

To create shared queues in Kernel Space

1. Once the binary and kernel object file have been added to the target using scp command, we need to include it into kernel using 'insmod' command

```
crw----- 1 root root 3, 26 Jun 17 22:13 ttyqa
crw----- 1 root root 3, 27 Jun 17 22:13 ttyqb
crw----- 1 root root 3, 28 Jun 17 22:13 ttyqc
crw----- 1 root root 3, 29 Jun 17 22:13 ttyqd
crw----- 1 root root 3, 30 Jun 17 22:13 ttyqe
crw----- 1 root root 3, 31 Jun 17 22:13 ttyqf
-rw-r--r-- 1 root root 3 Jan 1 2001 udev_network_queue
crw----- 1 root root 10, 239 Jun 17 22:13 uhid
crw----- 1 root root 10, 223 Jun 17 22:13 uinput
crw----- 1 root root 247, 0 Jun 17 22:13 ui0
crw----- 1 root root 247, 1 Jun 17 22:13 ui1
crw-rw-rw- 1 root root 1, 9 Jun 17 22:13 urandom
crw-rw---- 1 root tty 7, 0 Jun 17 22:13 vcs
crw-rw---- 1 root tty 7, 1 Jun 17 22:13 vcs1
crw-rw---- 1 root tty 7, 2 Jun 17 22:13 vcs2
crw-rw---- 1 root tty 7, 3 Jun 17 22:13 vcs3
crw-rw---- 1 root tty 7, 4 Jun 17 22:13 vcs4
crw-rw---- 1 root tty 7, 5 Jun 17 22:13 vcs5
crw-rw---- 1 root tty 7, 6 Jun 17 22:13 vcs6
crw-rw---- 1 root tty 7, 128 Jun 17 22:13 vcsa
crw-rw---- 1 root tty 7, 129 Jun 17 22:13 vcsa1
crw-rw---- 1 root tty 7, 130 Jun 17 22:13 vcsa2
crw-rw---- 1 root tty 7, 131 Jun 17 22:13 vcsa3
crw-rw---- 1 root tty 7, 132 Jun 17 22:13 vcsa4
crw-rw---- 1 root tty 7, 133 Jun 17 22:13 vcsa5
crw-rw---- 1 root tty 7, 134 Jun 17 22:13 vcsa6
crw----- 1 root root 10, 63 Jun 17 22:13 vga_arbiter
crw----- 1 root root 10, 137 Jun 17 22:13 vhci
crw----- 1 root root 10, 130 Jun 17 22:13 watchdog
crw----- 1 root root 251, 0 Jun 17 22:13 watchdog0
crw-rw-rw- 1 root root 1, 5 Jun 17 22:13 zero
root@quark:~/test# insmod ./queue_driver.ko
[ 398.704172] DataQueue Devices created
root@quark:~/test#
root@quark:~/test# ls -l /dev
crw----- 1 root root 243, 0 Jun 17 22:19 DataQueue1
crw----- 1 root root 243, 1 Jun 17 22:19 DataQueue2
crw----- 1 root root 10, 235 Jun 17 22:13 autofs
drwxr-xr-x 2 root root 140 Jan 1 2001 block
drwxr-xr-x 3 root root 60 Jan 1 2001 bus
drwxr-xr-x 2 root root 3780 Jun 17 22:19 char
crw----- 1 root root 5, 1 Jun 17 22:13 console
lrwxrwxrwx 1 root root 11 Jan 1 2001 core -> /proc/kcore
crw----- 1 root root 10, 62 Jun 17 22:13 cpu_dma_latency
```

We can see the Devices 'DataQueue1' and 'DataQueue2' have been added.

2. We can run the binary just by giving binary name.

```
_id=0 message=3,1121872426998327[ 1340,493168]
[ 1340,493168] DataQueue1 is opening
Message queue[ 1340,498732]
[ 1340,498732] DataQueue2 is opening
time is 1426,23[ 1340,505176] Reading from the Queue DataQueue1 done
7008 ms
Message[ 1340,511669] Reading from the Queue DataQueue2 done
received in DQ2[ 1340,517858]
[ 1340,517858] DataQueue1 is closing
message_id=11 s[ 1340,523924]
[ 1340,523924] DataQueue2 is closing
source_id=2 message=3,1121872426998327
Message [ 1340,533163]
[ 1340,533163] DataQueue1 is opening
queue time is 13[ 1340,539402]
[ 1340,539402] DataQueue2 is opening
63,097877 ms
Me[ 1340,545858]
[ 1340,545858] DataQueue1 is closing
message received i[ 1340,552097]
[ 1340,552097] DataQueue2 is closing
in DQ1 message_id=10 source_id=1 message=3,1121872426998327
Message queue time is 1447,141042 ms
Message received in DQ2 message_id=12 source_id=3 message=3,1121872426998327
Message queue time is 1384,042817 ms
Message received in DQ1 message_id=13 source_id=0 message=3,1121872426998327
Message queue time is 1384,190913 ms
Message received in DQ2 message_id=15 source_id=2 message=3,1121872426998327
Message queue time is 1321,037828 ms
Message received in DQ1 message_id=14 source_id=1 message=3,1121872426998327
Message queue time is 1405,139243 ms
Message received in DQ2 message_id=16 source_id=3 message=3,1121872426998327
Message queue time is 1342,303018 ms
Message received in DQ1 message_id=17 source_id=0 message=3,1121872426998327
Message queue time is 1321,151883 ms
Message received in DQ2 message_id=19 source_id=2 message=3,1121872426998327
Message queue time is 1279,410543 ms
Message received in DQ1 message_id=18 source_id=1 message=3,1121872426998327
Message queue time is 1342,098612 ms
Message received in DQ2 message_id=20 source_id=3 message=3,1121872426998327
Message queue time is 1300,360827 ms
*****
Total Messages = 48 Messages Received= 20 Messages Transmitted=20 Messages Dropped=28
*****
Average of message queueing time is 1405,113799 ms
*****
Standard deviation is 72,332677 ms
*****
root@quark:~/test#
```