

# *COMPUTER NETWORKS*

## **Assignment-2 Report**

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ROLL NO: 2020390

Q3) a)

1) Multi-process server using fork system call:

The time taken for this program = **0.000737 seconds**

2) Multi-process server call using Threading:

The time taken for this program = **0.107451 seconds**

3) Non-blocking server using select system call:

The time taken for this program = **0.092363 seconds**

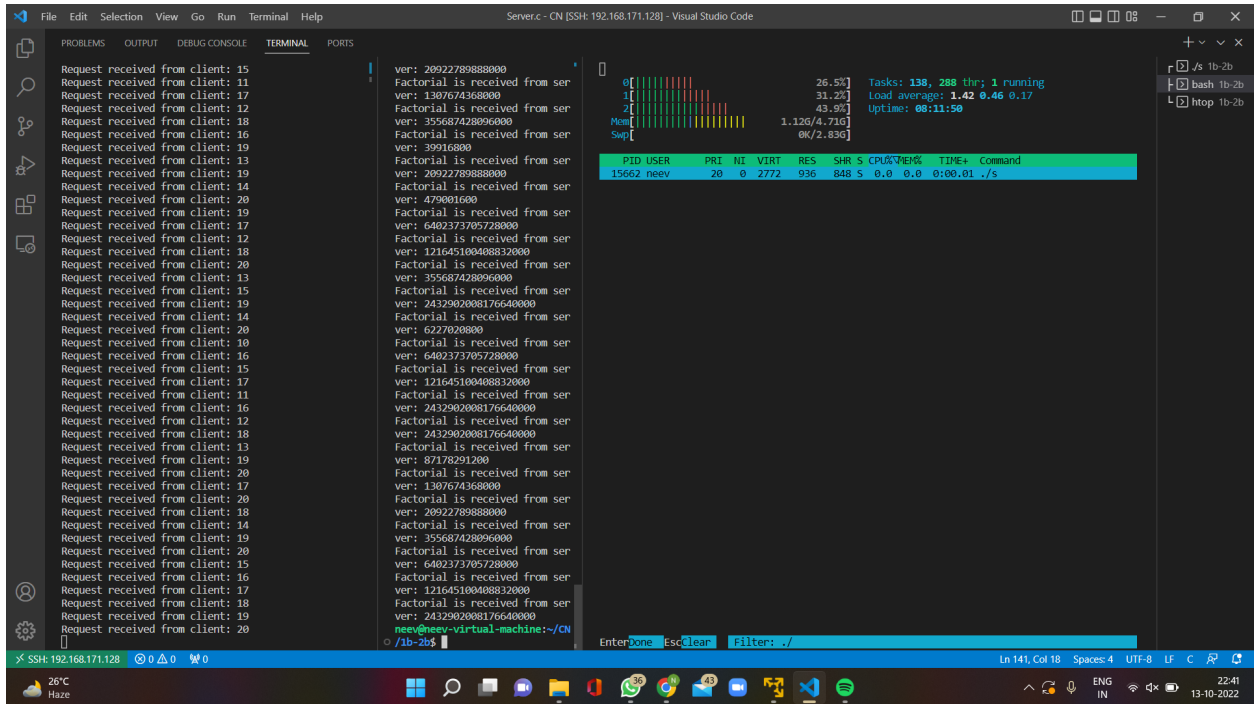
4) Non-blocking server using poll system call:

The time taken for this program = **0.95707 seconds**

Q3) b) & c)  
1) Multi-process server using fork system call:

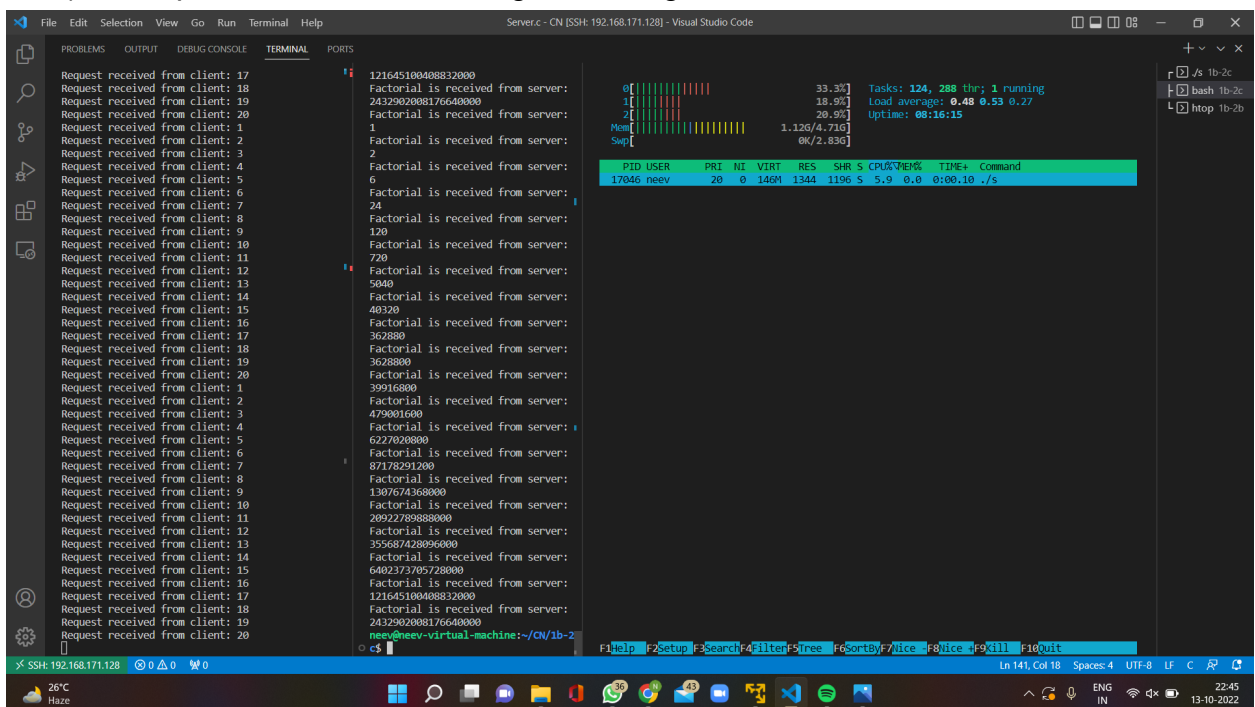
Q3) b) & c)

1) Multi-process server using fork system call:



Under the HTOP command, you can see the columns CPU and MEM, which represent CPU and memory usage. This is true for all the screenshots provided.

## 2) Multi-process server call using Threading:



### 3) Non-blocking server using select system call:

```
File Edit Selection View Go Run Terminal Help
Server.c - CN [SSH: 192.168.171.128] - Visual Studio Code

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Request received from client: 17
Request received from client: 18
Request received from client: 19
Request received from client: 20
Request received from client: 1
Request received from client: 2
Request received from client: 3
Request received from client: 4
Request received from client: 5
Request received from client: 6
Request received from client: 7
Request received from client: 8
Request received from client: 9
Request received from client: 10
Request received from client: 11
Request received from client: 12
Request received from client: 13
Request received from client: 14
Request received from client: 15
Request received from client: 16
Request received from client: 17
Request received from client: 18
Request received from client: 19
Request received from client: 20
Request received from client: 1
Request received from client: 2
Request received from client: 3
Request received from client: 4
Request received from client: 5
Request received from client: 6
Request received from client: 7
Request received from client: 8
Request received from client: 9
Request received from client: 10
Request received from client: 11
Request received from client: 12
Request received from client: 13
Request received from client: 14
Request received from client: 15
Request received from client: 16
Request received from client: 17
Request received from client: 18
Request received from client: 19
Request received from client: 20

5687428996000
Factorial is received from server: 64
02373705728000
Factorial is received from server: 12
1645100408832000
Factorial is received from server: 1
32902008176640000
Factorial is received from server: 2
Factorial is received from server: 6
Factorial is received from server: 24
Factorial is received from server: 12
0
Factorial is received from server: 72
0
Factorial is received from server: 56
40
Factorial is received from server: 40
320
Factorial is received from server: 36
2880
Factorial is received from server: 36
28800
Factorial is received from server: 39
916800
Factorial is received from server: 47
9801600
Factorial is received from server: 62
27020800
Factorial is received from server: 87
178291200
Factorial is received from server: 13
07674368000
Factorial is received from server: 26
922789888000
Factorial is received from server: 35
5687428996000
Factorial is received from server: 64
02373705728000
Factorial is received from server: 12
1645100408832000
Factorial is received from server: 24
32902008176640000
neev-virtual-machine:~/CN/1b-2d/
$

0% 39.3% Tasks: 124, 288 thr; 1 running
1% 23.7% Load average: 0.79 0.59 0.32
2% 20.2% Uptime: 08:17:49
Mem 1.136/4.71G
Swap 0K/2.83G

PID USER PRI NI VIRT RES SHR S CPU/MEM% TIME+ Command
17641 neev 20 0 2772 936 844 S 4.7 0.0 0:00.09 ./s

SSH: 192.168.171.128 0 0 0 0 0
26°C Haze
```

