

Предмет	Управление и автоматизация БД
Курс	4
Семестр	2
Работа	Практическое задание №13
Группа	494
Фамилия	Зубкова
Имя	Валерия
Отчество	Геннадьевна

Отчет

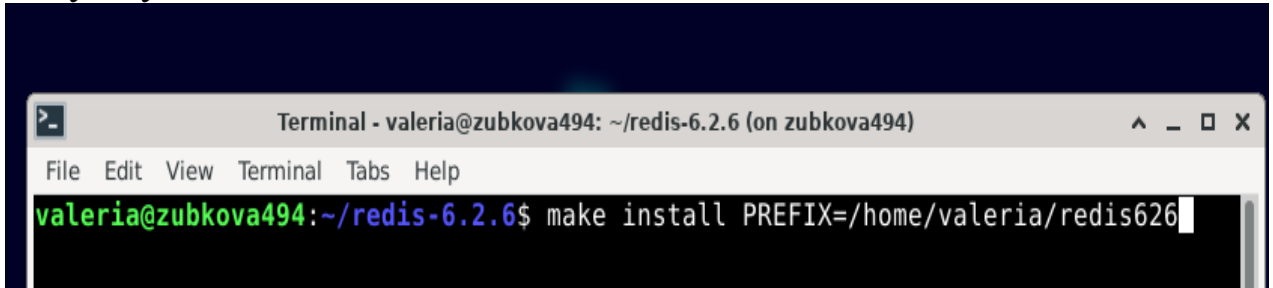
Скачивание redis файлов

```

Terminal - valeria@zubkova494: ~ (on zubkova494)
File Edit View Terminal Tabs Help
valeria@zubkova494:~$ curl https://download.redis.io/releases/redis-6.2.6.tar.gz > redis.tar.gz
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left  Speed
100 2418k  100 2418k    0     0  310k      0  0:00:07  0:00:07 --:--:-- 571k
valeria@zubkova494:~$ make install PREFIX=/home/valeria/redis626

```

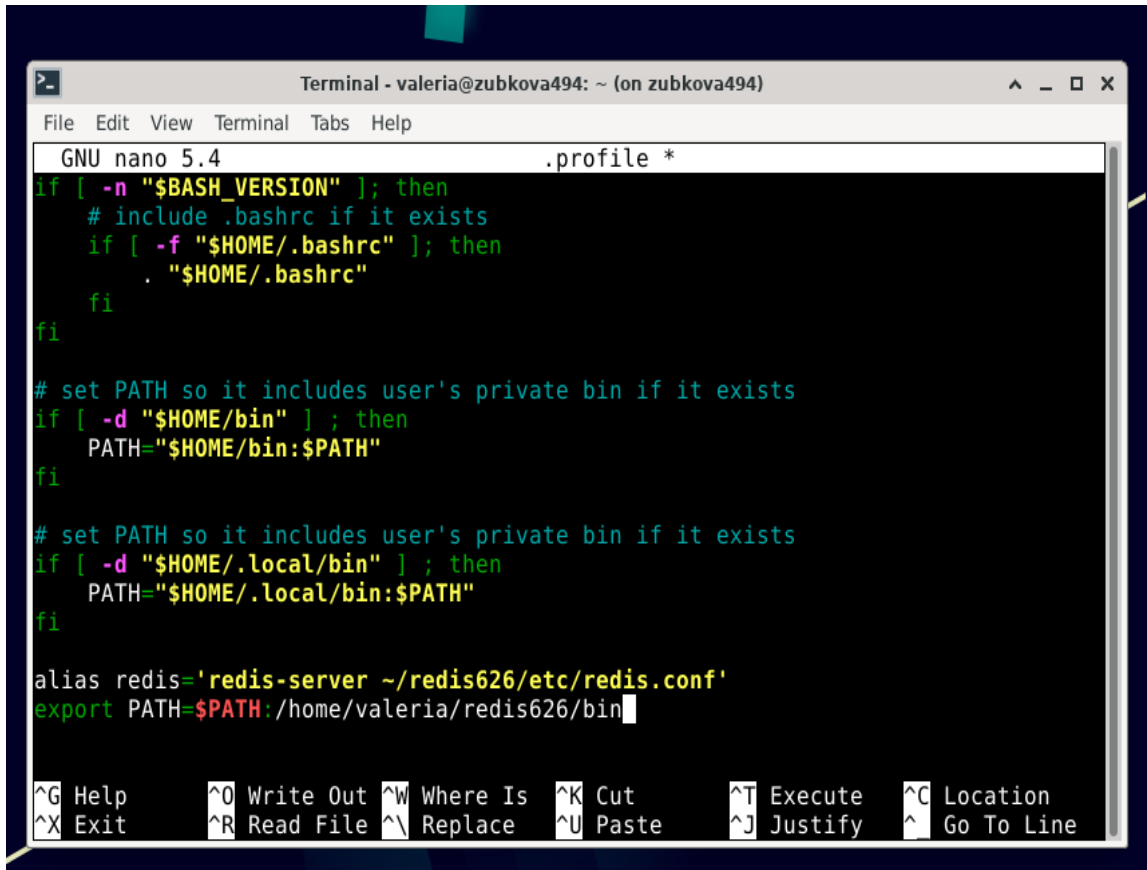
Запуск установочных текстов



A terminal window titled "Terminal - valeria@zubkova494: ~/redis-6.2.6 (on zubkova494)". The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The command prompt shows the user "valeria@zubkova494" in the directory "~/redis-6.2.6" executing the command "make install PREFIX=/home/valeria/redis626".

```
Terminal - valeria@zubkova494: ~/redis-6.2.6 (on zubkova494)
File Edit View Terminal Tabs Help
valeria@zubkova494:~/redis-6.2.6$ make install PREFIX=/home/valeria/redis626
```

Заносим в PATH путь к исполняющим файлам redis



A terminal window titled "Terminal - valeria@zubkova494: ~ (on zubkova494)". The window shows the "GNU nano 5.4" editor editing the ".profile" file. The file content includes bash version checks, path updates for ~/bin and ~/.local/bin, and an alias for redis. The PATH is updated to include ~/redis626/bin. The bottom of the window shows nano editor shortcuts.

```
Terminal - valeria@zubkova494: ~ (on zubkova494)
File Edit View Terminal Tabs Help
GNU nano 5.4 .profile *
if [ -n "$BASH_VERSION" ]; then
  # include .bashrc if it exists
  if [ -f "$HOME/.bashrc" ]; then
    . "$HOME/.bashrc"
  fi
fi

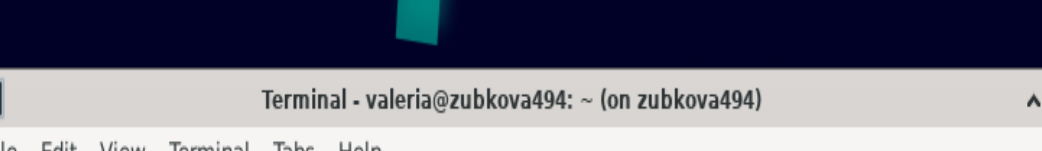
# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/bin" ] ; then
  PATH="$HOME/bin:$PATH"
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/.local/bin" ] ; then
  PATH="$HOME/.local/bin:$PATH"
fi

alias redis='redis-server ~/redis626/etc/redis.conf'
export PATH=$PATH:/home/valeria/redis626/bin

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

Обновляем profile и проверяем расположение redis-server

A terminal window titled "Terminal - valeria@zubkova494: ~ (on zubkova494)". The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The terminal output shows the following commands and results:

```
valeria@zubkova494:~$ source .profile
valeria@zubkova494:~$ which redis-server
/home/valeria/redis626/bin/redis-server
valeria@zubkova494:~$ mkdir redis626/etc
valeria@zubkova494:~$ cp redis-6.2.6/redis.conf redis626/etc/
```

Запускаем redis

```

Terminal - valeria@zubkova494: ~ (on zubkova494)
File Edit View Terminal Tabs Help
valeria@zubkova494:~$ source .profile
valeria@zubkova494:~$ redis
21819:C 08 Feb 2023 15:51:43.331 # o000o000o000o Redis is starting o000o000o000o
21819:C 08 Feb 2023 15:51:43.331 # Redis version=6.2.6, bits=64, commit=00000000, modified=0, pid=21819, just started
21819:C 08 Feb 2023 15:51:43.331 # Configuration loaded
21819:M 08 Feb 2023 15:51:43.332 * Increased maximum number of open files to 10032 (it was originally set to 1024).
21819:M 08 Feb 2023 15:51:43.332 * monotonic clock: POSIX clock_gettime

                                Redis 6.2.6 (00000000/0) 64 bit

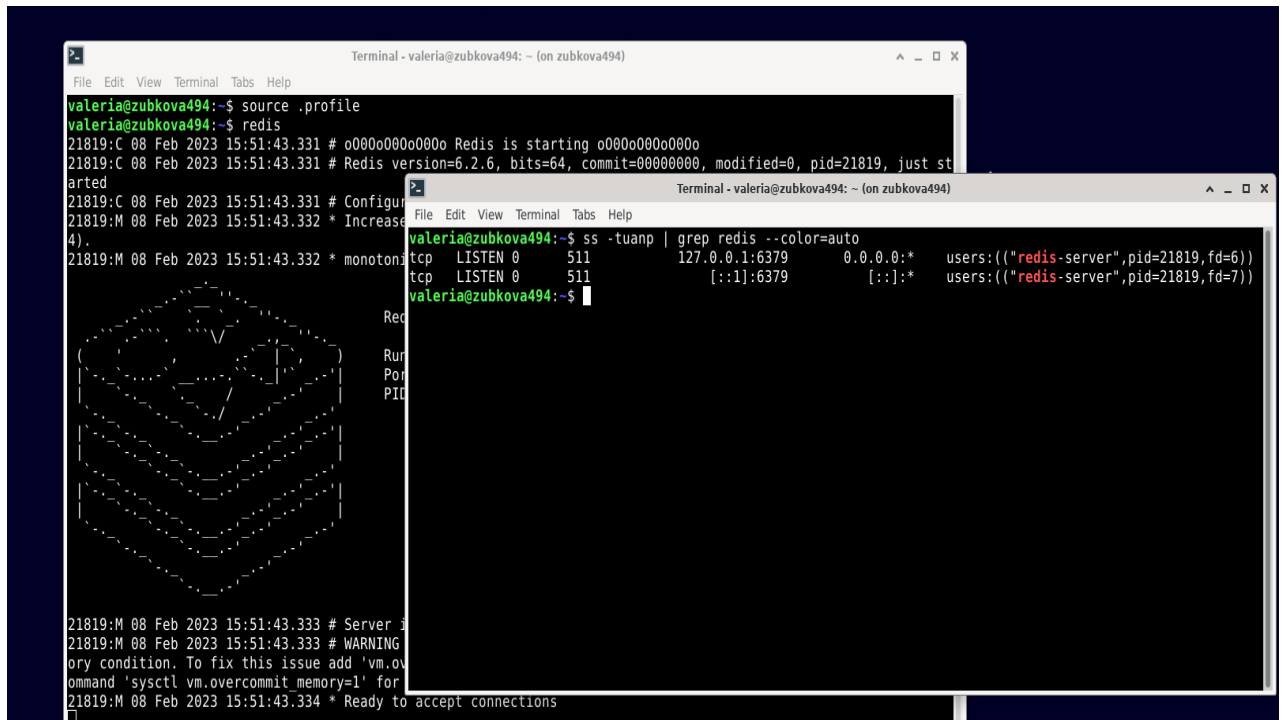
                                Running in standalone mode
                                Port: 6379
                                PID: 21819

                                https://redis.io

21819:M 08 Feb 2023 15:51:43.333 # Server initialized
21819:M 08 Feb 2023 15:51:43.333 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcommit_memory = 1' to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.overcommit_memory=1' for this to take effect.
21819:M 08 Feb 2023 15:51:43.334 * Ready to accept connections

```

Проверяем TCP порты

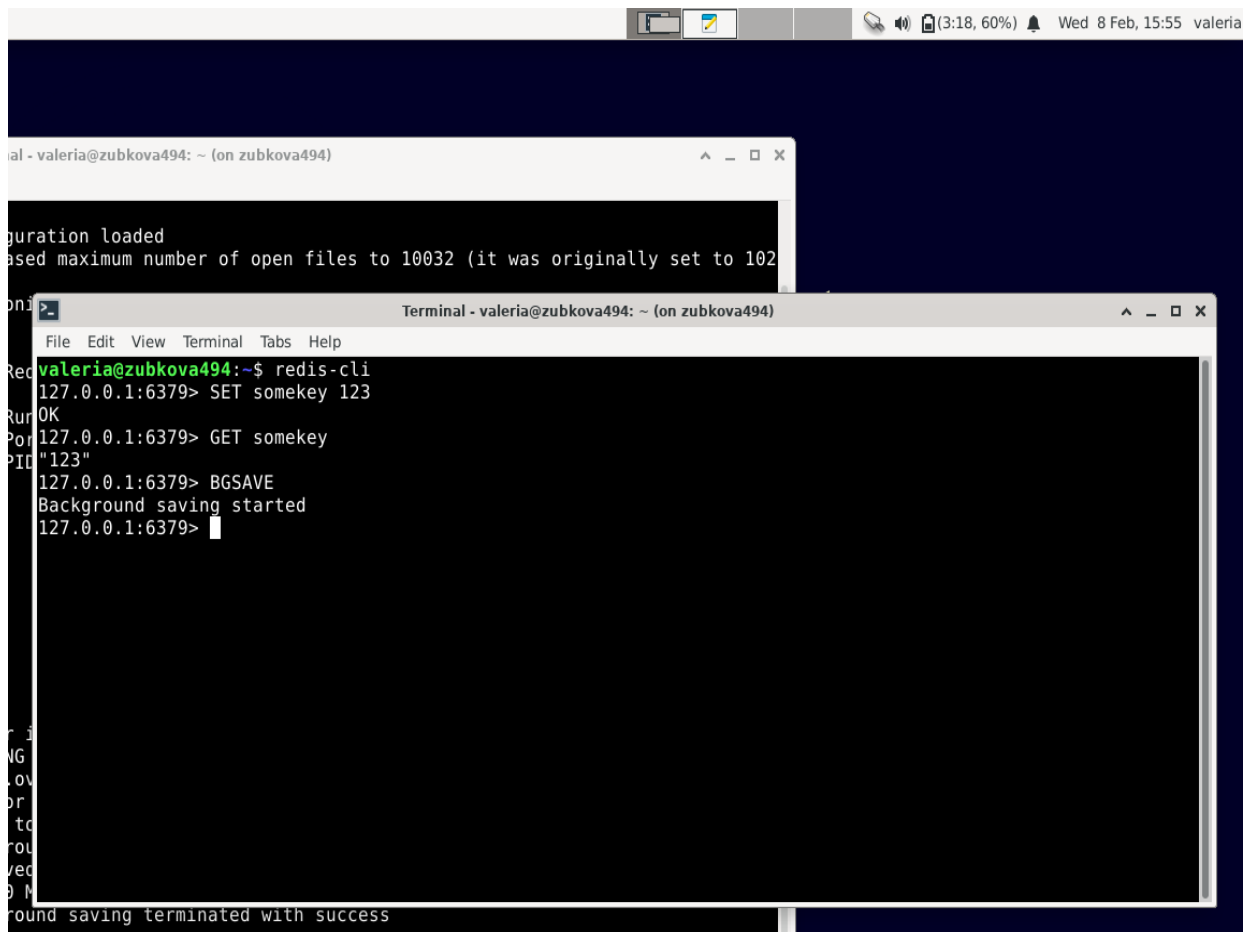


The image shows two terminal windows. The left window shows the Redis startup process with logs indicating it is starting on port 6379. The right window shows the output of the `ss -tunap | grep redis` command, displaying two listening sockets on port 6379 for the `redis-server` process.

