AEROSPIKE

Install and configure 1 node Aerospike cluster community edition

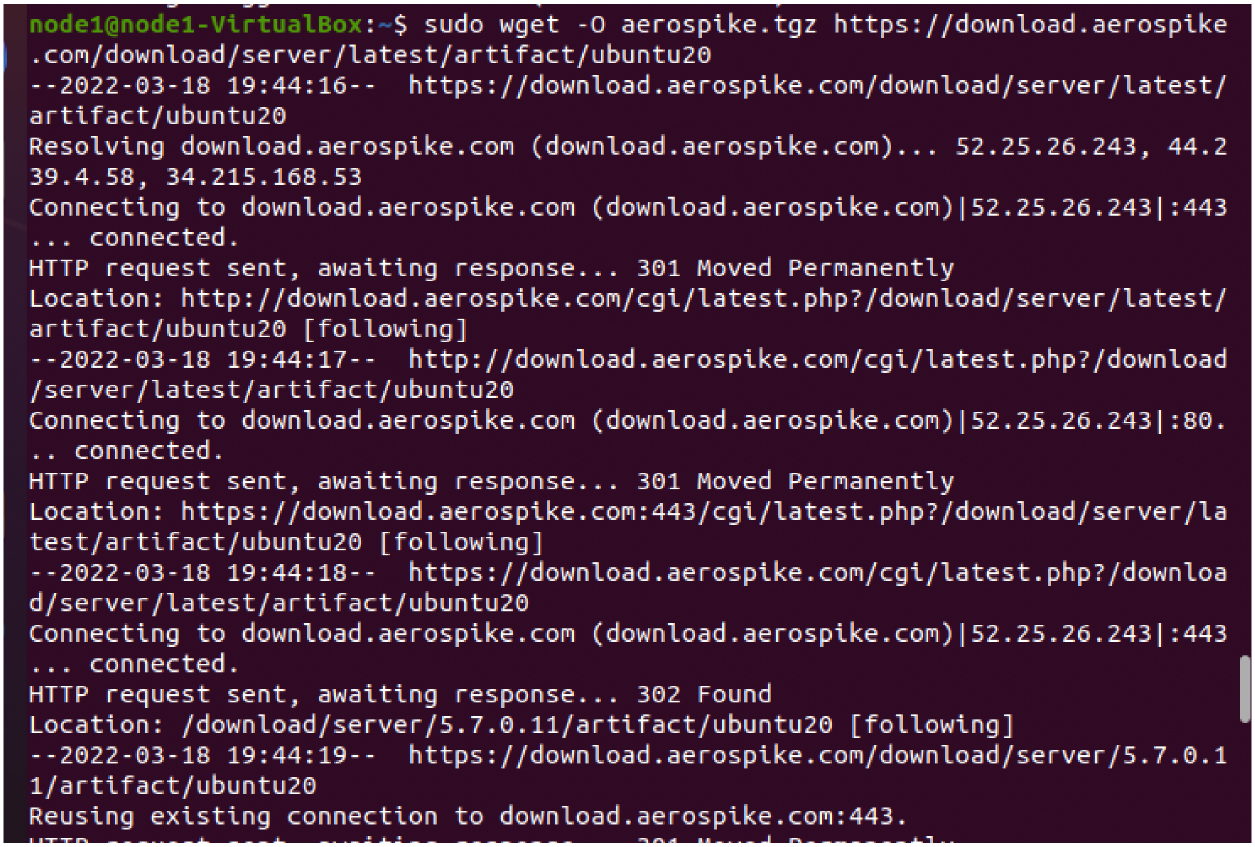
Do the following procedure to install and configure the aerospike .

- Setup a virtual machine.

Run the following commands to install aerospike on the virtual machine.

- Download the file and install as the gz or tar.gz file.

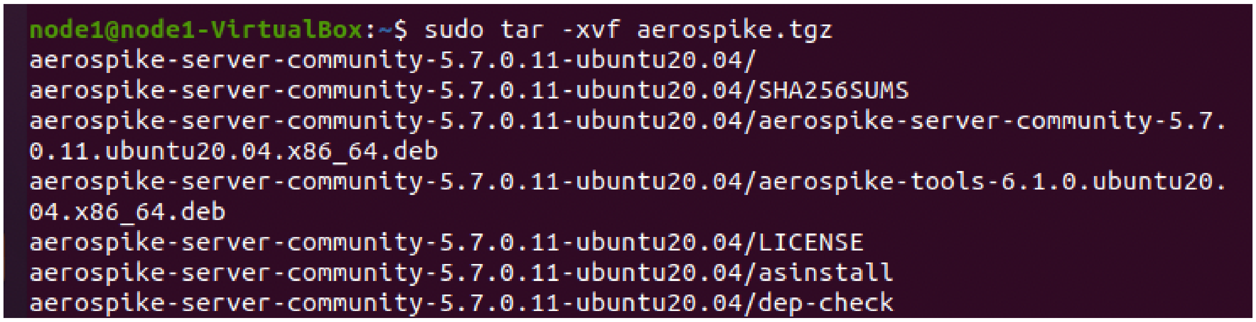
sudo wget -O aerospike.tgz https://download.aerospike.com/download/server/latest/artifact/ubuntu20



```
node1@node1-VirtualBox:~$ sudo wget -O aerospike.tgz https://download.aerospike
.com/download/server/latest/artifact/ubuntu20
--2022-03-18 19:44:16--  https://download.aerospike.com/download/server/latest/
artifact/ubuntu20
Resolving download.aerospike.com (download.aerospike.com)... 52.25.26.243, 44.2
39.4.58, 34.215.168.53
Connecting to download.aerospike.com (download.aerospike.com)|52.25.26.243|:443
... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: http://download.aerospike.com/cgi/latest.php?/download/server/latest/
artifact/ubuntu20 [following]
--2022-03-18 19:44:17--  http://download.aerospike.com/cgi/latest.php?/download
/server/latest/artifact/ubuntu20
Connecting to download.aerospike.com (download.aerospike.com)|52.25.26.243|:80.
.. connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://download.aerospike.com:443/cgi/latest.php?/download/server/la
test/artifact/ubuntu20 [following]
--2022-03-18 19:44:18--  https://download.aerospike.com/cgi/latest.php?/downloa
d/server/latest/artifact/ubuntu20
Connecting to download.aerospike.com (download.aerospike.com)|52.25.26.243|:443
... connected.
HTTP request sent, awaiting response... 302 Found
Location: /download/server/5.7.0.11/artifact/ubuntu20 [following]
--2022-03-18 19:44:19--  https://download.aerospike.com/download/server/5.7.0.1
1/artifact/ubuntu20
Reusing existing connection to download.aerospike.com:443.
```

- Extract the file.

