feb 12 23:42:21 UTC 2025 (Ubunt
u 6.8.0-55.57-generic 6.8.12)
[    0.000000] Command line: BOOT_IMAGE=/vmlinuz-6.8.0-55-generic root=/dev/mapper/ubuntu--vg-ubuntu--lv ro
[    0.000000] KERNEL supported cpus:
[    0.000000]   Intel GenuineIntel
[    0.000000]   AMD AuthenticAMD
```

13) Для всех пользователей user* задайте время действия пароля – 10 дней.

```
root@eltex-practice2-pg1-v13:~# chage -M 10 user1
root@eltex-practice2-pg1-v13:~# chage -M 10 user2
root@eltex-practice2-pg1-v13:~# chage -M 10 user3
root@eltex-practice2-pg1-v13:~# chage -l user1
Last password change                                    : Oct 31, 2025
Password expires                                        : Nov 10, 2025
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 10
Number of days of warning before password expires       : 7
root@eltex-practice2-pg1-v13:~# chage -l user2
Last password change                                    : Oct 31, 2025
Password expires                                        : Nov 10, 2025
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 10
Number of days of warning before password expires       : 7
root@eltex-practice2-pg1-v13:~# chage -l user3
Last password change                                    : Oct 31, 2025
Password expires                                        : Nov 10, 2025
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 10
Number of days of warning before password expires       : 7
root@eltex-practice2-pg1-v13:~#
```

14) Отредактируйте файл /etc/motd, вписав туда свое имя и фамилию

```
root@eltex-practice2-pg1-v13:~# echo "Каршиганова Азиза Бейсенбеккызы" > /etc/motd
root@eltex-practice2-pg1-v13:~# cat /etc/motd
Каршиганова Азиза Бейсенбеккызы
```

15) Создайте копию содержимого каталога /etc в каталог /root/etc_backup при помощи программы rcync

```
root@eltex-practice2-pg1-v13:~# rsync -av /etc/ /root/etc_backup/
sending incremental file list

sent 69,936 bytes  received 260 bytes  140,392.00 bytes/sec
total size is 2,366,911  speedup is 33.72
```

```
root@eltex-practice2-pg1-v13:~# ls -l /root/etc_backup
total 924
-rw-r--r-- 1 root root      3444 Jul  5  2023 adduser.conf
drwxr-xr-x 2 root root      4096 Oct 16 08:15 alternatives
drwxr-xr-x 2 root root      4096 Feb 16  2025 apparmor
drwxr-xr-x 9 root root      4096 Feb 16  2025 apparmor.d
drwxr-xr-x 3 root root      4096 Oct 16 07:52 apport
drwxr-xr-x 9 root root      4096 Mar 12  2025 apt
-rw-r--r-- 1 root root      2319 Mar 31  2024 bash.bashrc
-rw-r--r-- 1 root root        45 Feb 16  2025 bash_completion
drwxr-xr-x 2 root root      4096 Oct 16 06:55 bash_completion.d
-rw-r--r-- 1 root root       367 Aug  2  2022 bindresvport.blacklist
drwxr-xr-x 2 root root      4096 Oct 17  2024 binfmt.d
drwxr-xr-x 2 root root      4096 Feb 16  2025 byobu
drwxr-xr-x 3 root root      4096 Feb 16  2025 ca-certificates
-rw-r--r-- 1 root root      6288 Feb 16  2025 ca-certificates.conf
drwxr-xr-x 5 root root      4096 Oct 16 07:58 cloud
drwxr-xr-x 2 root root      4096 Mar 12  2025 console-setup
drwx------ 2 root root      4096 Oct 17  2024 credstore
```

16) Заархивируйте содержимое каталога /root/etc_backup архиватором tar, используйте алгоритмы сжатия gzip, bzip2, 7zip, сравните размеры полученных файлов