```
Terminal - valeria@zubkova494: ~ (on zubkova494)
valeria@zubkova494:~$ source .profile
valeria@zubkova494:~$ redis
21819:C 08 Feb 2023 15:51:43.331 # o000o000o000o Redis is starting o000o000o000o
21819:C 08 Feb 2023 15:51:43.331 # Redis version=6.2.6, bits=64, commit=00000000, modified=0, pid=21819, just started
21819:C 08 Feb 2023 15:51:43.331 # Configuration loaded
21819:M 08 Feb 2023 15:51:43.332 * Increase the maximum number of open files to 10032 (it was originally set to 1024)
21819:M 08 Feb 2023 15:51:43.332 * monotonous time: 0.000000 seconds
21819:M 08 Feb 2023 15:51:43.333 # Server started
21819:M 08 Feb 2023 15:51:43.333 # WARNING: Overcommit memory limit: Couldn't set since the memory limit is too low. To fix this issue add 'vm.overcommit_memory=1' to the redis.conf file and restart the server.
21819:M 08 Feb 2023 15:51:43.334 * Ready to accept connections

Terminal - valeria@zubkova494: ~ (on zubkova494)
valeria@zubkova494:~$ ss -tunap | grep redis --color=auto
tcp LISTEN 0 511 127.0.0.1:6379 0.0.0.0:* users:(("redis-server",pid=21819,fd=6))
tcp LISTEN 0 511 [::]:6379 [::]:* users:(("redis-server",pid=21819,fd=7))
```

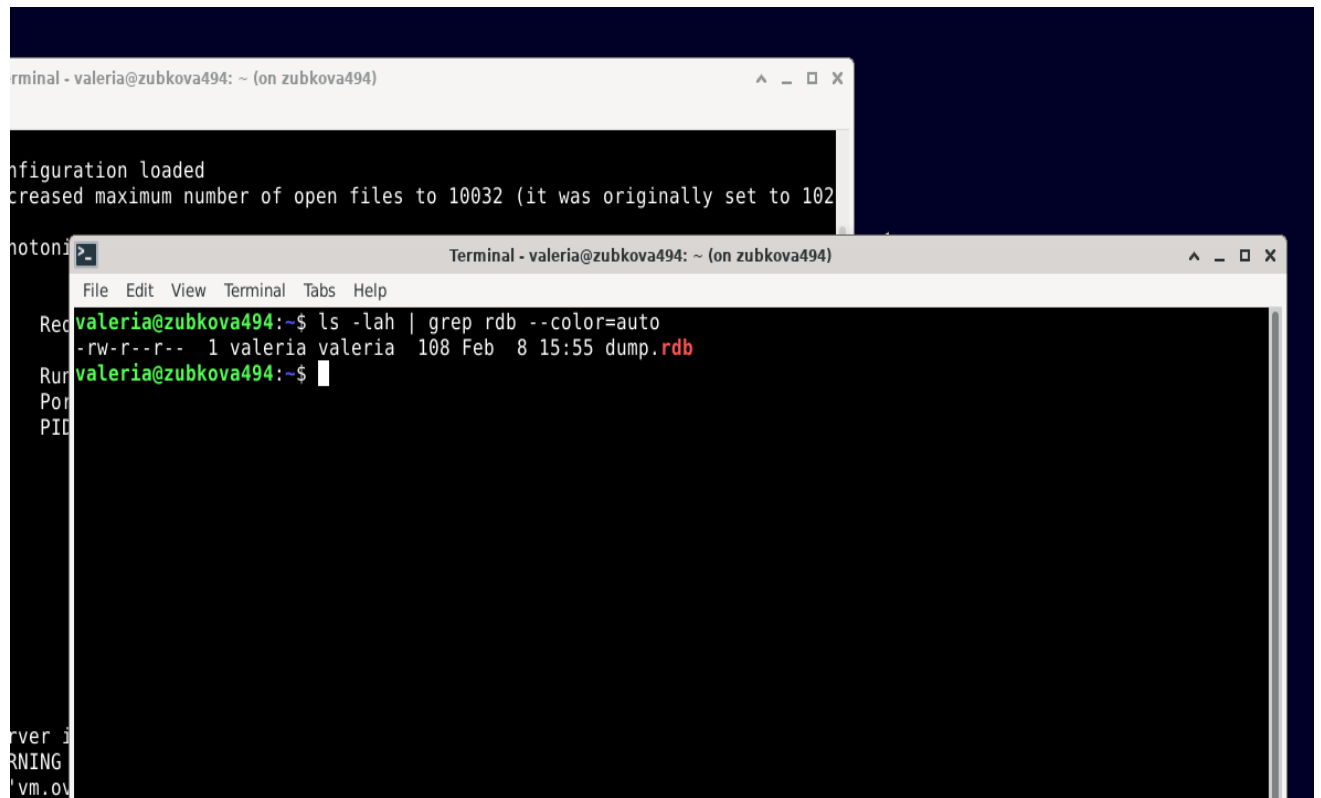
Запускаем redis-cli



The image shows a terminal window with the Redis CLI interface. The user has connected to the Redis server on port 6379 and executed several commands: `SET somekey 123`, `GET somekey`, and `BGSAVE`. The output shows the key was set successfully, the value was retrieved as "123", and background saving started.