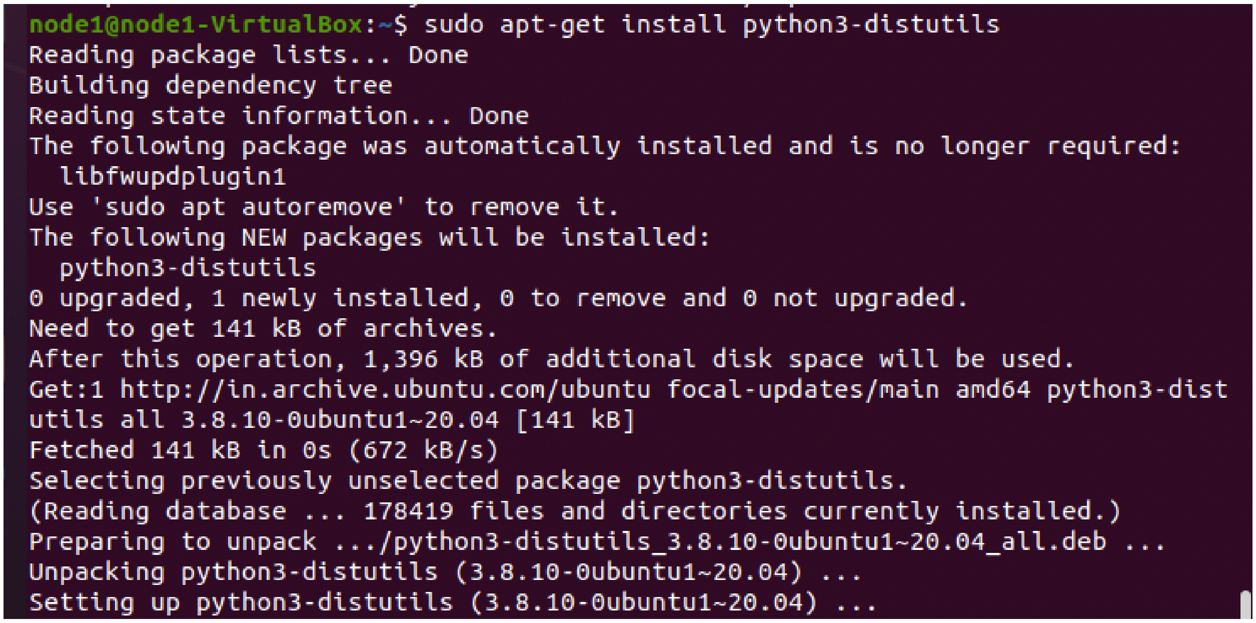
sudo tar-xvf aerospike.tgz



```
node1@node1-VirtualBox:~$ sudo tar -xvf aerospike.tgz
aerospike-server-community-5.7.0.11-ubuntu20.04/
aerospike-server-community-5.7.0.11-ubuntu20.04/SHA256SUMS
aerospike-server-community-5.7.0.11-ubuntu20.04/aerospike-server-community-5.7.
0.11.ubuntu20.04.x86_64.deb
aerospike-server-community-5.7.0.11-ubuntu20.04/aerospike-tools-6.1.0.ubuntu20.
04.x86_64.deb
aerospike-server-community-5.7.0.11-ubuntu20.04/LICENSE
aerospike-server-community-5.7.0.11-ubuntu20.04/asinstall
aerospike-server-community-5.7.0.11-ubuntu20.04/dep-check
```

- There are some python3-distutils errors . To resolve that, run the following command.

sudo apt --fix-error install && sudo apt-get install python3-distutils



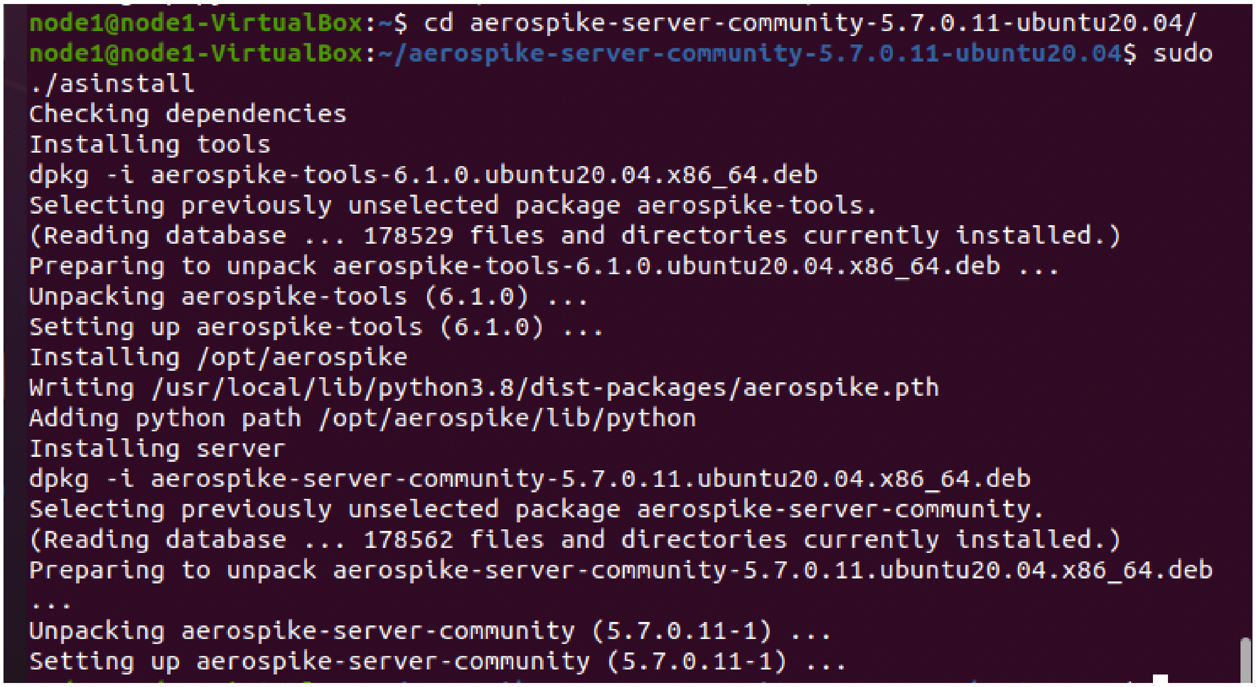
```
node1@node1-VirtualBox:~$ sudo apt-get install python3-distutils
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  python3-distutils
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 141 kB of archives.
After this operation, 1,396 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-dist
utils all 3.8.10-0ubuntu1~20.04 [141 kB]
Fetched 141 kB in 0s (672 kB/s)
Selecting previously unselected package python3-distutils.
(Reading database ... 178419 files and directories currently installed.)
Preparing to unpack .../python3-distutils_3.8.10-0ubuntu1~20.04_all.deb ...
Unpacking python3-distutils (3.8.10-0ubuntu1~20.04) ...
Setting up python3-distutils (3.8.10-0ubuntu1~20.04) ...
```

