# Assignment – Memory Management

**1)** Setup additional swap space in the system to solve low memory issue. The swap which you added should be available post reboot.

Step 1 - Allocate additional space and make it swap space

Cmd - sudo fallocate -l 2G /swapfile

sudo mkswap /swapfile

```
ubuntu@ip-172-31-2-192:~$ sudo fallocate -l 2G /swapfile
ubuntu@ip-172-31-2-192:~$ sudo chmod 600 /swapfile
ubuntu@ip-172-31-2-192:~$ sudo mkswap /swapfile
Setting up swapspace version 1, size = 2 GiB (2147479552 bytes)
no label, UUID=ec46ecb7-14e5-4136-bd1d-216e3dcbdfdf
```

Step 2 Enabling the swap space

Cmd - sudo swapon /swapfile

```
ubuntu@ip-172-31-2-192:~$ sudo swapon /swapfile
ubuntu@ip-172-31-2-192:~$ free -h
               total        used        free      shared  buff/cache   available
Mem:           957Mi       343Mi       444Mi       880Ki       320Mi       613Mi
Swap:          2.0Gi          0B       2.0Gi
ubuntu@ip-172-31-2-192:~$
```

Step 3 - To make swap space available after reboot

Cmd - sudo nano /etc/fstab

Inside that file

Cmd - /swapfile none swap sw 0 0

Step 4 – Reboot and verify

Cmd - sudo reboot

Free -h OR swapon --show

```
ubuntu@ip-172-31-2-192:~$ sudo reboot
ubuntu@ip-172-31-2-192:~$ free -h
               total        used        free      shared  buff/cache   available
Mem:           957Mi       327Mi       528Mi       884Ki       252Mi       630Mi
Swap:          2.0Gi          0B       2.0Gi
ubuntu@ip-172-31-2-192:~$ swapon --show
NAME      TYPE SIZE USED PRIO
/swapfile file   2G   0B   -2
```

2) Find out the number of process is in run queue and blocking queue.

To find the process states we use

cmd - vmstat

```
ubuntu@ip-172-31-2-192:~$ vmstat
procs -----------memory---------- ---swap-- -----io---- -system-- --------cpu--------
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st gu
 1  0      0 548820  18724 239636    0    0  1230    77  227    2  2  2 82  1 14  0
ubuntu@ip-172-31-2-192:~$
```