### 4) Non-blocking server using poll system call:

```
File Edit Selection View Go Run Terminal Help
Server.c - CN [SSH: 192.168.171.128] - Visual Studio Code

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Returned fd is 4 (server's fd)
Request received from client: 1
Request received from client: 2
Request received from client: 3
Request received from client: 4
Request received from client: 5
Request received from client: 6
Request received from client: 7
Request received from client: 8
Request received from client: 9
Request received from client: 10
Request received from client: 11
Request received from client: 12
Request received from client: 13
Request received from client: 14
Request received from client: 15
Request received from client: 16
Request received from client: 17
Request received from client: 18
Request received from client: 19
Request received from client: 20
Accepted a new connection with fd: 10
Returned fd is 4 (server's fd)
Request received from client: 1
Request received from client: 2
Request received from client: 3
Request received from client: 4
Request received from client: 5
Request received from client: 6
Request received from client: 7
Request received from client: 8
Request received from client: 9
Request received from client: 10
Request received from client: 11
Request received from client: 12
Request received from client: 13
Request received from client: 14
Request received from client: 15
Request received from client: 16
Request received from client: 17
Request received from client: 18
Request received from client: 19
Request received from client: 20
Accepted a new connection with fd: 11

Factorial is received from server: 35
5687428996000
Factorial is received from server: 64
02373705728000
Factorial is received from server: 12
1645100408832000
Factorial is received from server: 24
32902008176640000
Factorial is received from server: 1
Factorial is received from server: 2
Factorial is received from server: 6
Factorial is received from server: 24
Factorial is received from server: 12
0
Factorial is received from server: 72
0
Factorial is received from server: 56
40
Factorial is received from server: 40
320
Factorial is received from server: 36
2880
Factorial is received from server: 36
28800
Factorial is received from server: 39
916800
Factorial is received from server: 47
9801600
Factorial is received from server: 62
27020800
Factorial is received from server: 87
178291200
Factorial is received from server: 13
07674368000
Factorial is received from server: 26
922789888000
Factorial is received from server: 35
5687428996000
Factorial is received from server: 64
02373705728000
Factorial is received from server: 12
1645100408832000
Factorial is received from server: 24
32902008176640000

0% 13.6% Tasks: 125, 291 thr; 1 running
1% 23.4% Load average: 0.40 0.53 0.31
2% 12.2% Uptime: 08:19:02
Mem 1.126/4.71G
Swap 0K/2.83G

PID USER PRI NI VIRT RES SHR S CPU/MEM% TIME+ Command
18137 neev 20 0 138M 1836 1672 S 4.6 0.0 0:00.08 ./r
18050 neev 20 0 2772 936 844 S 2.9 0.0 0:00.06 ./s
18143 neev 20 0 138M 1836 1672 S 0.0 0.0 0:00.00 ./r
18145 neev 20 0 138M 1836 1672 S 0.0 0.0 0:00.00 ./r
18147 neev 20 0 138M 1836 1672 S 0.0 0.0 0:00.00 ./r

SSH: 192.168.171.128 0 0 0 0 0
26°C Haze
```

The file name with './s' is our server file.