- Change your directory to the directory that is created when the file is extracted.

cd aerospike-server-community-5.7.0.10-ubuntu 20.04

- Install the inbuilt script.

sudo ./asinstall



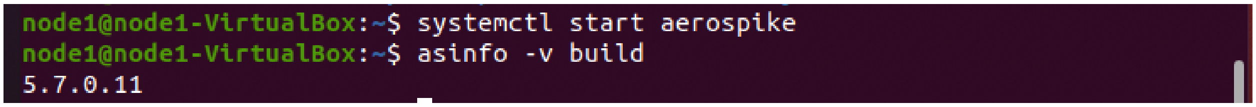
```
node1@node1-VirtualBox:~$ cd aerospike-server-community-5.7.0.11-ubuntu20.04/
node1@node1-VirtualBox:~/aerospike-server-community-5.7.0.11-ubuntu20.04$ sudo
./asinstall
Checking dependencies
Installing tools
dpkg -i aerospike-tools-6.1.0.ubuntu20.04.x86_64.deb
Selecting previously unselected package aerospike-tools.
(Reading database ... 178529 files and directories currently installed.)
Preparing to unpack aerospike-tools-6.1.0.ubuntu20.04.x86_64.deb ...
Unpacking aerospike-tools (6.1.0) ...
Setting up aerospike-tools (6.1.0) ...
Installing /opt/aerospike
Writing /usr/local/lib/python3.8/dist-packages/aerospike.pth
Adding python path /opt/aerospike/lib/python
Installing server
dpkg -i aerospike-server-community-5.7.0.11.ubuntu20.04.x86_64.deb
Selecting previously unselected package aerospike-server-community.
(Reading database ... 178562 files and directories currently installed.)
Preparing to unpack aerospike-server-community-5.7.0.11.ubuntu20.04.x86_64.deb
...
Unpacking aerospike-server-community (5.7.0.11-1) ...
Setting up aerospike-server-community (5.7.0.11-1) ...
```

- Start the aerospike service

sudo systemctl start aerospike

- (optional) Just to the check the version of the aerospike installed

asinfo -v build



```
node1@node1-VirtualBox:~$ systemctl start aerospike
node1@node1-VirtualBox:~$ asinfo -v build
5.7.0.11
```

- To configure and check the logs. Do this:

journalctl -u aerospike -a -o cat -f

The AS cluster should have a username/password

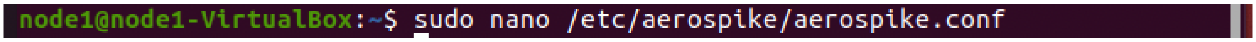
This feature is not available in the community edition. This feature is only available in the enterprise edition of the Aerospike.

Data should be persisted on disk

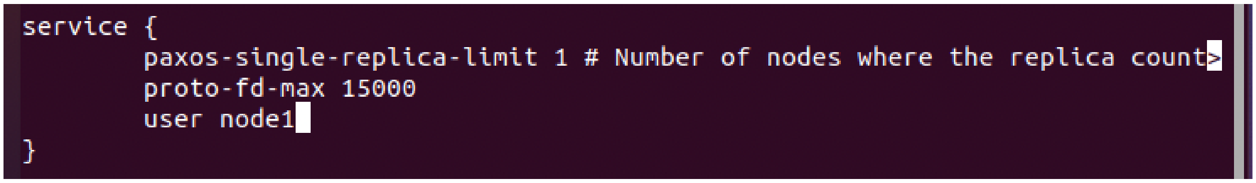
For achieving data persistence , we need to change storage-engine from memory to device and specify a .dat file or device itself into the namespace stanza.

Steps:

Provide the permissions for the user before that in the aerospike.conf

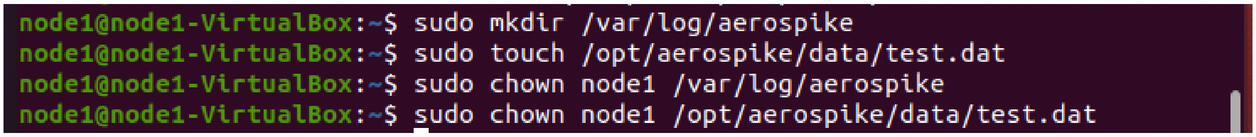


```
node1@node1-VirtualBox:~$ sudo nano /etc/aerospike/aerospike.conf
```



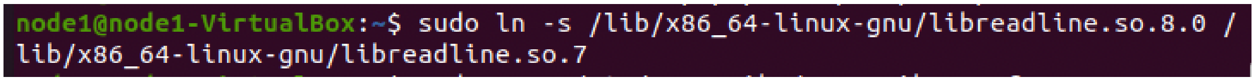
```
service {
        paxos-single-replica-limit 1 # Number of nodes where the replica count>
        proto-fd-max 15000
        user node1
}
```

Create the required files and Provide the permissions to the user for the above files.



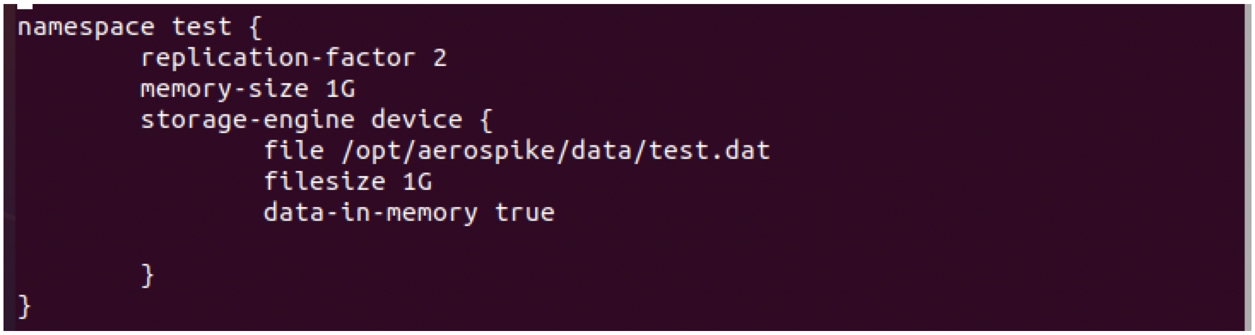
```
node1@node1-VirtualBox:~$ sudo mkdir /var/log/aerospike
node1@node1-VirtualBox:~$ sudo touch /opt/aerospike/data/test.dat
node1@node1-VirtualBox:~$ sudo chown node1 /var/log/aerospike
node1@node1-VirtualBox:~$ sudo chown node1 /opt/aerospike/data/test.dat
```

Create the symlink for accessing each node.



