

**NATIONAL INSTITUTE OF TECHNOLOGY
DELHI-40**



NETWORK PROGRAMMING
ASSIGNMENT-5

SUBMITTED BY:

NAME: OMPRAKASH GUPTA

ROLL: 171210041

CSE 3RD YEAR

SUBMITTED TO:

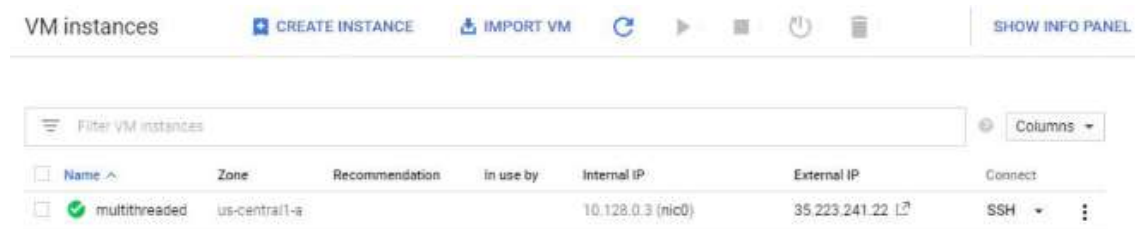
DR. Ravi Arya

NIT, DELHI

Implement multithreaded (using pthread library) client-server with TCP to allow multiple (2) clients to connect/ Interact with the server simultaneously

Step:1

Create VM instance on gcloud



VM instances

CREATE INSTANCE IMPORT VM

Filter VM instances Columns

Name	Zone	Recommendation	In use by	Internal IP	External IP	Connect
multithreaded	us-central1-a			10.128.0.3 (nic0)	35.223.241.22	SSH

Step:2

Run VM and install g++ and pthread library

```
aman212yadav@multithreaded:~$ sudo apt-get install g++
Reading package lists... Done
Building dependency tree
Reading state information... Done
g++ is already the newest version (4:5.3.1-lubuntui).
The following package was automatically installed and is no longer required:
  grub-pc-bin
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

```
aman212yadav@multithreaded:~$ sudo apt-get install libpthread-stubs0-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
libpthread-stubs0-dev is already the newest version (0.3-4).
```

Step:3

Upload server.c and client.c file to VM



File Transfer Close

client_.c Finished

```
aman212yadav@multithreaded:~$ ls
a.out client_.c client.c server_(1).c server_.c server.c
```

Step:4

Compile and run server.c file using gcc -pthread server.c

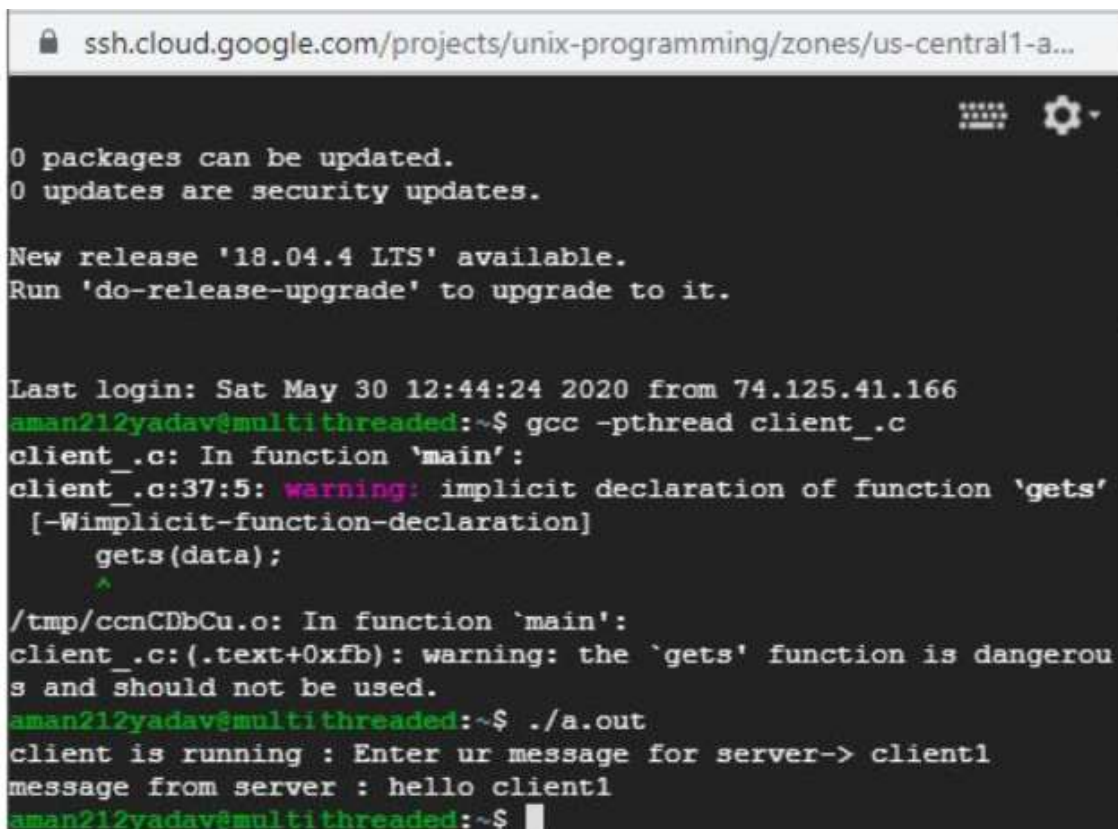
```
aman212yadav@multithreaded:~$ gcc -pthread server_.c
server_.c: In function 'socketThread':
server_.c:43:3: warning: implicit declaration of function 'gets' [-Wimplicit-function-declaration]
  gets(data);
  ^
/tmp/cc8RyQQu.o: In function 'socketThread':
server_.c:(.text+0x61): warning: the 'gets' function is dangerous and should not be used.
```

