

Cloud Computing Lab Experiment 4

Name: Naren Chandrashekhar

SRN: PES2UG20CS216

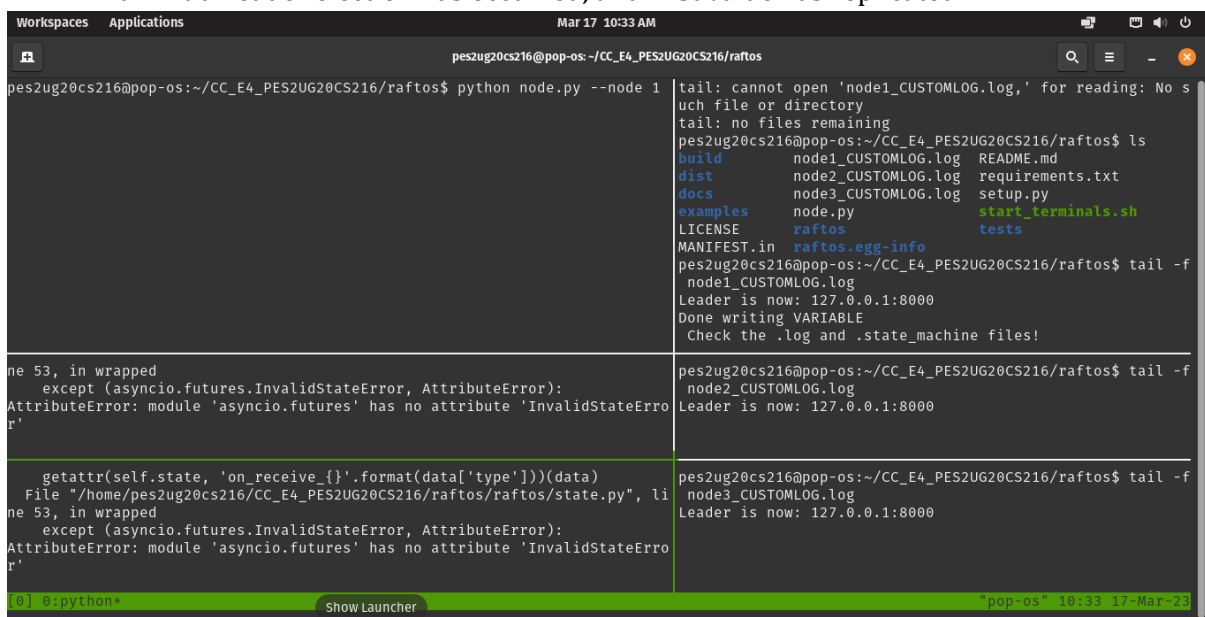
Section: D

Output Screenshots:

1a: Pyenv installed and local Python version changed to 3.6.8

```
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ ls -a
.  ..  raftos
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ python -V
Python 3.8.11
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ pyenv versions
system
* 3.8.11 (set by /home/pes2ug20cs216/.python-version)
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ pyenv local 3.8.11
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ python -V
Python 3.8.11
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$ ls -a
.  ..  .python-version  raftos
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216$
```

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



The screenshot shows a terminal window with the title bar "pes2ug20cs216@pop-os: ~/CC_E4_PES2UG20CS216/raftos". The terminal displays the output of running `python node.py --node 1` and `tail -f node1_CUSTOMLOG.log`. The output shows that the initial leader election has occurred, and the first value has been replicated. The logs indicate that the leader is now 127.0.0.1:8000 and that the variable has been written to the log and state machine files.

```
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ python node.py --node 1
tail: cannot open 'node1_CUSTOMLOG.log,' for reading: No such file or directory
tail: no files remaining
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ ls
build      node1_CUSTOMLOG.log  README.md
dist       node2_CUSTOMLOG.log  requirements.txt
docs       node3_CUSTOMLOG.log  setup.py
examples   node.py              start_terminals.sh
LICENSE    raftos               tests
MANIFEST.in raftos.egg-info
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f node1_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!

ne 53, in wrapped
  except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

getattr(self.state, 'on_receive {}'.format(data['type']))(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/state.py", line 53, in wrapped
  except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f node2_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f node3_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
```

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

```
Workspaces Applications Mar 17 10:37 AM
pes2ug20cs216@pop-os: ~/CC_E4_PES2UG20CS216/raftos

^CTraceback (most recent call last):
  File "node.py", line 88, in <module>
    loop.run_forever()
  File "/home/pes2ug20cs216/.pyenv/versions/3.8.11/lib/python3.8/asyncio/ba
se_events.py", line 570, in run_forever
    self._run_once()
  File "/home/pes2ug20cs216/.pyenv/versions/3.8.11/lib/python3.8/asyncio/ba
se_events.py", line 1823, in _run_once
    event_list = self._selector.select(timeout)
  File "/home/pes2ug20cs216/.pyenv/versions/3.8.11/lib/python3.8/selectors.
py", line 468, in select
    fd_event_list = self._selector.poll(timeout, max_ev)
KeyboardInterrupt

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$

tail: cannot open 'node1_CUSTOMLOG.log,' for reading: No s
uch file or directory
tail: no files remaining
pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ ls
build      node1_CUSTOMLOG.log  README.md
dist       node2_CUSTOMLOG.log  requirements.txt
docs       node3_CUSTOMLOG.log  setup.py
examples   node.py               start_terminals.sh
LICENSE    raftos               tests
MANIFEST.in raftos.egg-info

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f
node1_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Done writing VARIABLE
Check the .log and .state_machine files!

ne 53, in wrapped
    except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

getattr(self.state, 'on_receive_{}'.format(data['type']))(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/state.py", li
ne 53, in wrapped
    except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

[0] 0: bash* Files "pop-os" 10:37 17-Mar-23
```

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

```
Workspaces Applications Mar 17 10:39 AM
pes2ug20cs216@pop-os: ~/CC_E4_PES2UG20CS216/raftos

File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/network.py",
line 33, in datagram_received
    self.request_handler(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/server.py", l
ine 73, in request_handler
    self.state.request_handler(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/state.py", li
ne 534, in request_handler
    getattr(self.state, 'on_receive_{}'.format(data['type']))(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/state.py", li
ne 53, in wrapped
    except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

ne 53, in wrapped
    except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

getattr(self.state, 'on_receive_{}'.format(data['type']))(data)
File "/home/pes2ug20cs216/CC_E4_PES2UG20CS216/raftos/raftos/state.py", li
ne 53, in wrapped
    except (asyncio.futures.InvalidStateError, AttributeError):
AttributeError: module 'asyncio.futures' has no attribute 'InvalidStateError'

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ ls
build      node1_CUSTOMLOG.log  README.md
dist       node2_CUSTOMLOG.log  requirements.txt
docs       node3_CUSTOMLOG.log  setup.py
examples   node.py               start_terminals.sh
LICENSE    raftos               tests
MANIFEST.in raftos.egg-info

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/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_CUSTO
MLOG.log: file truncated
Leader is now: 127.0.0.1:8002

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f
node2_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Leader is now: 127.0.0.1:8002

pes2ug20cs216@pop-os:~/CC_E4_PES2UG20CS216/raftos$ tail -f
node3_CUSTOMLOG.log
Leader is now: 127.0.0.1:8000
Leader is now: None
Leader is now: 127.0.0.1:8002
Done writing VARIABLE
Check the .log and .state_machine files!

[0] 0: python* Firefox Web Browser "pop-os" 10:39 17-Mar-23
```