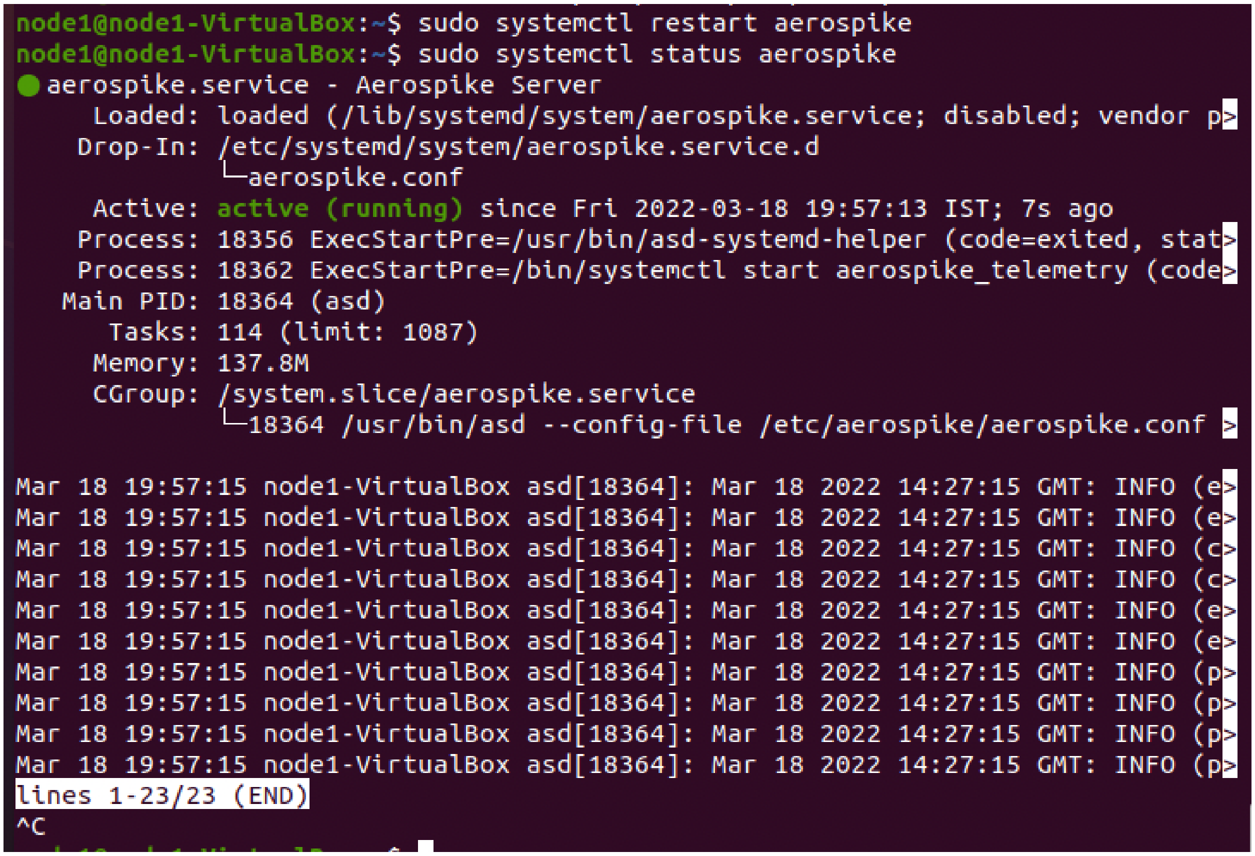
```
node1@node1-VirtualBox:~$ sudo ln -s /lib/x86_64-linux-gnu/libreadline.so.8.0 /
lib/x86_64-linux-gnu/libreadline.so.7
```

Provide the below given in the namespace stanza



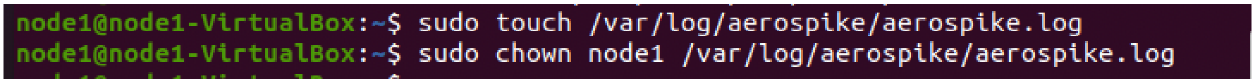
```
namespace test {
        replication-factor 2
        memory-size 1G
        storage-engine device {
                file /opt/aerospike/data/test.dat
                filesize 1G
                data-in-memory true

        }
}
```

Restart aerospike.

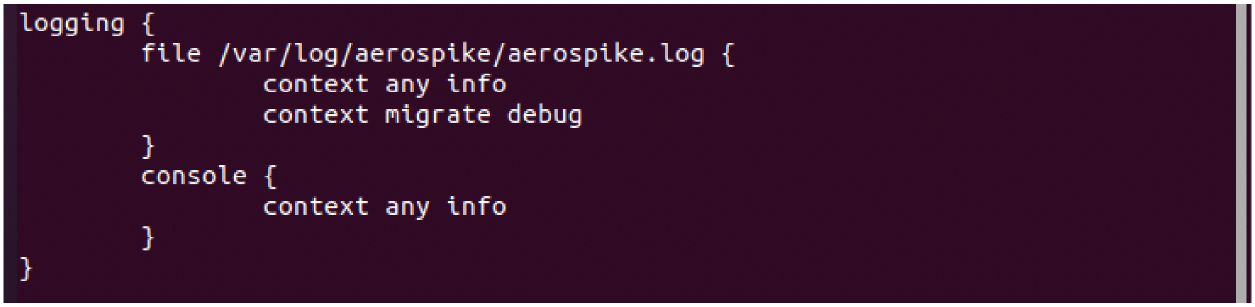


```
node1@node1-VirtualBox:~$ sudo systemctl restart aerospike
node1@node1-VirtualBox:~$ sudo systemctl status aerospike
● aerospike.service - Aerospike Server
     Loaded: loaded (/lib/systemd/system/aerospike.service; disabled; vendor p>
    Drop-In: /etc/systemd/system/aerospike.service.d
             └─aerospike.conf
     Active: active (running) since Fri 2022-03-18 19:57:13 IST; 7s ago
    Process: 18356 ExecStartPre=/usr/bin/asd-systemd-helper (code=exited, stat>
    Process: 18362 ExecStartPre=/bin/systemctl start aerospike_telemetry (code>
   Main PID: 18364 (asd)
      Tasks: 114 (limit: 1087)
     Memory: 137.8M
     CGroup: /system.slice/aerospike.service
             └─18364 /usr/bin/asd --config-file /etc/aerospike/aerospike.conf >

Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (e>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (e>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (c>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (c>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (e>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (e>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (p>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (p>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (p>
Mar 18 19:57:15 node1-VirtualBox asd[18364]: Mar 18 2022 14:27:15 GMT: INFO (p>
lines 1-23/23 (END)
^C
```

