

## Server A

- a. Time required by the server to process all (i.e., 10) concurrent client requests

```
prerak@prerak-virtual-machine: ~/Documents/Computer_Networks/Q1_a__Q2_a
prerak@prerak-virtual-machine:~/Documents/Computer_Networks/Q1_a__Q2_a$ gcc server.c -o server; ./server 9898
Time Elapsed: 0.001866 seconds
prerak@prerak-virtual-machine:~/Documents/Computer_Networks/Q1_a__Q2_a$
```

- b. Server process's CPU utilization (Represented by %CPU)  
c. Server process's memory utilization (Represented by %MEM)

```
prerak@prerak-virtual-machine: ~/Documents/Computer_Networks/Q1_a__Q2_a
top - 23:49:30 up 6:34, 1 user, load average: 0.04, 0.47, 1.02
Tasks: 310 total, 1 running, 309 sleeping, 0 stopped, 0 zombie
%Cpu(s): 15.5 us, 7.8 sy, 0.0 ni, 76.5 id, 0.0 wa, 0.0 hi, 0.2 si, 0.0 st
Mem Mem : 1941.6 total, 71.8 free, 1408.8 used, 461.1 buff/cache
Mem Swap: 2140.0 total, 1081.3 free, 1058.7 used, 333.7 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND
 1168 prerak    20   0 4464760 99704 28996 S  15.6   5.0   17:20.82  gnome-shell
 1991 prerak    20   0 582348 46388 23956 S  15.6   2.3   1:51.73  gnome-terminal-
 1372 prerak    20   0 323488 2904 1780 S   2.0   0.1   0:14.90  ibus-daemon
 1428 prerak    20   0 356424 4040 2552 S   1.0   0.2   0:07.20  ibus-extension-
   92 root       20   0     0     0     0 S   0.7   0.0   3:15.27  kswapd0
 1576 prerak    20   0 172260 2200 1620 S   0.7   0.1   0:03.02  ibus-engine-sim
 2275 prerak    20   0  58.5g 146032 55728 S   0.7   7.3   21:55.81  code
 2481 prerak    20   0 11.7g 302496 90100 S   0.7  15.2   22:36.12  firefox
 2670 prerak    20   0 3139076 277632 54324 S   0.7  14.0   8:36.80  Isolated Web Co
 16870 prerak   20   0  21880  3876  3016 R   0.7   0.2   0:00.37  top
 400 root      -51   0     0     0     0 S   0.3   0.0   0:28.58  irq/16-vmwgfx
 625 root       20   0 252392 2300 1864 S   0.3   0.1   0:31.45  vmttoolsd
 2933 prerak    20   0 2432936 27188 19404 S   0.3   1.4   0:47.77  Isolated Servic
 15768 root       20   0     0     0     0 I   0.3   0.0   0:01.82  kworker/1:2-events
   1 root       20   0 166632 2412 1596 S   0.0   0.1   0:04.54  systemd
   2 root       20   0     0     0     0 S   0.0   0.0   0:00.05  kthreadd
   3 root       0 -20   0     0     0 I   0.0   0.0   0:00.00  rcu_gp
   4 root       0 -20   0     0     0 I   0.0   0.0   0:00.00  rcu_par_gp
   5 root       0 -20   0     0     0 I   0.0   0.0   0:00.00  netns
   7 root       0 -20   0     0     0 I   0.0   0.0   0:00.00  kworker/0:0H-events_highpri
   9 root       0 -20   0     0     0 I   0.0   0.0   1:37.92  kworker/0:1H-kblockd
  10 root       0 -20   0     0     0 I   0.0   0.0   0:00.00  mm_percpu_wq
  11 root       20   0     0     0     0 S   0.0   0.0   0:00.00  rcu_tasks_rude_
  12 root       20   0     0     0     0 S   0.0   0.0   0:00.00  rcu_tasks_trace
  13 root       20   0     0     0     0 S   0.0   0.0   0:01.79  ksoftirqd/0
  14 root       20   0     0     0     0 I   0.0   0.0   0:18.43  rcu_sched
  15 root       rt   0     0     0     0 S   0.0   0.0   0:00.13  migration/0
  16 root      -51   0     0     0     0 S   0.0   0.0   0:00.00  idle_inject/0
  18 root       20   0     0     0     0 S   0.0   0.0   0:00.00  cpuhp/0
  19 root       20   0     0     0     0 S   0.0   0.0   0:00.00  cpuhp/1
  20 root      -51   0     0     0     0 S   0.0   0.0   0:00.00  idle_inject/1
```

