

Lab Experiment 4: The Raft Consensus Algorithm

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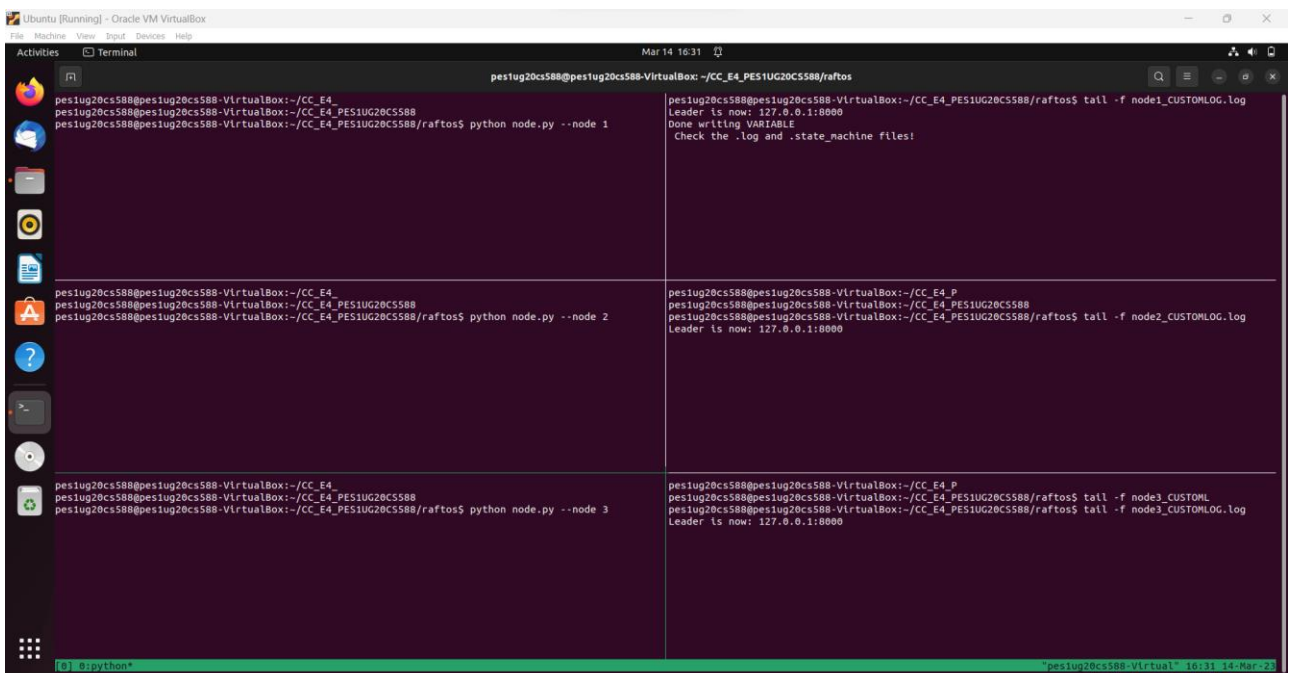
SRN: PES1UG20CS588

SECTION: J

1a: Pyenv installed and local Python version changed to 3.7.2

```
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ ls -a
.  ..  raftos
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python -V
Python 3.7.2
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ pyenv versions
system
* 3.7.2 (set by /home/pes1ug20cs588/.pyenv/version)
  3.8-dev
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ pyenv local 3.7.2
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python -V
Python 3.7.2
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ la -a
.  ..  .python-version  raftos
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ ls -a
.  ..  .python-version  raftos
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$
```

2a: Initial leader election has occurred, and first value has replicated.



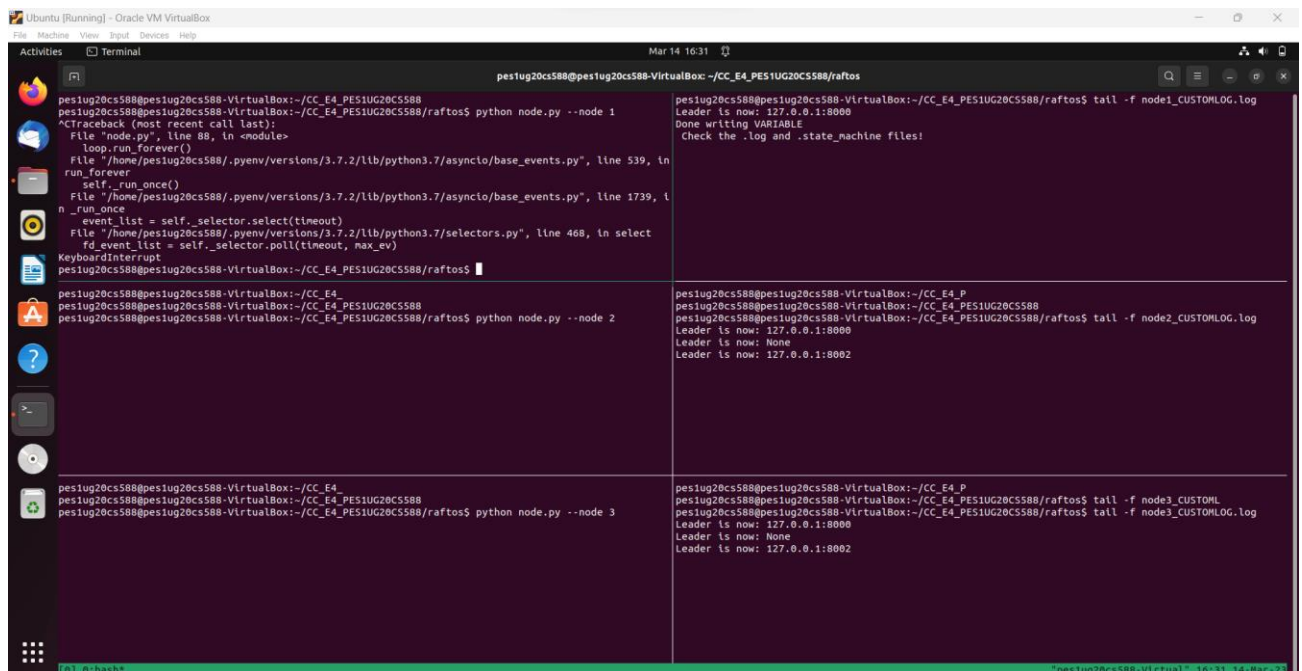
```
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python node.py --node 1
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python node.py --node 2
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python node.py --node 3
```

```
pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node1_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!

pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node2_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000

pes1ug20cs588@pes1ug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node3_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
```