To enable the log file do the following configuration in /etc/aerospike/aerospike.conf file.



```
node1@node1-VirtualBox:~$ sudo touch /var/log/aerospike/aerospike.log
node1@node1-VirtualBox:~$ sudo chown node1 /var/log/aerospike/aerospike.log
```

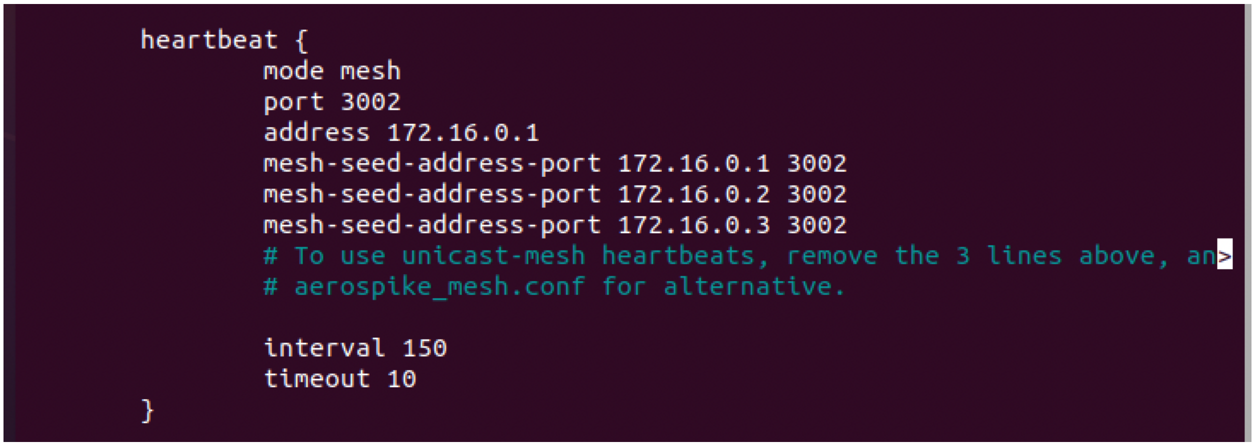


```
logging {
        file /var/log/aerospike/aerospike.log {
                context any info
                context migrate debug
        }
        console {
                context any info
        }
}
```

The Data persistence is set up now.

Add 2 more nodes to the cluster without restarting AS service on first one

1. Create two more virtual machines and setup aerospike on it as above node2 and node3.
2. Add the following configuration to all the three nodes aerospike.conf now.



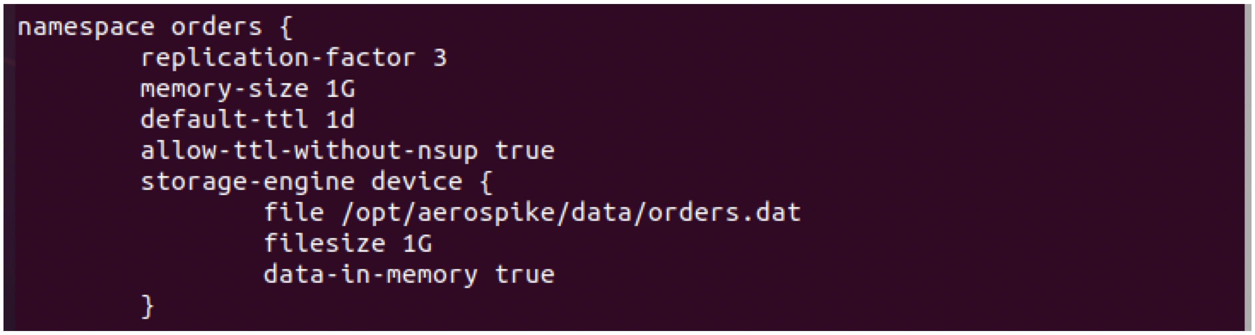
```
        heartbeat {
                mode mesh
                port 3002
                address 172.16.0.1
                mesh-seed-address-port 172.16.0.1 3002
                mesh-seed-address-port 172.16.0.2 3002
                mesh-seed-address-port 172.16.0.3 3002
                # To use unicast-mesh heartbeats, remove the 3 lines above, an>
                # aerospike_mesh.conf for alternative.

                interval 150
                timeout 10
        }
```

Verify the cluster size after restarting the daemon.

Cluster is setup now.

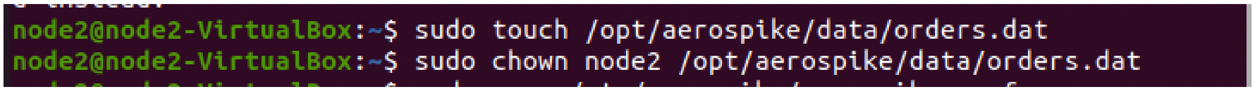
Create a namespace Orders

Create a namespace stanza in the aerospike.conf file and add the following



```
namespace orders {
        replication-factor 3
        memory-size 1G
        default-ttl 1d
        allow-ttl-without-nsup true
        storage-engine device {
                file /opt/aerospike/data/orders.dat
                filesize 1G
                data-in-memory true
        }
```

Add the required files and the permissions.

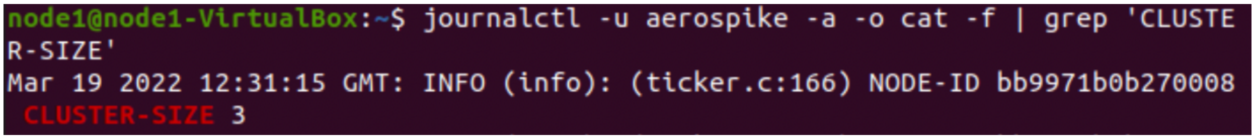


```
node2@node2-VirtualBox:~$ sudo touch /opt/aerospike/data/orders.dat
node2@node2-VirtualBox:~$ sudo chown node2 /opt/aerospike/data/orders.dat
```

Restart after applying changes.