## Server B

- Time required by the server to process all (i.e., 10) concurrent client requests
- Server process's CPU utilization (Represented by **%CPU**)
- Server process's memory utilization (Represented by **%MEM**)

```
prerak@prerak-virtual-machine: ~/Documents/Computer_Networks/Q1_b____Q2_b
top - 23:53:08 up 6:38, 1 user, load average: 0.62, 0.75, 1.03
Tasks: 315 total, 1 running, 314 sleeping, 0 stopped, 0 zombie
%Cpu(s): 15.6 us, 10.6 sy, 0.0 ni, 69.1 id, 2.8 wa, 0.0 hi, 1.8 st, 0.0 st
MiB Mem : 1941.6 total, 68.4 free, 1445.7 used, 427.5 buff/cache
MiB Swap: 2140.0 total, 1088.2 free, 1051.8 used, 282.9 avail Mem

  PID USER      PR  NI   VIRT   RES    SHR   S  %CPU  %MEM    TIME+  COMMAND
 1168 prerak    20   0 4477788 126216 38460   S  12.3   6.3   17:46.26  gnome-shell
16972 prerak    20   0 571152  58736 43548   S  10.6   3.0    0:06.95  gnome-terminal-
2310 prerak    20   0  44.5g  47112 28464   S   6.6   2.4    0:34.25   code
2275 prerak    20   0  58.5g 155652 50164   S   5.3   7.8   22:05.15   code
1372 prerak    20   0 323488  2824   1700   S   2.3   0.1    0:15.69  ibus-daemon
  136 root        0 -20    0      0      0    I   2.0   0.0    1:36.16  kworker/1:1H-events_highpri
16941 prerak    20   0 939872  71492 49716   S   2.0   3.6    0:04.89  nautilus
   9 root        0 -20    0      0      0    I   1.3   0.0    1:39.07  kworker/0:1H-events_highpri
1428 prerak    20   0 356424  3968   2480   S   1.0   0.2    0:07.47  ibus-extension-
1576 prerak    20   0 172260  2112   1532   S   0.7   0.1    0:03.15  ibus-engine-sim
  400 root       -51  0      0      0      0    S   0.3   0.0    0:29.26  irq/16-vmmgfx
1575 prerak    20   0 276048 25028 19480   S   0.3   1.3    7:57.78  Xwayland
2246 prerak    20   0  32.5g 22584 21136   S   0.3   1.1    4:30.34   code
2311 prerak    20   0  36.4g 28988 15296   S   0.3   1.5    0:55.05   code
2370 prerak    20   0  36.4g 14152 11544   S   0.3   0.7    0:05.74   code
2481 prerak    20   0  11.8g 268264 72032   S   0.3  13.5   23:02.00  firefox
2670 prerak    20   0 3184896 281920 64708   S   0.3  14.2    8:54.94  Isolated Web Co
2933 prerak    20   0 2432936 25552 18468   S   0.3   1.3    0:48.22  Isolated Servic
17086 prerak    20   0 21880  3844  2992   R   0.3   0.2    0:00.12  top
   1 root        20   0 166632  6044  3712   S   0.0   0.3    0:04.60  systemd
   2 root        20   0      0      0      0    S   0.0   0.0    0:00.05  kthreadd
   3 root        0 -20    0      0      0    I   0.0   0.0    0:00.00  rcu_gp
   4 root        0 -20    0      0      0    I   0.0   0.0    0:00.00  rcu_par_gp
   5 root        0 -20    0      0      0    I   0.0   0.0    0:00.00  netns
   7 root        0 -20    0      0      0    I   0.0   0.0    0:00.00  kworker/0:0H-events_highpri
  10 root        0 -20    0      0      0    I   0.0   0.0    0:00.00  mn_percpu_wq
  11 root        20   0      0      0      0    S   0.0   0.0    0:00.00  rcu_tasks_rude_
  12 root        20   0      0      0      0    S   0.0   0.0    0:00.00  rcu_tasks_trace
  13 root        20   0      0      0      0    S   0.0   0.0    0:01.82  ksoftirqd/0
  14 root        20   0      0      0      0    I   0.0   0.0    0:18.71  rcu_sched
  15 root        rt   0      0      0      0    S   0.0   0.0    0:00.13  migration/0
```