```
Terminal - valeria@zubkova494: ~ (on zubkova494)
valeria@zubkova494:~$ redis-cli
127.0.0.1:6379> SET somekey 123
OK
127.0.0.1:6379> GET somekey
"123"
127.0.0.1:6379> BGSAVE
Background saving started
127.0.0.1:6379>
```

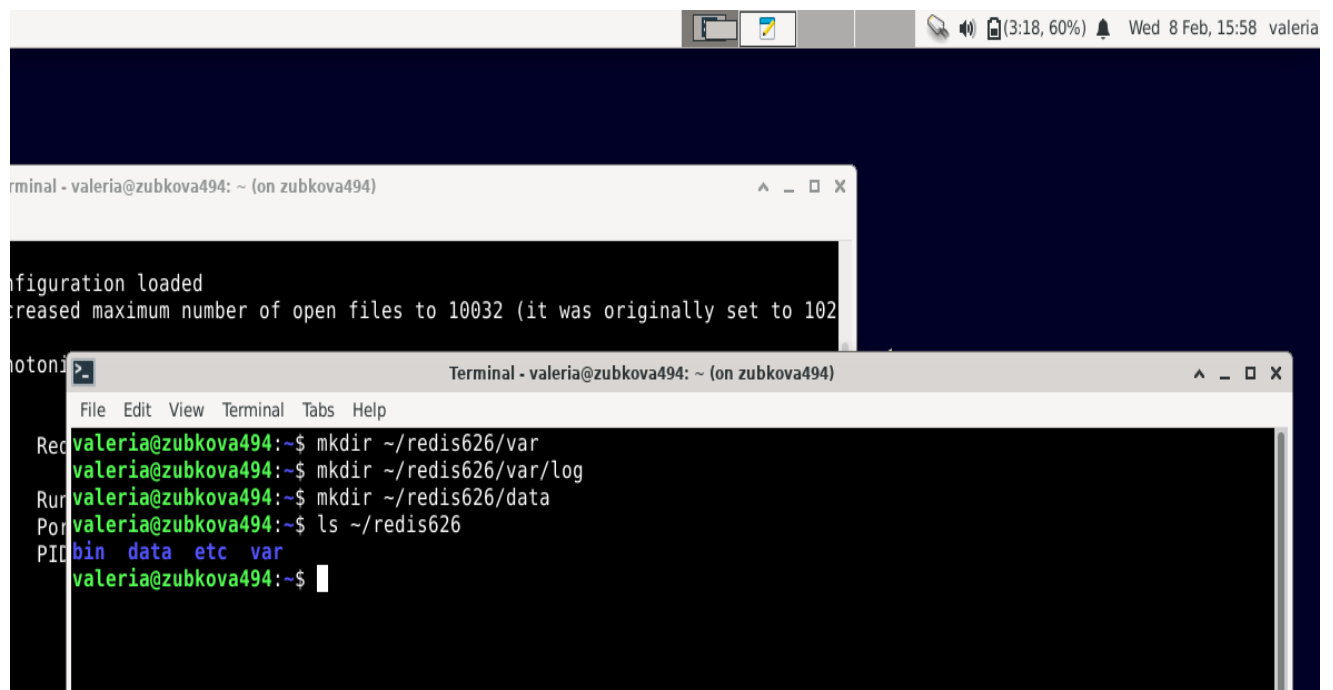
Проверяем наличие dump файла



```
Terminal - valeria@zubkova494: ~ (on zubkova494)
configuration loaded
increased maximum number of open files to 10032 (it was originally set to 1024)

valeria@zubkova494:~$ ls -lah | grep rdb --color=auto
-rw-r--r-- 1 valeria valeria 108 Feb  8 15:55 dump.rdb
valeria@zubkova494:~$
```

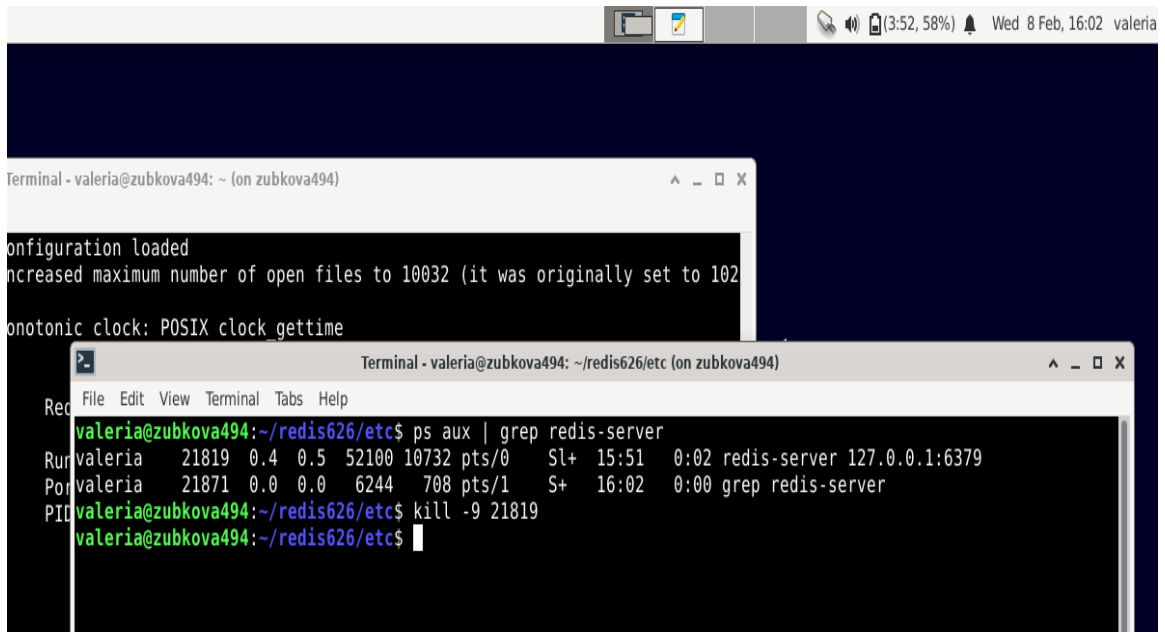
Создаем папки для логирования и данных



```
Terminal - valeria@zubkova494: ~ (on zubkova494)
configuration loaded
increased maximum number of open files to 10032 (it was originally set to 1024)

valeria@zubkova494:~$ mkdir ~/redis626/var
valeria@zubkova494:~$ mkdir ~/redis626/var/log
valeria@zubkova494:~$ mkdir ~/redis626/data
valeria@zubkova494:~$ ls ~/redis626
bin  data  etc  var
valeria@zubkova494:~$
```

Остановка работы redis.



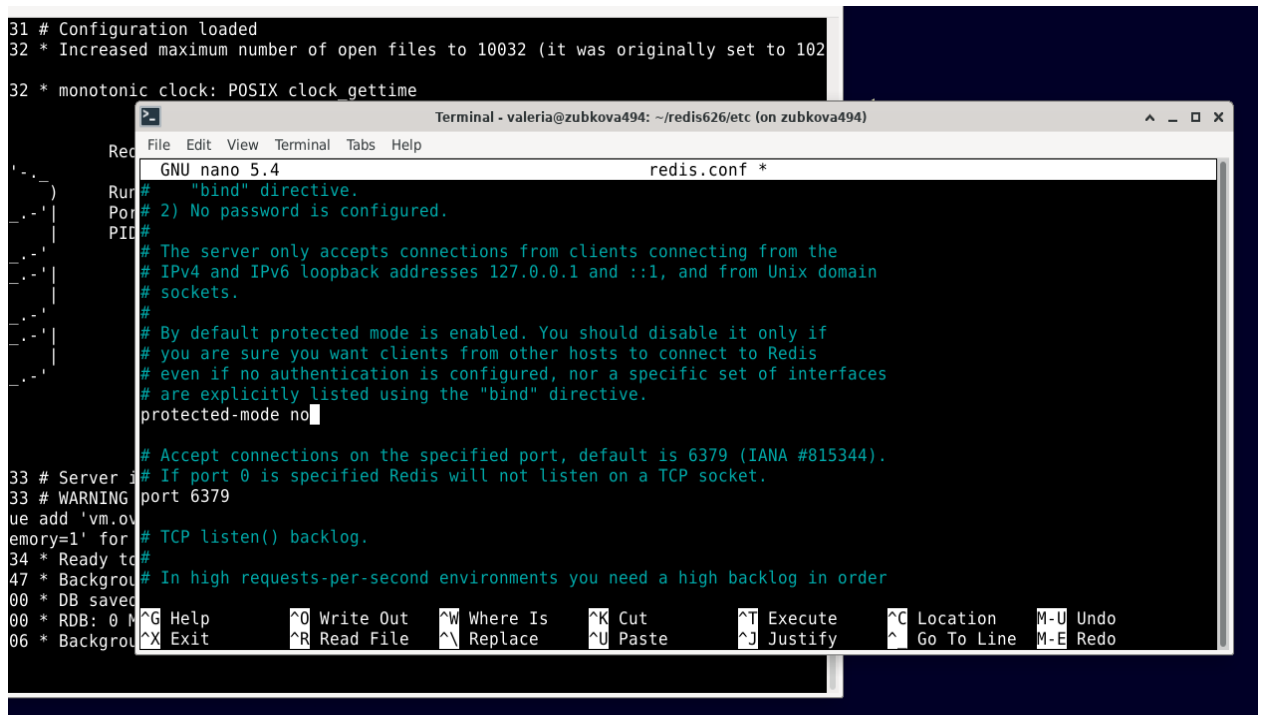
The screenshot shows a terminal window with the following content:

```
Terminal - valeria@zubkova494: ~ (on zubkova494)

onfiguration loaded
Increased maximum number of open files to 10032 (it was originally set to 102
monotonic clock: POSIX clock_gettime

Terminal - valeria@zubkova494: ~/redis626/etc (on zubkova494)
File Edit View Terminal Tabs Help
valeria@zubkova494:~/redis626/etc$ ps aux | grep redis-server
Run valeria 21819 0.4 0.5 52100 10732 pts/0 Sl+ 15:51 0:02 redis-server 127.0.0.1:6379
Por valeria 21871 0.0 0.0 6244 708 pts/1 S+ 16:02 0:00 grep redis-server
PID valeria@zubkova494:~/redis626/etc$ kill -9 21819
valeria@zubkova494:~/redis626/etc$
```

Отключаем protected-mode.



The screenshot shows a terminal window with the following content:

```
31 # Configuration loaded
32 * Increased maximum number of open files to 10032 (it was originally set to 102
32 * monotonic clock: POSIX clock_gettime

Terminal - valeria@zubkova494: ~/redis626/etc (on zubkova494)
File Edit View Terminal Tabs Help
GNU nano 5.4 redis.conf *
Run # "bind" directive.
Por # 2) No password is configured.
PID #
# The server only accepts connections from clients connecting from the
# IPv4 and IPv6 loopback addresses 127.0.0.1 and ::1, and from Unix domain
# sockets.
#
# By default protected mode is enabled. You should disable it only if
# you are sure you want clients from other hosts to connect to Redis
# even if no authentication is configured, nor a specific set of interfaces
# are explicitly listed using the "bind" directive.
protected-mode no
#
# Accept connections on the specified port, default is 6379 (IANA #815344).
# If port 0 is specified Redis will not listen on a TCP socket.
33 # Server port 6379
33 # WARNING: If port 0 is specified Redis will not listen on a TCP socket.
ue add 'vm.o
emory=1' for
34 * Ready to
47 * Backgrou
00 * DB saved
00 * RDB: 0
06 * Backgrou

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^_ Go To Line M-E Redo
```

Добавляем путь к log файлу.

Меняем database

Меняем параметры сохранения

```
increased maximum number of open files to 10032 (it was originally set to 1024)
monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
# number of write operations against the DB occurred.
#
# Snapshotting can be completely disabled with a single empty string argument
# as in following example:
#
# save ""
#
# Unless specified otherwise, by default Redis will save the DB:
# * After 3600 seconds (an hour) if at least 1 key changed
# * After 300 seconds (5 minutes) if at least 100 keys changed
# * After 60 seconds if at least 10000 keys changed
#
# You can set these explicitly by uncommenting the three following lines.
#
Server: save 60 1
WARNING: save 30 10
d 'vm.ov save 10 1000
=1' for
Ready to # By default Redis will stop accepting writes if RDB snapshots are enabled
Backgrou # (at least one save point) and the latest background save failed.
DB saved
RDB: 0 M
Backgrou

^G Help      ^O Write Out  ^W Where Is  ^K Cut        ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File  ^\ Replace   ^U Paste      ^J Justify   ^_ Go To Line  M-E Redo
```

Убираем сжатие

```
configuration loaded
increased maximum number of open files to 10032 (it was originally set to 1024)
monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
stop-writes-on-bgsave-error yes
Port:
PID:
# Compress string objects using LZF when dump .rdb databases?
# By default compression is enabled as it's almost always a win.
# If you want to save some CPU in the saving child set it to 'no' but
# the dataset will likely be bigger if you have compressible values or keys.
rdbcompression no

# Since version 5 of RDB a CRC64 checksum is placed at the end of the file.
# This makes the format more resistant to corruption but there is a performance
# hit to pay (around 10%) when saving and loading RDB files, so you can disable it
# for maximum performances.
#
# RDB files created with checksum disabled have a checksum of zero that will
# tell the loading code to skip the check.
rdbchecksum yes
WARNING: rdbchecksum yes
'vm.ov
' for
Ready to # Enables or disables full sanitation checks for ziplist and listpack etc when
ckgrou # loading an RDB or RESTORE payload. This reduces the chances of a assertion or
saved # crash later on while processing commands.
B: 0 M
ckgrou

^G Help      ^O Write Out  ^W Where Is  ^K Cut        ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File  ^\ Replace   ^U Paste      ^J Justify   ^_ Go To Line  M-E Redo
```


Переименовываем дамб файл

```
figuration loaded
Increased maximum number of open files to 10032 (it was originally set to 1024)
Monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
# clients - Perform full sanitization only for user connections.
# Excludes: RDB files, RESTORE commands received from the master
# connection, and client connections which have the
# skip-sanitize-payload ACL flag.
# The default should be 'clients' but since it currently affects cluster
# resharding via MIGRATE, it is temporarily set to 'no' by default.
#
# sanitize-dump-payload no

# The filename where to dump the DB
dbfilename main.rdb

# Remove RDB files used by replication in instances without persistence
# enabled. By default this option is disabled, however there are environments
# where for regulations or other security concerns, RDB files persisted on
# disk by masters in order to feed replicas, or stored on disk by replicas
# in order to load them for the initial synchronization, should be deleted
# ASAP. Note that this option ONLY WORKS in instances that have both AOF
# and RDB persistence disabled, otherwise is completely ignored.

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

Дальнейшая настройка etc.conf

```
Monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
# with the better durability guarantees.
# Please check https://redis.io/topics/persistence for more information.

requirepass password
appendonly yes

# The name of the append only file (default: "appendonly.aof")
appendfilename "journal.aof"

# The fsync() call tells the Operating System to actually write data on disk
# instead of waiting for more data in the output buffer. Some OS will really flush
# data on disk, some other OS will just try to do it ASAP.

# Redis supports three different modes:
#
# no: don't fsync, just let the OS flush the data when it wants. Faster.
# always: fsync after every write to the append only log. Slow, Safest.
# everysec: fsync only one time every second. Compromise.

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

Дальнешая настройка etc.conf

```
figuration loaded
Increased maximum number of open files to 10032 (it was originally set to 1024)
monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
# "no" that will let the operating system flush the output buffer when
# it wants, for better performances (but if you can live with the idea of
# some data loss consider the default persistence mode that's snapshotting),
# or on the contrary, use "always" that's very slow but a bit safer than
# everysec.
#
# More details please check the following article:
# http://antirez.com/post/redis-persistence-demystified.html
# If unsure, use "everysec".