```
aman212yadav@multithreaded:~$ ./a.out
server is Running.
```

Step:5

Create multiple clients and make them interact with server

Client-1



The screenshot shows a terminal window with the following content:

```
ssh.cloud.google.com/projects/unix-programming/zones/us-central1-a...

0 packages can be updated.
0 updates are security updates.

New release '18.04.4 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Sat May 30 12:44:24 2020 from 74.125.41.166
aman212yadav@multithreaded:~$ gcc -pthread client_.c
client_.c: In function 'main':
client_.c:37:5: warning: implicit declaration of function 'gets'
  [-Wimplicit-function-declaration]
  gets(data);
  ^
/tmp/ccnCDbCu.o: In function 'main':
client_.c:(.text+0xfb): warning: the 'gets' function is dangerous
s and should not be used.
aman212yadav@multithreaded:~$ ./a.out
client is running : Enter ur message for server-> client1
message from server : hello client1
aman212yadav@multithreaded:~$
```

Client-2

```
ssh.cloud.google.com/projects/unix-programming/zones/us-central1-a/instan...
0 packages can be updated.
0 updates are security updates.

New release '18.04.4 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Sat May 30 13:00:12 2020 from 173.194.93.99
aman212yadav@multithreaded:~$ ls
a.out client_.c client.c server_(1).c server_.c server.c
aman212yadav@multithreaded:~$ gcc -pthread client_.c
client_.c: In function 'main':
client_.c:37:5: warning: implicit declaration of function 'gets' [-Wimplicit-function-declaration]
    gets(data);
    ^
/tmp/cc54BWJN.o: In function 'main':
client_.c:(.text+0xfb): warning: the 'gets' function is dangerous and should not be used.
aman212yadav@multithreaded:~$ ./a.out
client is running : Enter ur message for server-> client2
message from server : hello client2
aman212yadav@multithreaded:~$
```

Server

```
ssh.cloud.google.com/projects/unix-programming/zones/us-central1-a/instances/multithreaded?authuser=0&hl=en_GB&projectNumber=121407860050
/tmp/cc8RyQQU.o: In function 'socketThread':
server_.c:(.text+0x61): warning: the 'gets' function is dangerous and should not be used.
aman212yadav@multithreaded:~$ ./a.out

server is Running.
server : one client sent me a message and the message is -> client1
server : enter response message for client -> hello client1
server: response message sent to the client
Exit socketThread
server : one client sent me a message and the message is -> client2client1
server : enter response message for client -> hello client2
server: response message sent to the client
Exit socketThread
```

Code link:

https://github.com/omchs10/Network_Programming/tree/master/Assignment-5