## Server C

- Time required by the server to process all (i.e., 10) concurrent client requests
- Server process's CPU utilization (Represented by **%CPU**)
- Server process's memory utilization (Represented by **%MEM**)

```
prerak@prerak-virtual-machine: ~/Documents/Computer_Networks/Q1_b__Q2_c
top - 23:54:15 up 6:39, 1 user, load average: 0.51, 0.73, 1.00
Tasks: 317 total, 1 running, 316 sleeping, 0 stopped, 0 zombie
%Cpu(s): 12.7 us, 11.2 sy, 0.0 ni, 74.1 id, 1.2 wa, 0.0 hi, 0.8 si, 0.0 st
MiB Mem : 1941.6 total, 68.5 free, 1452.3 used, 420.9 buff/cache
MiB Swap: 2140.0 total, 1084.0 free, 1056.0 used, 264.4 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR  S  %CPU  %MEM    TIME+  COMMAND
 1168 prerak    20   0 4481672 126000 37820 S  11.9   6.3  17:57.37 gnome-shell
17154 prerak    20   0 579248 55544 40592 S  10.9   2.8   0:03.07 gnome-terminal-
  92 root       20   0      0      0      0 S   3.3   0.0   3:17.59 kswapd0
2275 prerak    20   0 58.5g 137840 45632 S   2.3   6.9  22:05.30 code
   9 root       0 -20      0      0      0 I   2.0   0.0   1:39.36 kworker/0:1H-kblockd
1372 prerak    20   0 323488 2772 1648 S   2.0   0.1   0:16.09 ibus-daemon
2481 prerak    20   0 11.8g 265684 72852 S   1.7  13.4  23:13.12 firefox
16941 prerak    20   0 939872 65388 43576 S   1.3   3.3   0:06.98 nautilus
1428 prerak    20   0 356424 4188 2580 S   1.0   0.2   0:07.61 ibus-extension-
2670 prerak    20   0 3194580 307236 72524 S   1.0  15.5   9:00.47 Isolated Web Co
  14 root       20   0      0      0      0 I   0.3   0.0   0:18.82 rcu_sched
136 root       0 -20      0      0      0 I   0.3   0.0   1:36.37 kworker/1:1H-events_highpri
314 root       20   0      0      0      0 S   0.3   0.0   0:03.32 jbd2/sda3-8
400 root      -51   0      0      0      0 S   0.3   0.0   0:29.59 irq/16-vmwgfx
590 systemd+   20   0 14824 128 0 S   0.3   0.0   0:33.13 systemd-oomd
625 root       20   0 252392 2268 1832 S   0.3   0.1   0:31.89 vmtoolsd
1467 prerak    20   0 296864 8256 6220 S   0.3   0.4   0:33.48 vmtoolsd
1576 prerak    20   0 172260 2060 1480 S   0.3   0.1   0:03.21 ibus-engine-sim
2185 prerak    20   0 36.9g 59804 35696 S   0.3   3.0   3:39.76 code
2246 prerak    20   0 32.5g 22448 21020 S   0.3   1.1   4:30.36 code
2370 prerak    20   0 36.4g 14080 11328 S   0.3   0.7   0:05.76 code
2673 prerak    20   0 2632036 73536 33804 S   0.3   3.7   2:17.98 Isolated Web Co
15575 root       20   0      0      0      0 I   0.3   0.0   0:02.50 kworker/u256:4-events_unbound
17178 prerak    20   0 19924 4852 3184 S   0.3   0.2   0:00.03 bash
17192 prerak    20   0 21880 3908 3052 R   0.3   0.2   0:00.13 top
   1 root       20   0 166632 5900 3572 S   0.0   0.3   0:04.60 systemd
   2 root       20   0      0      0      0 S   0.0   0.0   0:00.05 kthreadd
   3 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_gp
   4 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
   5 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 netns
   7 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
```