# appendfsync always
appendfsync always
# appendfsync no

# When the AOF fsync policy is set to always or everysec, and a background
# saving process (a background save or AOF log background rewriting) is
# performing a lot of I/O against the disk, in some Linux configurations
# Redis may block too long on the fsync() call. Note that there is no fix for
# this currently, as even performing fsync in a different thread will block

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

Дальнешая настройка etc.conf

```
Terminal - valeria@zubkova494: ~ (on zubkova494)

configuration loaded
Increased maximum number of open files to 10032 (it was originally set to 1024)
monotonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
#
# When a long running script exceeds the maximum execution time only the
# SCRIPT KILL and SHUTDOWN NOSAVE commands are available. The first can be
# used to stop a script that did not yet call any write commands. The second
# is the only way to shut down the server in the case a write command was
# already issued by the script but the user doesn't want to wait for the natural
# termination of the script.
#
# Set it to 0 or a negative value for unlimited execution without warnings.
lua-time-limit 1000

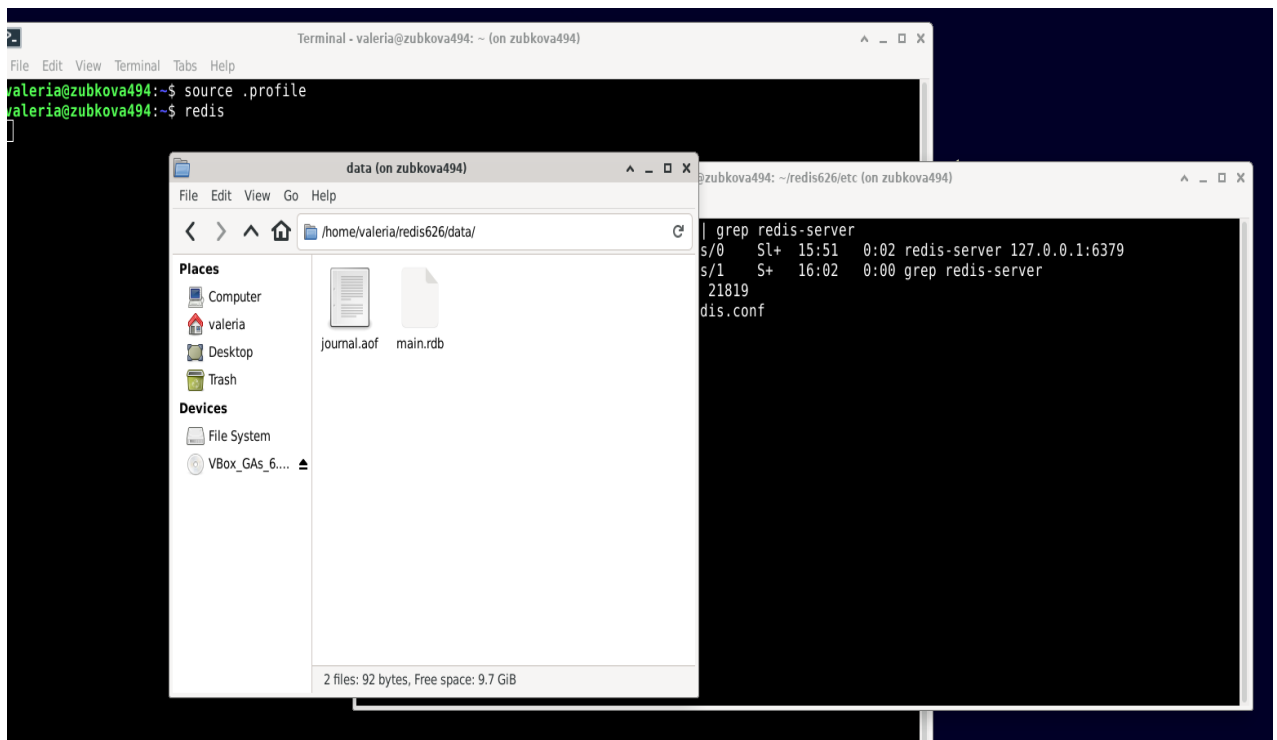
##### REDIS CLUSTER #####
# Normal Redis instances can't be part of a Redis Cluster; only nodes that are
# started as cluster nodes can. In order to start a Redis instance as a
# cluster node enable the cluster support uncommenting the following:
# cluster-enabled yes
#
# Every cluster node has a cluster configuration file. This file is not
```

Дальнейшая настройка etc.conf

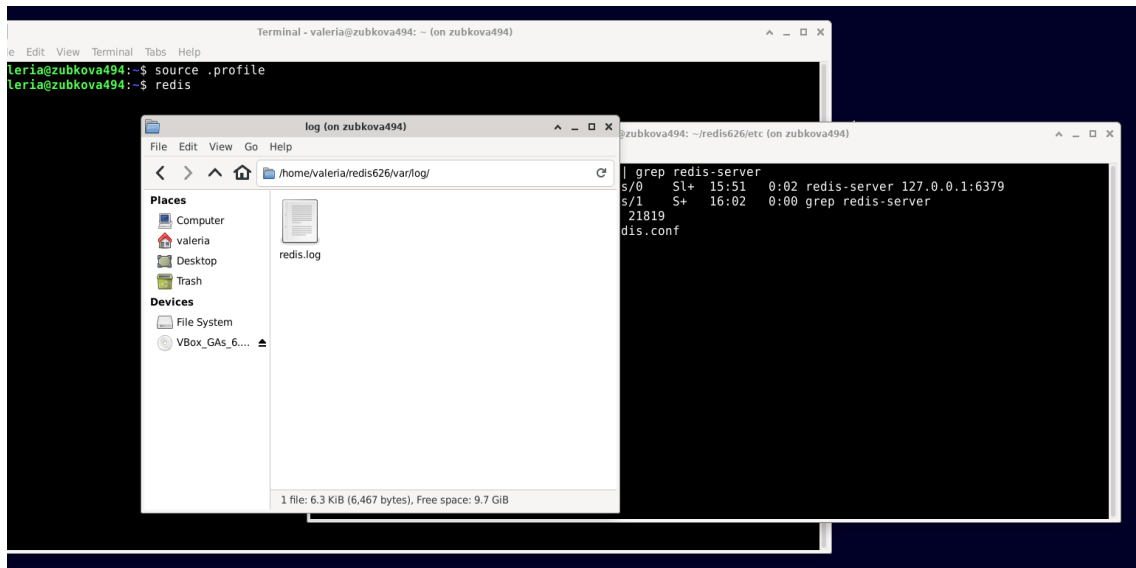
```
figuration loaded
Increased maximum number of open files to 10032 (it was originally set to 1024)
tonic clock: POSIX clock_gettime

GNU nano 5.4 redis.conf *
# Set redis server/io threads to cpu affinity 0,2,4,6:
# server_cpulist 0-7:2
# Set bio threads to cpu affinity 1,3:
# bio_cpulist 1,3
# Set aof rewrite child process to cpu affinity 8,9,10,11:
# aof_rewrite_cpulist 8-11
# Set bgsave child process to cpu affinity 1,10,11
# bgsave_cpulist 1,10-11
# In some cases redis will emit warnings and even refuse to start if it detects
# that the system is in bad state, it is possible to suppress these warnings
# by setting the following config which takes a space delimited list of warnings
# to suppress
# ignore-warnings ARM64-COW-BUG
dir /home/valeria/redis626/data
```