The cluster setup is done. Check and Verify the cluster size :

journalctl -u aerospike -a -o cat -f | grep ‘CLUSTER-SIZE’

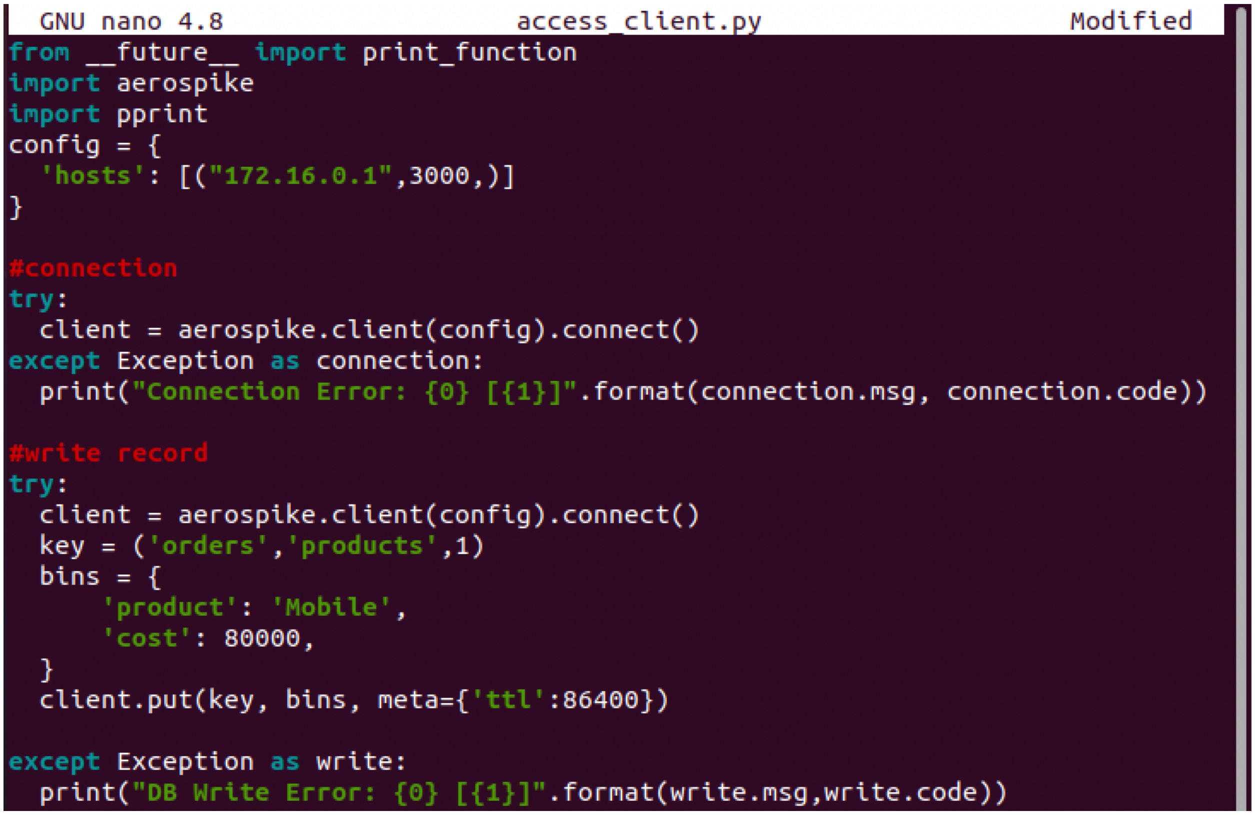


```
node1@node1-VirtualBox:~$ journalctl -u aerospike -a -o cat -f | grep 'CLUSTE
R-SIZE'
Mar 19 2022 12:31:15 GMT: INFO (info): (ticker.c:166) NODE-ID bb9971b0b270008
 CLUSTER-SIZE 3
```

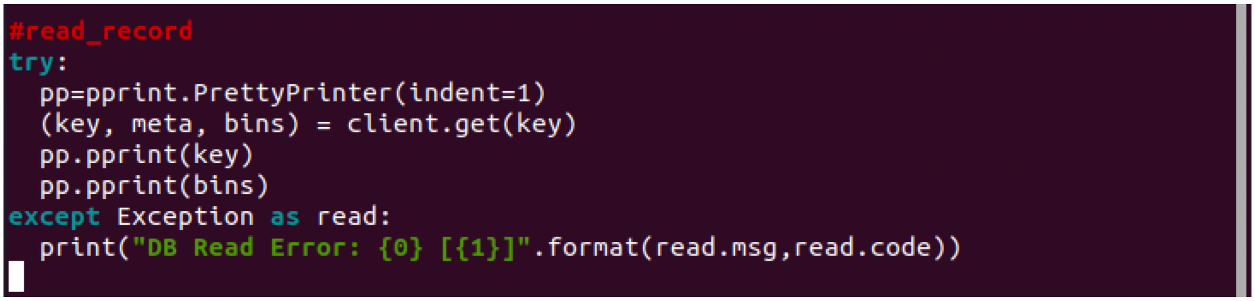
Testing:

Write a program using an AS client to write and read the data from AS

Python program to use an AS client to write and read data from AS.

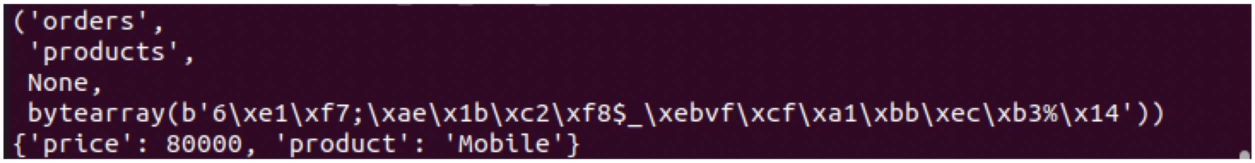


```
  GNU nano 4.8                     access_client.py                    Modified
from __future__ import print_function
import aerospike
import pprint
config = {
  'hosts': [("172.16.0.1",3000,)]
}

#connection
try:
  client = aerospike.client(config).connect()
except Exception as connection:
  print("Connection Error: {0} [{1}]".format(connection.msg, connection.code))

#write record
try:
  client = aerospike.client(config).connect()
  key = ('orders','products',1)
  bins = {
      'product': 'Mobile',
      'cost': 80000,
  }
  client.put(key, bins, meta={'ttl':86400})

except Exception as write:
  print("DB Write Error: {0} [{1}]".format(write.msg,write.code))
```



```
#read_record
try:
  pp=pprint.PrettyPrinter(indent=1)
  (key, meta, bins) = client.get(key)
  pp.pprint(key)
  pp.pprint(bins)
except Exception as read:
  print("DB Read Error: {0} [{1}]".format(read.msg,read.code))
```