2b) Leader crashed, new leader elected, and second value replicated.

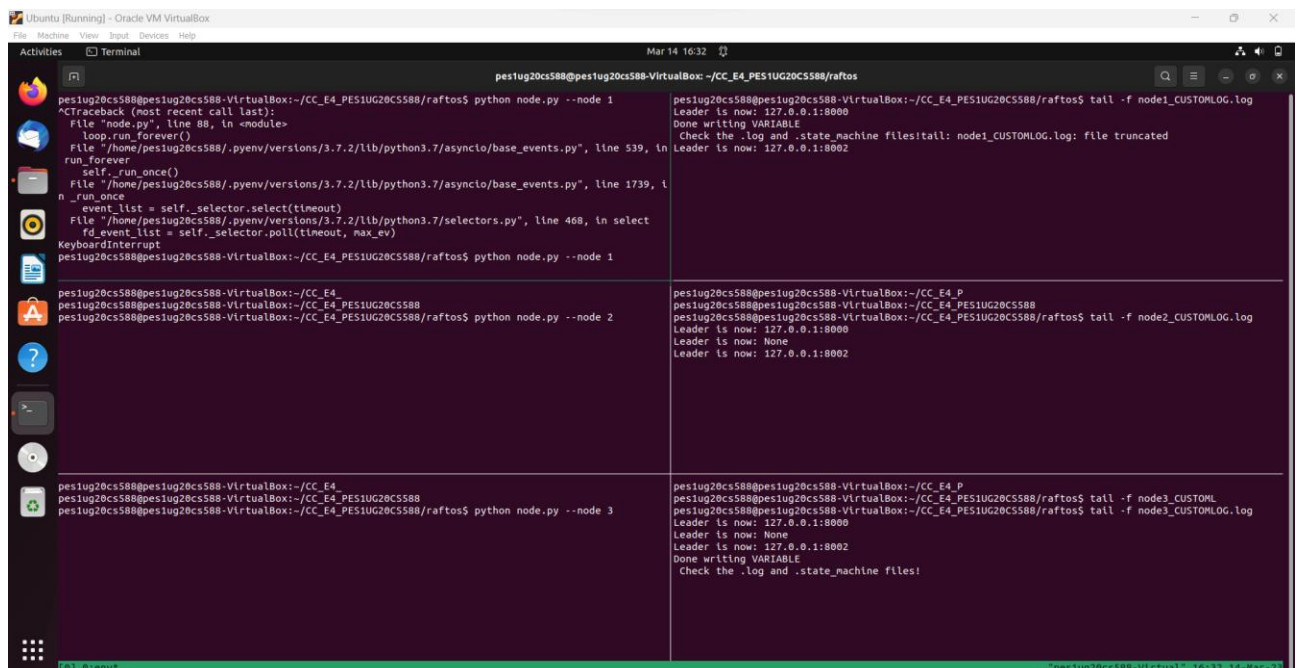


```
pesiug20cs588@pesiug20cs588-VirtualBox: ~/CC_E4_PES1UG20CS588/raftos
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588$ python node.py --node 1
^CTraceback (most recent call last):
  File "node.py", line 88, in <module>
    loop.run_forever()
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/asyncio/base_events.py", line 539, in
    run_forever
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/asyncio/base_events.py", line 1739, i
    n_run_once
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/selectors.py", line 468, in select
    fd_event_list = self._selector.poll(timeout, max_ev)
KeyboardInterrupt
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$

pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 2
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node2_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!

pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 3
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node3_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!
```

2c) Old leader comes back online, but becomes a follower instead and updates its old state to its new state.



```
pesiug20cs588@pesiug20cs588-VirtualBox: ~/CC_E4_PES1UG20CS588/raftos
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 1
^CTraceback (most recent call last):
  File "node.py", line 88, in <module>
    loop.run_forever()
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/asyncio/base_events.py", line 539, in
    run_forever
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/asyncio/base_events.py", line 1739, i
    n_run_once
  File "/home/pesiug20cs588/.pyenv/versions/3.7.2/lib/python3.7/selectors.py", line 468, in select
    fd_event_list = self._selector.poll(timeout, max_ev)
KeyboardInterrupt
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 1
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node1_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!tail: node1_CUSTOMLOG.log: file truncated
Leader is now: 127.0.0.1:8002

pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 2
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node2_CUSTOMLOG.log
Leader is now: None
Leader is now: 127.0.0.1:8002

pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ python node.py --node 3
pesiug20cs588@pesiug20cs588-VirtualBox:~/CC_E4_PES1UG20CS588/raftos$ tail -f node3_CUSTOMLOG.log
Leader is now: None
Leader is now: 127.0.0.1:8002
Done writing VARIABLE
Check the .log and .state_machine files!
```