(a) Single Threaded Server:

manan@DESKTOP-S69HDK5:~/cn_assignment\$ /usr/lib/linux-tools/5.15.0-121-generic/perf

stat ./server_automated 0

Request recieved: get_top_processes

top cpu processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get top processes

top_cpu_processes sent

Performance counter stats for './server_automated 0':

```
12.29 msec task-clock:u
                           # 0.008 CPUs utilized
       context-switches:u # 0.000 /sec
   0
                           # 0.000 /sec
   0
       cpu-migrations:u
                          # 5.453 K/sec
  67
        page-faults:u
2550270
          cycles:u
                            # 0.208 GHz
573432
          stalled-cycles-frontend:u # 22.49% frontend cycles idle
236703
          stalled-cycles-backend:u # 9.28% backend cycles idle
          instructions:u
1304970
                             # 0.51 insn per cycle
                     # 0.44 stalled cycles per insn
                             # 22.556 M/sec
277128
          branches:u
                              # 4.53% of all branches
 12553
         branch-misses:u
```

1.626802722 seconds time elapsed

0.000000000 seconds user

0.014450000 seconds sys

(b) Multi Threaded Server:

manan@DESKTOP-S69HDK5:~/cn assignment\$ /usr/lib/linux-tools/5.15.0-121-generic/perf

stat ./server_automated 1

Request recieved: get_top_processes Request recieved: get_top_processes

top_cpu_processes sent top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top cpu processes sent

Performance counter stats for './server_automated 1':

```
10.20 msec task-clock:u
                               # 0.009 CPUs utilized
        context-switches:u
                             # 0.000 /sec
   0
   0
        cpu-migrations:u
                            # 0.000 /sec
        page-faults:u
  82
                           # 8.036 K/sec
2306397
                             # 0.226 GHz
           cycles:u
449060
          stalled-cycles-frontend:u # 19.47% frontend cycles idle
244769
          stalled-cycles-backend:u # 10.61% backend cycles idle
1300393
           instructions:u
                              # 0.56 insn per cycle
```

0.35 stalled cycles per insn

275990 branches:u # 27.045 M/sec

12163 branch-misses:u # 4.41% of all branches

- 1.115101509 seconds time elapsed
- 0.000000000 seconds user
- 0.009650000 seconds sys

```
ment$ /usr/lib/linux-tools/5.15.0-121-generic/perf stat ./server_automated 1
Request recieved: get_top_processes
Request recieved: get_top_processes
top_cpu_processes sent
top_cpu_processes sent
Request recieved: get_top_processes
top_cpu_processes sent
Request recieved: get_top_processes
top_cpu_processes sent
 Request recieved: get_top_processes
top_cpu_processes sent
 Performance counter stats for './server_automated 1':
                             gec task-clock:u # 0.009 cros

context-switches:u # 0.000 /sec

cpu-migrations:u # 0.000 /sec

page-faults:u # 8.036 K/sec

page-faults:u # 0.226 GHz
                                                                            0.009 CPUs utilized
                  10.20 msec task-clock:u
                      0
                       0
                      82
                             cycles:u
stalled-c
               2306397
                449060
                                stalled-cycles-frontend:u #
                                                                            19.47% frontend cycles idle
                                stalled-cycles-frontend:u # 19.4/% frontend cycles idle
stalled-cycles-backend:u # 10.61% backend cycles idle
instructions:u # 0.56 insn per cycle
# 0.35 stalled cycles per insn
branches:u # 27.045 M/sec
                244769
               1300393
                275990
                  12163
                                 branch-misses:u
                                                                            4.41% of all branches
         1.115101509 seconds time elapsed
         0.000000000 seconds user
         0.009650000 seconds sys
```

(c) Server with select:

 $man an @DESKTOP-S69HDK5: \sim /cn_assignment \ / usr/lib/linux-tools/5.15.0-121-generic/performation \ / usr/lib/linux-tools/5.0-121-generic/performation \ / usr/lib/linux-tool$

stat ./server_select

Request recieved: get top processes

top_cpu_processes sent

Request recieved: get_top_processes

top cpu processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

Request recieved: get_top_processes

top_cpu_processes sent

read: Success

Host disconnected, ip 10.0.0.253, port 60046

^C

Performance counter stats for './server_select':

```
9.67 msec task-clock:u
                               # 0.003 CPUs utilized
        context-switches:u
                             # 0.000 /sec
   0
   0
        cpu-migrations:u
                             # 0.000 /sec
  58
        page-faults:u
                            # 5.995 K/sec
2184785
           cycles:u
                             # 0.226 GHz
409215
           stalled-cycles-frontend:u # 18.73% frontend cycles idle
258612
           stalled-cycles-backend:u # 11.84% backend cycles idle
1265252
           instructions:u
                              # 0.58 insn per cycle
                      # 0.32 stalled cycles per insn
268293
                              # 27.731 M/sec
           branches:u
                               # 4.91% of all branches
 13177
          branch-misses:u
```

- 3.724360805 seconds time elapsed
- 0.007187000 seconds user 0.003113000 seconds sys

```
anan@DESKTOP-S69HDK5:~/cn_assignment$ /usr/lib/linux-tools/5.15.0-121-generic/perf stat ./server_select
Request recieved: get_top_processes
cop_cpu_processes sent
Request recieved: get_top_processes
top_cpu_processes sent
Request recieved: get_top_processes
top_cpu_processes sent
Request recieved: get_top_processes
 op_cpu_processes sent
Request recieved: get_top_processes
top_cpu_processes sent
 ead: Success
Host disconnected, ip 10.0.0.253, port 60046
 Performance counter stats for './server_select':
                            task-clock:u # 0.003 CPUs u
context-switches:u # 0.000 /sec
cpu-migrations:u # 0.000 /sec
page-faults:u # 5.995 K/sec
cycles:u # 0.226 GHz
                                                                   0.003 CPUs utilized
                 9.67 msec task-clock:u
                    0
                           page-faults:u
                   58
             2184785
                            stalled-cycles-frontend:u # 18.73% frontend cycles idle
stalled-cycles-backend:u # 11.84% backend cycles idle
instructions:u # 0.58 insn per cycle
# 0.32 stalled cycles per insn
              409215
              258612
             1265252
                                                                  27.731 M/sec
              268293
                             branches:u
                             branch-misses:u
                                                                   4.91% of all branches
               13177
        3.724360805 seconds time elapsed
        0.007187000 seconds user
        0.003113000 seconds sys
```