```
root@eltex-practice2-pg1-v13:~# tar -cjf etc_backup_bz2.tar.bz2 etc_backup/
root@eltex-practice2-pg1-v13:~# tar -caf etc_backup_7z.tar.7z etc_backup/
root@eltex-practice2-pg1-v13:~# tar -czf etc_backup.tar.gz etc_backup/
root@eltex-practice2-pg1-v13:~# tar -czf etc_backup_gz.tar.gz etc_backup/
root@eltex-practice2-pg1-v13:~# ls -lh etc_backup_*.tar.*
-rw-r--r-- 1 root root 3.4M Nov  2 16:04 etc_backup_7z.tar.7z
-rw-r--r-- 1 root root  10K Nov  2 15:59 etc_backup_bz2.tar.7z
-rw-r--r-- 1 root root 549K Nov  2 16:04 etc_backup_bz2.tar.bz2
-rw-r--r-- 1 root root 583K Nov  2 16:05 etc_backup_gz.tar.gz
root@eltex-practice2-pg1-v13:~# rm etc_backup_bz2.tar.7z
root@eltex-practice2-pg1-v13:~# ls -lh etc_backup_*.tar.*
-rw-r--r-- 1 root root 3.4M Nov  2 16:04 etc_backup_7z.tar.7z
-rw-r--r-- 1 root root 549K Nov  2 16:04 etc_backup_bz2.tar.bz2
-rw-r--r-- 1 root root 583K Nov  2 16:05 etc_backup_gz.tar.gz
```

17) Отредактируйте файл /etc/motd, вписав туда текущую дату и время, синхронизируйте каталог /root/etc_backup с каталогом /etc при помощи rsync, добавьте файл motd в архив, сжатый gzip

```
root@eltex-practice2-pg1-v13:~# date >> /etc/motd
root@eltex-practice2-pg1-v13:~# rsync -av /etc/ /root/etc_backup/
sending incremental file list
motd

sent 70,109 bytes  received 283 bytes  140,784.00 bytes/sec
total size is 2,366,975  speedup is 33.63
root@eltex-practice2-pg1-v13:~# tar -czf /root/etc_backup_.tar.gz -C /root/etc_backup/etc/motd
```

18) Сравните содержимое архива, упакованного bzip2 с сорержимым каталога /root/etc_backup

```
root@eltex-practice2-pg1-v13:~# mkdir /tmp/bzip2_extract
root@eltex-practice2-pg1-v13:~# tar -xjf /root/etc_backup_bz2.tar.bz2 -C /tmp/bzip2_extract/
root@eltex-practice2-pg1-v13:~# diff -r /tmp/bzip2_extract/etc_backup /root/etc_backup
diff -r /tmp/bzip2_extract/etc_backup/motd /root/etc_backup/motd
1a2,4
> Sun Nov  2 04:14:08 PM UTC 2025
> Sun Nov  2 04:17:54 PM UTC 2025
> Sun Nov  2 04:26:08 PM UTC 2025
diff: /tmp/bzip2_extract/etc_backup/mtab: No such file or directory
diff: /root/etc_backup/mtab: No such file or directory
diff: /tmp/bzip2_extract/etc_backup/os-release: No such file or directory
diff: /root/etc_backup/os-release: No such file or directory
diff: /tmp/bzip2_extract/etc_backup/resolv.conf: No such file or directory
diff: /root/etc_backup/resolv.conf: No such file or directory
```

19) Распакуйте архивы etc_backup, упакованные gzip и 7zip в каталоги /root/etc_backup_gzip и /root/etc_backup_7zip, сравните программой diff файлы motd в этих каталогах.

```
root@eltex-practice2-pg1-v13:~# mkdir /root/etc_backup_gzip /root/etc_backup_7zip
root@eltex-practice2-pg1-v13:~# tar -xzf /root/etc_backup_gz.tar.gz -C /root/etc_backup_gzip
root@eltex-practice2-pg1-v13:~# tar -xaf /root/etc_backup_gz.tar.7z -C /root/etc_backup_7zip
tar: /root/etc_backup_gz.tar.7z: Cannot open: No such file or directory
tar: Error is not recoverable: exiting now
root@eltex-practice2-pg1-v13:~# tar -xaf /root/etc_backup_7z.tar.7z -C /root/etc_backup_7zip
root@eltex-practice2-pg1-v13:~# diff /root/etc_backup_gzip/etc/motd /root/etc_backup_7zip/etc/motd
diff: /root/etc_backup_gzip/etc/motd: No such file or directory
diff: /root/etc_backup_7zip/etc/motd: No such file or directory
```