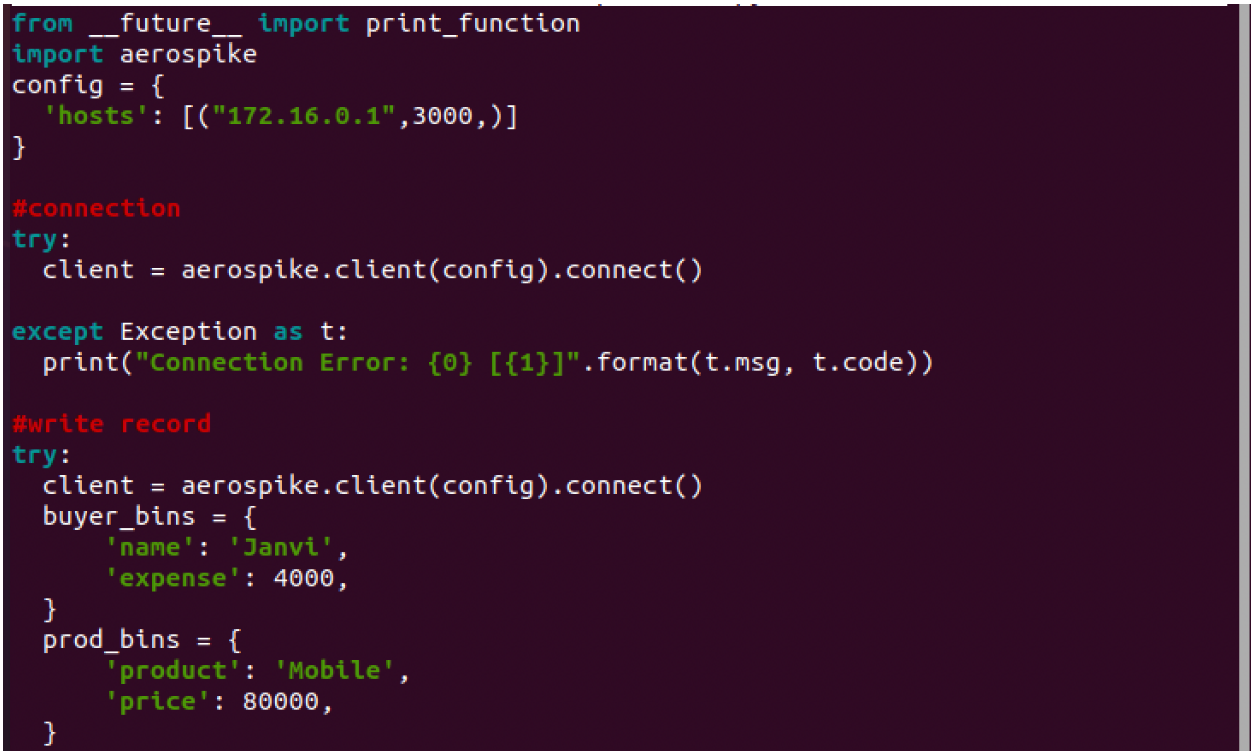
Run the following with the help of python3 access_client.py



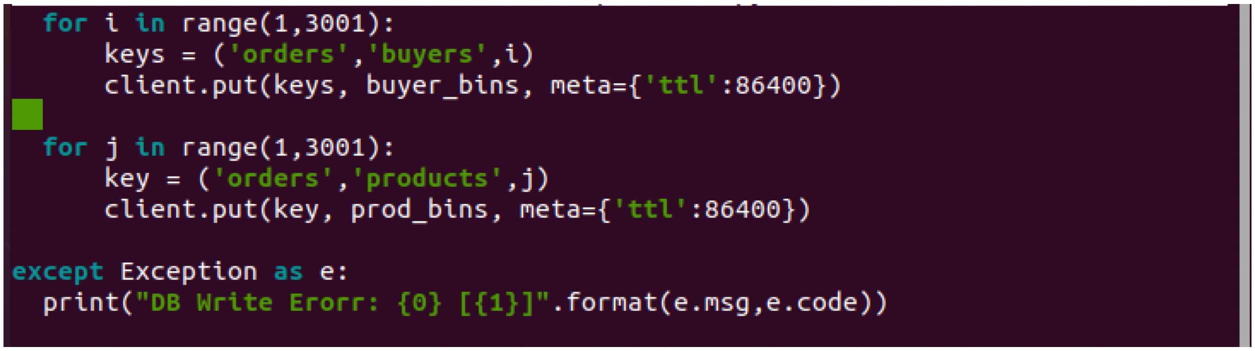
```
('orders',
 'products',
 None,
 bytearray(b'6\xe1\xf7;\xae\x1b\xc2\xf8$_\xebvf\xcf\xa1\xbb\xec\xb3%\x14'))
{'price': 80000, 'product': 'Mobile'}
```

The namespace should have the following sets (buyer details, product details)

Creating namespace buyer and product with the help of a program .



```
from __future__ import print_function
import aerospike
config = {
  'hosts': [("172.16.0.1",3000,)]
}

#connection
try:
  client = aerospike.client(config).connect()

except Exception as t:
  print("Connection Error: {0} [{1}]".format(t.msg, t.code))

#write record
try:
  client = aerospike.client(config).connect()
  buyer_bins = {
      'name': 'Janvi',
      'expense': 4000,
  }
  prod_bins = {
      'product': 'Mobile',
      'price': 80000,
  }
```

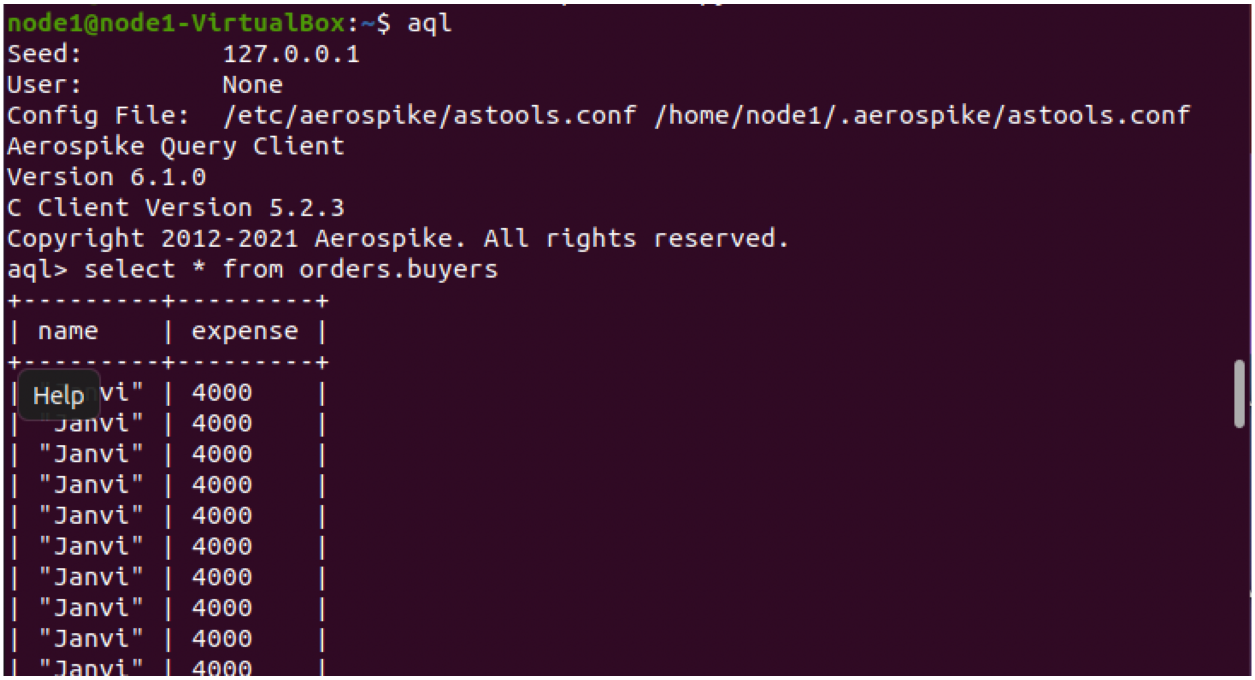


```
  for i in range(1,3001):
      keys = ('orders','buyers',i)
      client.put(keys, buyer_bins, meta={'ttl':86400})

  for j in range(1,3001):
      key = ('orders','products',j)
      client.put(key, prod_bins, meta={'ttl':86400})

except Exception as e:
  print("DB Write Erorr: {0} [{1}]".format(e.msg,e.code))
```