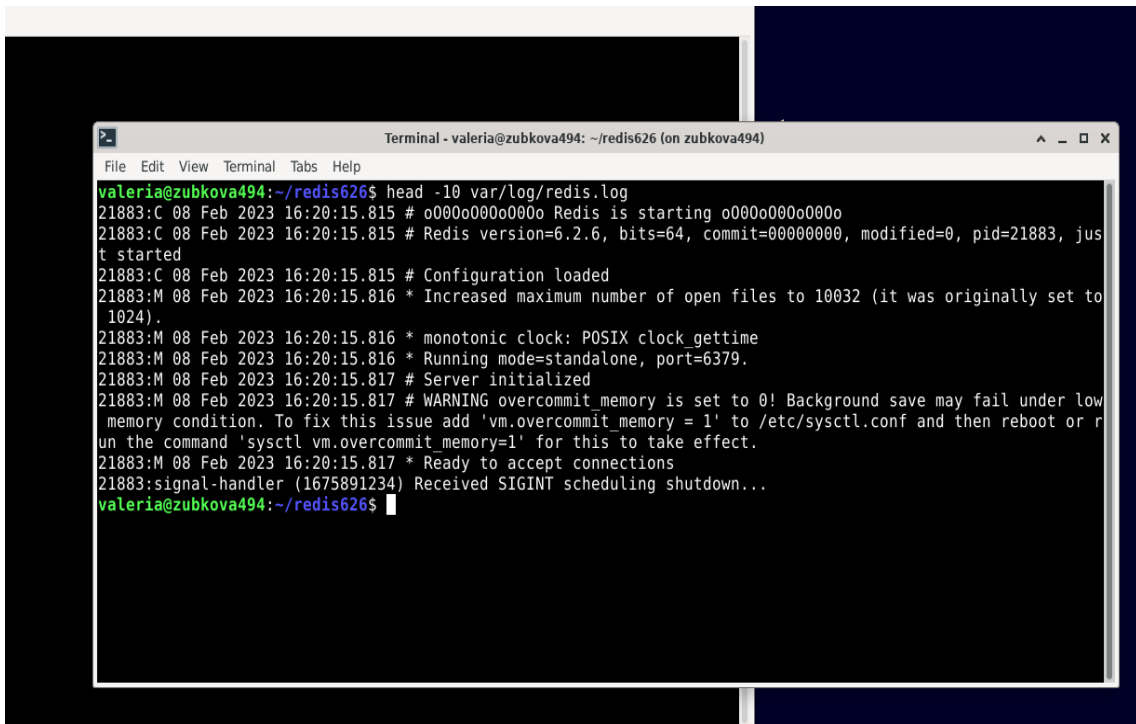
Содержимое папки data



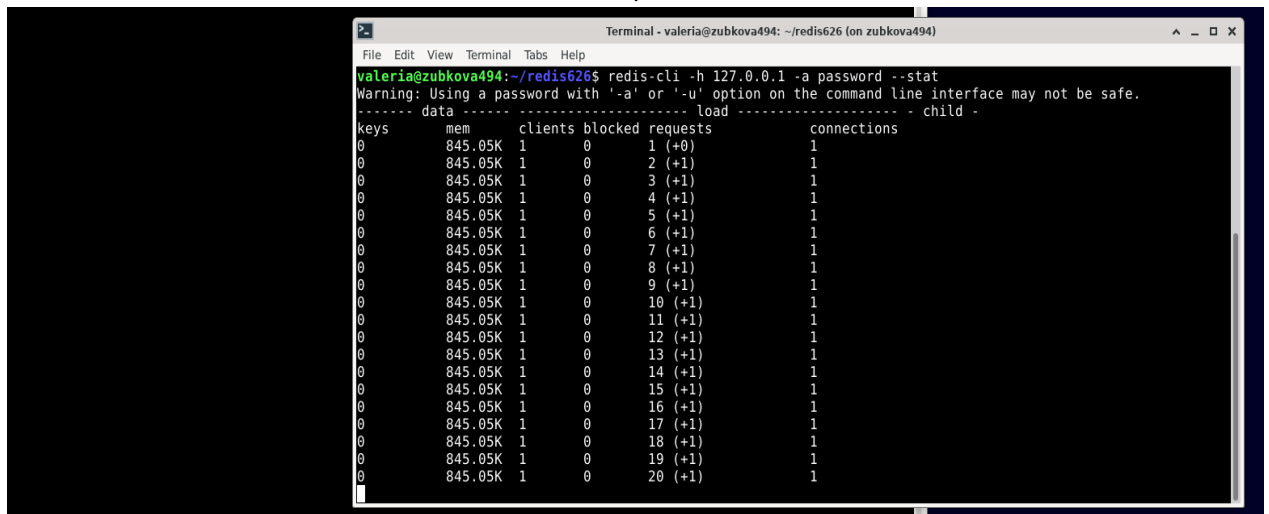
Содержимое папки var



Отображаем последние события из лога

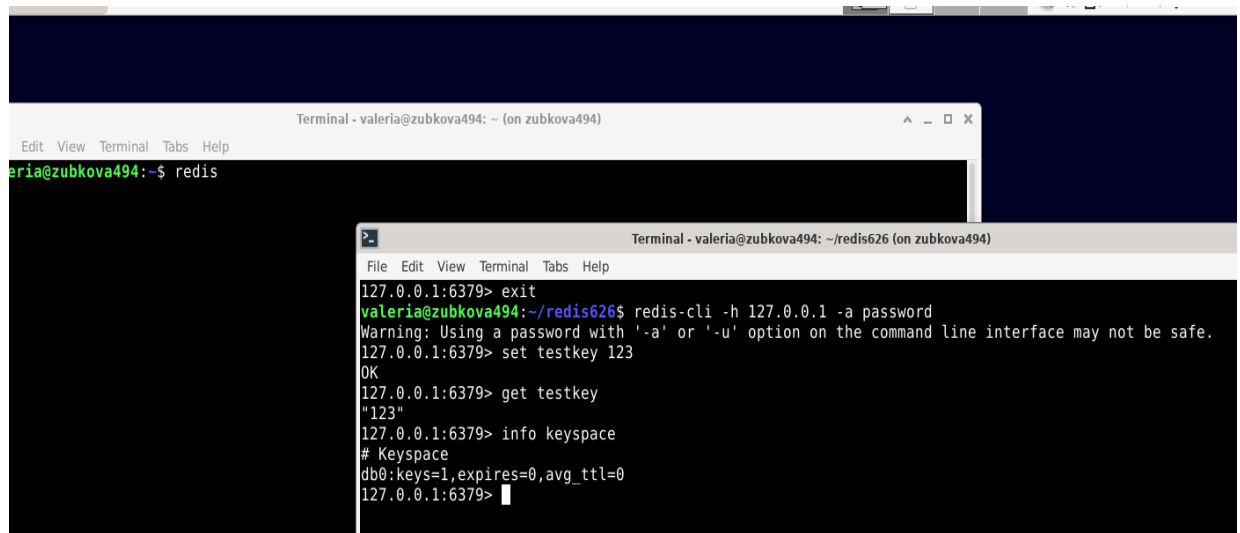


Отображение статистики через redis-cli



```
Terminal - valeria@zubkova494: ~/redis626 (on zubkova494)
valeria@zubkova494:~/redis626$ redis-cli -h 127.0.0.1 -a password --stat
Warning: Using a password with '-a' or '-u' option on the command line interface may not be safe.
----- data -----
keys      mem      clients blocked requests      connections      child
0         845.05K 1        0        1 (+0)          1
0         845.05K 1        0        2 (+1)          1
0         845.05K 1        0        3 (+1)          1
0         845.05K 1        0        4 (+1)          1
0         845.05K 1        0        5 (+1)          1
0         845.05K 1        0        6 (+1)          1
0         845.05K 1        0        7 (+1)          1
0         845.05K 1        0        8 (+1)          1
0         845.05K 1        0        9 (+1)          1
0         845.05K 1        0       10 (+1)          1
0         845.05K 1        0       11 (+1)          1
0         845.05K 1        0       12 (+1)          1
0         845.05K 1        0       13 (+1)          1
0         845.05K 1        0       14 (+1)          1
0         845.05K 1        0       15 (+1)          1
0         845.05K 1        0       16 (+1)          1
0         845.05K 1        0       17 (+1)          1