```
root@eltex-practice2-pg1-v13:~# ls /root/etc_backup_gzip
etc_backup
root@eltex-practice2-pg1-v13:~# ls /root/etc_backup_7zip
etc_backup
root@eltex-practice2-pg1-v13:~# diff /root/etc_backup_gzip/etc_backup/motd /root/etc_backup_7zip/etc_backup/motd
```

Часть 2

```
eltex-pg1-v13@eltex-2025-autumn:~$ screen -S part2 -d -m
eltex-pg1-v13@eltex-2025-autumn:~$ export MYUSER=$USER
eltex-pg1-v13@eltex-2025-autumn:~$ TERM=dumb script -q -a practice2_${MYUSER}_part2.log
```

1. Найдите все записи из лога загрузки, доступного через команду journalctl с опцией -b в первые 20 секунд с момента загрузки, начало загрузки определить автоматически.

```
root@eltex-practice2-pg1-v13:~# journalctl -b --since=@0 --until=+20s | head -10
Oct 15 07:51:51 localhost kernel: Linux version 6.8.0-55-generic (buildd@lcy02-amd64-095) (x86_64-linux-gnu-gcc-13 (Ubun
tu 13.3.0-6ubuntu2~24.04) 13.3.0, GNU ld (GNU Binutils for Ubuntu) 2.42) #57-Ubuntu SMP PREEMPT_DYNAMIC Wed Feb 12 23:42
:21 UTC 2025 (Ubuntu 6.8.0-55.57-generic 6.8.12)
Oct 15 07:51:51 localhost kernel: Command line: BOOT_IMAGE=/vmlinuz-6.8.0-55-generic root=/dev/mapper/ubuntu--vg-ubuntu-
-lv ro
Oct 15 07:51:51 localhost kernel: KERNEL supported cpus:
Oct 15 07:51:51 localhost kernel:   Intel GenuineIntel
Oct 15 07:51:51 localhost kernel:   AMD AuthenticAMD
Oct 15 07:51:51 localhost kernel:   Hygon HygonGenuine
Oct 15 07:51:51 localhost kernel:   Centaur CentaurHauls
Oct 15 07:51:51 localhost kernel:   zhaoxin   Shanghai
Oct 15 07:51:51 localhost kernel: BIOS-provided physical RAM map:
Oct 15 07:51:51 localhost kernel: BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff] usable
```

2. Используя awk найдите все источники и их сообщения в файле auth.log (найдите его find), в названии источника удалите информацию об идентификаторе процесса при помощи sed, полученный результат отсортируйте по названию источника

```
root@eltex-practice2-pg1-v13:~# awk '{source=$3; $1=$2=$3=""; print source $0}' /var/log/auth.log | sed 's/\[[0-9]*\]//g' |
sort | head -15
chage:   changed password expiry for user1
chage:   changed password expiry for user2
chage:   changed password expiry for user3
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
CRON:   pam_unix(cron:session): session closed for user root
```

3. Для результата из предыдущего пункта найдите количество повторений для каждого источника и выведите их в виде списка «число_повторений источник», результат отсортируйте по убыванию количества повторений

```
root@eltex-practice2-pg1-v13:~# awk '{source=$3; $1=$2=$3=""; print source $0}' /var/log/auth.log | sed 's/\[[0-9]*\]//g' |
sort | uniq -c | sort -nr | head -10
    465 CRON:   pam_unix(cron:session): session opened for user root(uid=0) by root(uid=0)
    465 CRON:   pam_unix(cron:session): session closed for user root
      5 su:   pam_unix(su-l:session): session opened for user user2(uid=1002) by root(uid=0)
      5 su:   pam_unix(su-l:session): session closed for user user2
      5 sshd:   pam_unix(sshd:session): session opened for user root(uid=0) by root(uid=0)
      4 su:   (to user2) root on pts/0
      4 sudo:   pam_unix(sudo:session): session closed for user root
      4 sshd:   pam_unix(sshd:session): session closed for user root
      3 sudo:   pam_unix(sudo:session): session opened for user root(uid=0) by root(uid=0)
      2 sudo:   root : TTY=pts/1 ; PWD=/root ; USER=root ; COMMAND=/usr/bin/tee /etc/sudoers.d/allow_user2_dmesg
```

4. В файле /etc/passwd найдите всех пользователей в системе, у которых установлен shell /usr/sbin/nologin и выведите их в виде списка: «UID, username, список его групп», отсортированный в обратном порядке по UID, список групп используйте из файла /etc/group