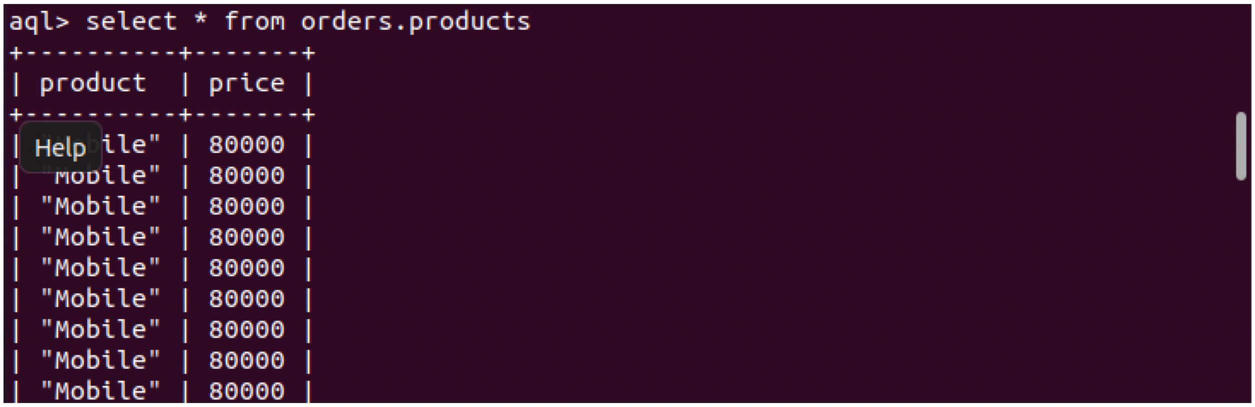
This program will write the data in the buyer and product sets of the order namespace.

Each set should have 3000 records.

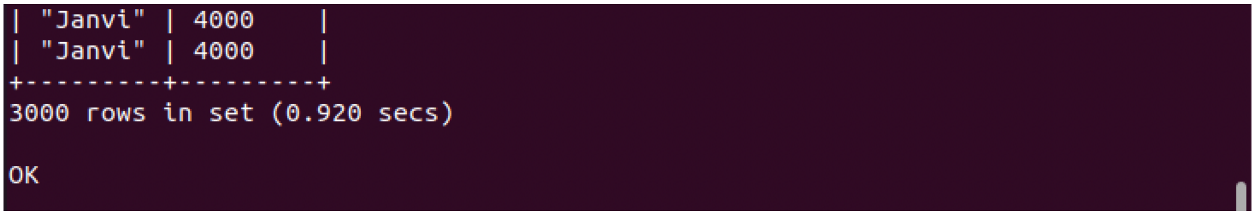
For adding 3000 records i have just provided the put function inside the for loop ranging from 1 , 3001 as in the above.



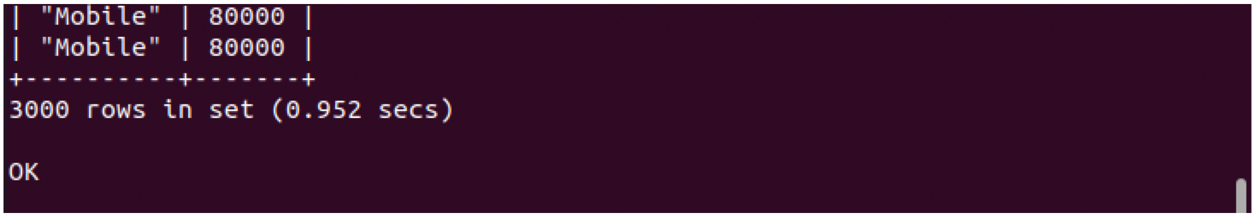
```
node1@node1-VirtualBox:~$ aql
Seed:         127.0.0.1
User:         None
Config File:  /etc/aerospike/astools.conf /home/node1/.aerospike/astools.conf
Aerospike Query Client
Version 6.1.0
C Client Version 5.2.3
Copyright 2012-2021 Aerospike. All rights reserved.
aql> select * from orders.buyers
+---------+---------+
| name    | expense |
+---------+---------+
|     vi" | 4000    |
|   Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
| "Janvi" | 4000    |
```



```
aql> select * from orders.products
+----------+-------+
| product  | price |
+----------+-------+
|     ile" | 80000 |
|   Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
| "Mobile" | 80000 |
```



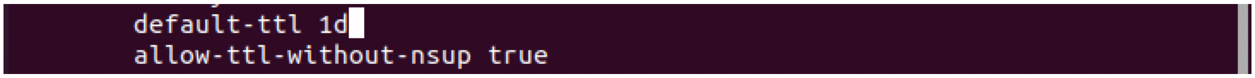
```
| "Janvi" | 4000    |
| "Janvi" | 4000    |
+---------+---------+
3000 rows in set (0.920 secs)

OK
```



```
| "Mobile" | 80000 |
| "Mobile" | 80000 |
+----------+-------+
3000 rows in set (0.952 secs)

OK
```

The records should have an expiry of 24h

To provide the records an expiry of 24 hr.
Set the following in the aerospike.conf file in the namespace stanza



```
        default-ttl 1d
        allow-ttl-without-nsup true
```

And if you need to get it into the program to add the meta in there as:

client.put(key, buyer_bins , meta={‘ttl’:86400})