0         845.05K 1        0       18 (+1)          1
0         845.05K 1        0       19 (+1)          1
0         845.05K 1        0       20 (+1)          1
```

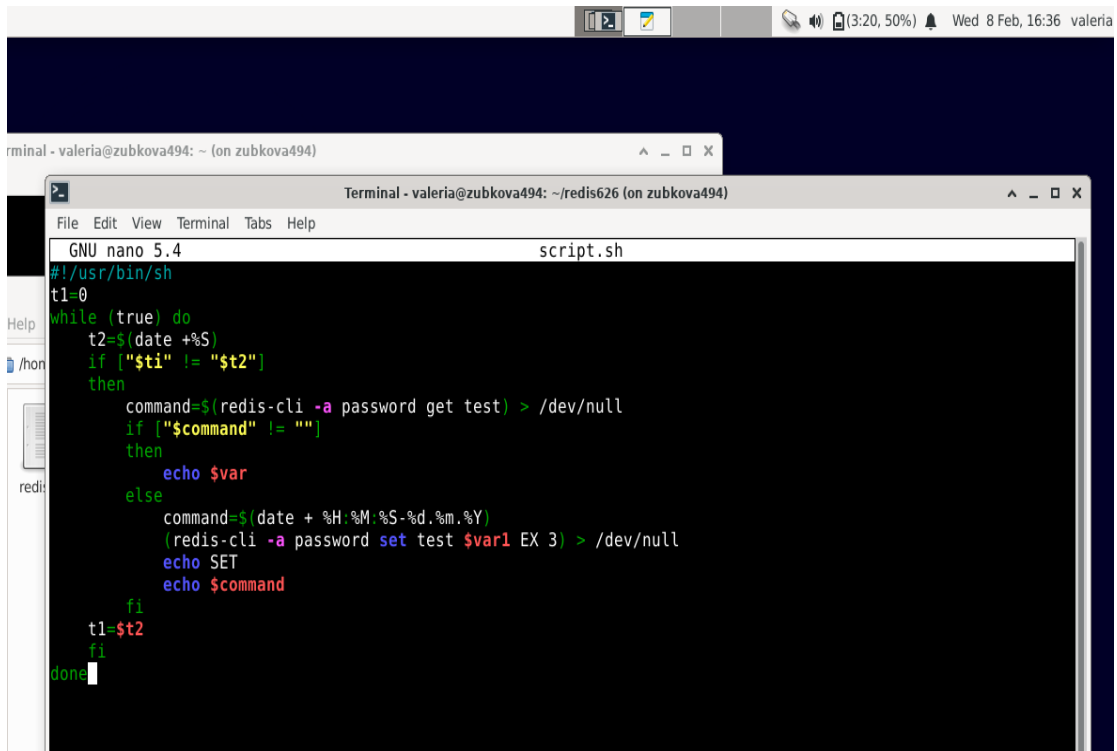
Добавление и вывод данных из redis-cli



```
Terminal - valeria@zubkova494: ~ (on zubkova494)
valeria@zubkova494:~$ redis

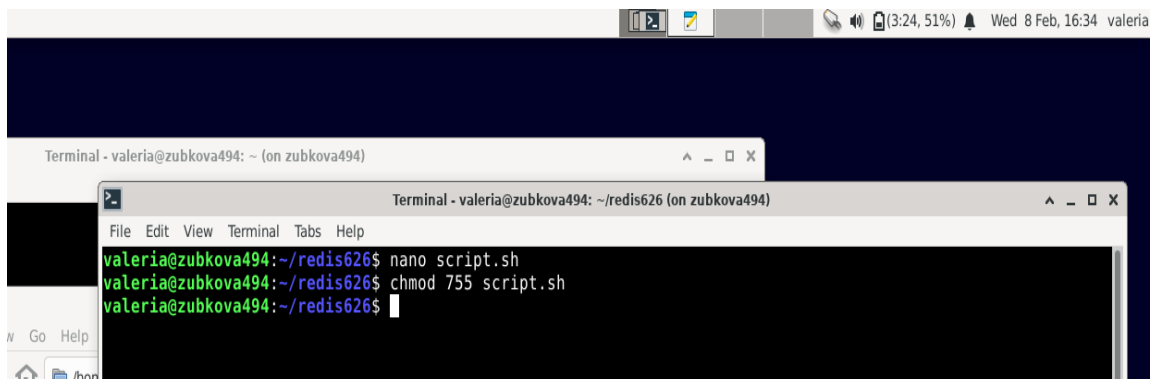
Terminal - valeria@zubkova494: ~/redis626 (on zubkova494)
127.0.0.1:6379> exit
valeria@zubkova494:~/redis626$ redis-cli -h 127.0.0.1 -a password
Warning: Using a password with '-a' or '-u' option on the command line interface may not be safe.
127.0.0.1:6379> set testkey 123
OK
127.0.0.1:6379> get testkey
"123"
127.0.0.1:6379> info keyspace
# Keyspace
db0:keys=1,expires=0,avg_ttl=0
127.0.0.1:6379>
```

Содержание bash скрипта



```
GNU nano 5.4 script.sh
#!/usr/bin/sh
t1=0
while (true) do
  t2=$(date +%S)
  if ["$t1" != "$t2"]
  then
    command=$(redis-cli -a password get test) > /dev/null
    if ["$command" != ""]
    then
      echo $var
    else
      command=$(date +%H:%M:%S-%d.%m.%Y)
      (redis-cli -a password set test $var1 EX 3) > /dev/null
      echo SET
      echo $command
    fi
    t1=$t2
  fi
done
```

Установка прав доступа для исполнения скрипта.



```
Terminal - valeria@zubkova494: ~/redis626 (on zubkova494)
valeria@zubkova494:~/redis626$ nano script.sh
valeria@zubkova494:~/redis626$ chmod 755 script.sh
valeria@zubkova494:~/redis626$
```

Пример выполнения скрипта

[illegible]