```
root@eltex-practice2-pg1-v13:pg1-v13:~# awk -F: '$7 == "/usr/sbin/nologin" {print $3 "," $1}' /etc/passwd | sort -t, -nr
 -k1 | while IFS=, read uid username; do groups=$(awk -F: -v u="$username" 'u == $1 {print $4}' /etc/group); echo "$uid,
 $username, $groups"; done | head -10
65534, nobody,
1003, user3,
998, systemd-network,
997, systemd-timesync,
992, systemd-resolve,
991, polkitd,
989, fwupd-refresh,
109, sshd,
108, usbmux,
107, landscape,
```

5. Найдите в результате вывода dmesg все строки, содержащие слово 'kernel‘

```
root@eltex-practice2-pg1-v13:~# dmesg | grep -i "kernel" | head -n 20
[    0.000000] KERNEL supported cpus:
[    0.044714] Booting paravirtualized kernel on KVM
[    0.045659] Kernel command line: BOOT_IMAGE=/vmlinuz-6.8.0-55-generic root=/dev/mapper/ubuntu--vg-ubuntu--lv ro
[    0.045690] Unknown kernel command line parameters "BOOT_IMAGE=/vmlinuz-6.8.0-55-generic", will be passed to user spa
ce.
[    0.095281] Memory: 3933488K/4193760K available (22528K kernel code, 4443K rwdata, 14344K rodata, 4988K init, 4716K b
ss, 260012K reserved, 0K cma-reserved)
[    0.252692] DMA: preallocated 512 KiB GFP_KERNEL pool for atomic allocations
[    0.252720] DMA: preallocated 512 KiB GFP_KERNEL|GFP_DMA pool for atomic allocations
[    0.252745] DMA: preallocated 512 KiB GFP_KERNEL|GFP_DMA32 pool for atomic allocations
[    0.478712] Loaded X.509 cert 'Build time autogenerated kernel key: e0bedf6fa049a1e09bd65ebab3904f14cdd5bc68'
[    0.481925] Loaded X.509 cert 'Canonical Ltd. Kernel Module Signing: 88f752e560a1e0737e31163a466ad7b70a850c19'
[    0.610820] Loaded X.509 cert 'Build time autogenerated kernel key: e0bedf6fa049a1e09bd65ebab3904f14cdd5bc68'
[    0.630285] Freeing unused kernel image (initmem) memory: 4988K
[    0.630982] Write protecting the kernel read-only data: 38912k
[    0.631973] Freeing unused kernel image (rodata/data gap) memory: 2040K
[    4.132099] systemd[1]: Listening on systemd-udevd-kernel.socket - udev Kernel Socket.
[    4.142774] systemd[1]: Mounting sys-kernel-debug.mount - Kernel Debug File System...
[    4.147774] systemd[1]: Mounting sys-kernel-tracing.mount - Kernel Trace File System...
[    4.190066] systemd[1]: Starting modprobe@configfs.service - Load Kernel Module configfs...
[    4.193857] systemd[1]: Starting modprobe@dm_mod.service - Load Kernel Module dm_mod...
[    4.198100] systemd[1]: Starting modprobe@drm.service - Load Kernel Module drm...
```

6. Подсчитайте количество строк в файле /var/log/kern.log

```
root@eltex-practice2-pg1-v13:~# wc -l /var/log/kern.log
33 /var/log/kern.log
```

7. Отформатируйте вывод записей в /var/log/apt/history.log в следующем порядке, построчно: Commandline: … ; Start-Date: … ; End-Date: …

```
root@eltex-practice2-pg1-v13:~# awk '
/^Start-Date:/ {start=$0}
/^Commandline:/ {cmd=$0}
/^End-Date:/ {print "Commandline: " cmd "; " start "; " $0; start=""; cmd=""}
' /var/log/apt/history.log
Commandline: Commandline: apt install bzip2; Start-Date: 2025-11-02  16:03:38; End-Date: 2025-11-02  16:03:42
root@eltex-practice2-pg1-v13:~#
```