

Tugas 4 - Implementasi program server

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Kelas : Pemrograman Jaringan E

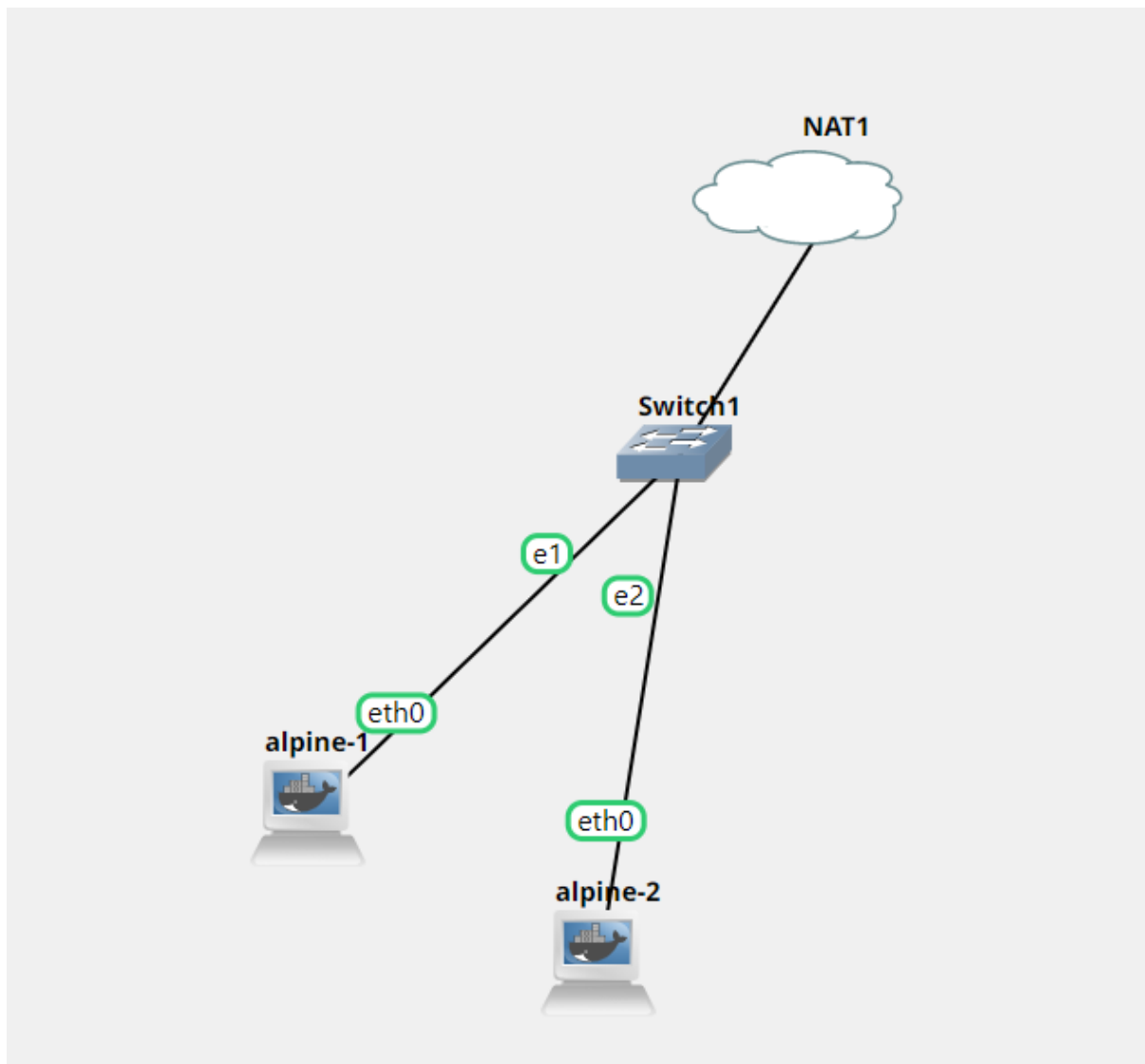
Soal:

semua tugas berikut ini HARUS dijalankan di SIMULATOR

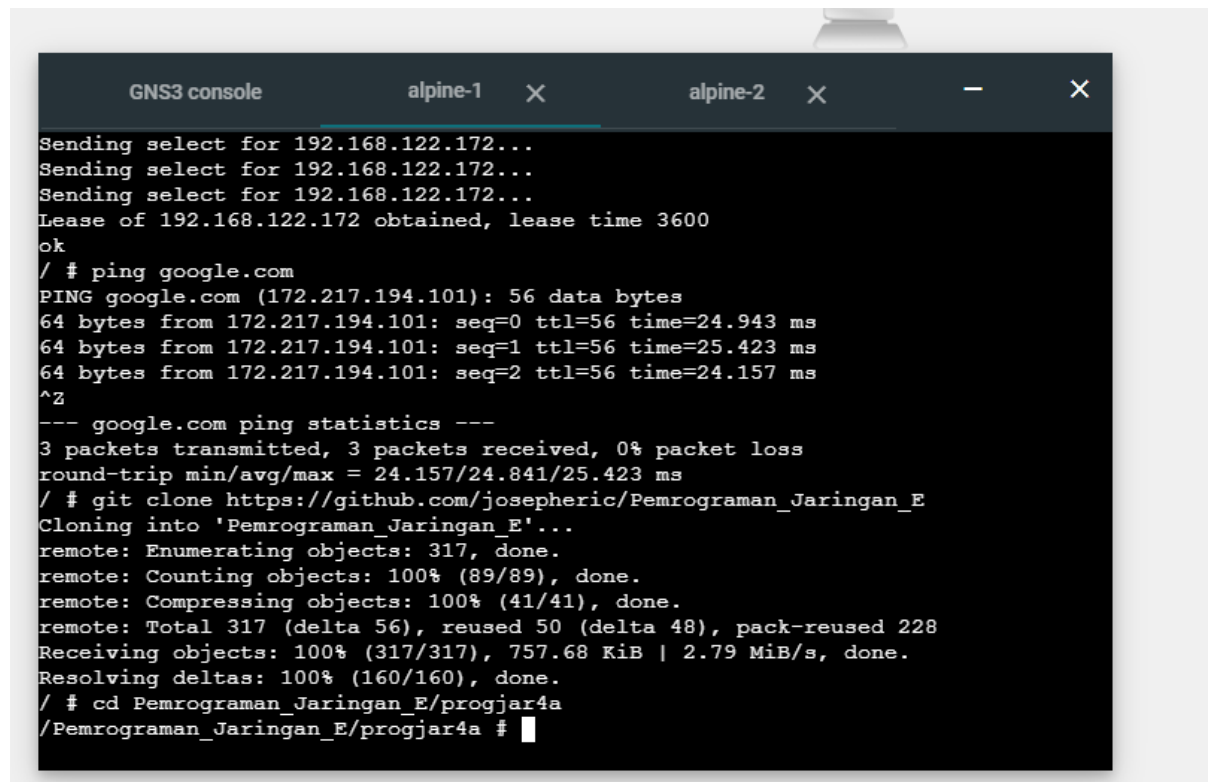
1. jalankan program server seperti dalam pembahasan
2. buatlah program client yang dapat melakukan 100 request get pada dalam satu saat untuk operasi get file "pokijan.jpg"
3. capture dan submitlah poin 1 dan 2 dalam satu dokumen pdf. berikan DESKRIPSI dan PENJELASAN

Jawab:

Berikut topologi jaringan yang digunakan:



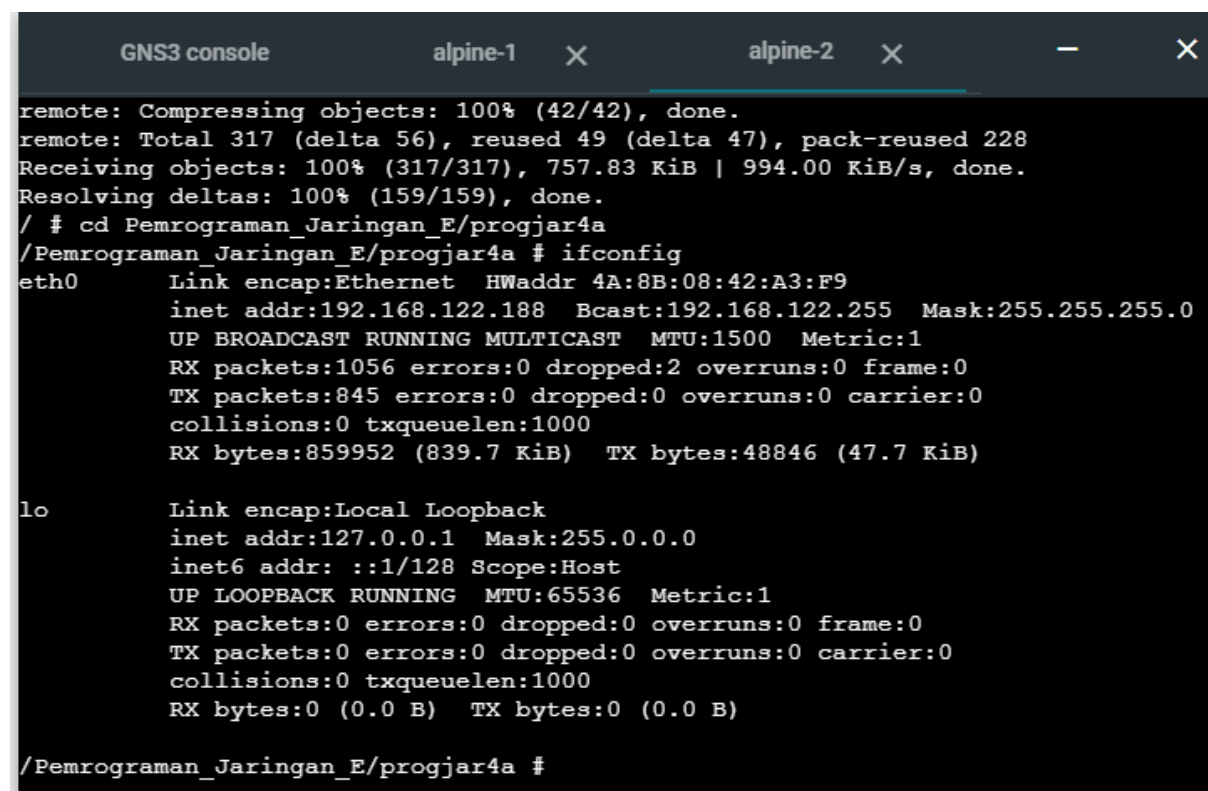
1. Alpine-1 akan dijadikan client, sedangkan alpine-2 sebagai server. Clone repository ke kedua alpine tersebut:



```
GNS3 console  alpine-1  X  alpine-2  X  -  X

Sending select for 192.168.122.172...
Sending select for 192.168.122.172...
Sending select for 192.168.122.172...
Lease of 192.168.122.172 obtained, lease time 3600
ok
/ # ping google.com
PING google.com (172.217.194.101): 56 data bytes
64 bytes from 172.217.194.101: seq=0 ttl=56 time=24.943 ms
64 bytes from 172.217.194.101: seq=1 ttl=56 time=25.423 ms
64 bytes from 172.217.194.101: seq=2 ttl=56 time=24.157 ms
^Z
--- google.com ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 24.157/24.841/25.423 ms
/ # git clone https://github.com/josepheric/Pemrograman_Jaringan_E
Cloning into 'Pemrograman_Jaringan_E'...
remote: Enumerating objects: 317, done.
remote: Counting objects: 100% (89/89), done.
remote: Compressing objects: 100% (41/41), done.
remote: Total 317 (delta 56), reused 50 (delta 48), pack-reused 228
Receiving objects: 100% (317/317), 757.68 KiB | 2.79 MiB/s, done.
Resolving deltas: 100% (160/160), done.
/ # cd Pemrograman_Jaringan_E/progjar4a
/Pemrograman_Jaringan_E/progjar4a #
```

2. Cari IP server pada alpine-2 menggunakan ifconfig. Pada kasus saya, ip server yang didapatkan adalah: 192.168.122.188



```
GNS3 console  alpine-1  X  alpine-2  X  -  X

remote: Compressing objects: 100% (42/42), done.
remote: Total 317 (delta 56), reused 49 (delta 47), pack-reused 228
Receiving objects: 100% (317/317), 757.83 KiB | 994.00 KiB/s, done.
Resolving deltas: 100% (159/159), done.
/ # cd Pemrograman_Jaringan_E/progjar4a
/Pemrograman_Jaringan_E/progjar4a # ifconfig
eth0      Link encap:Ethernet  HWaddr 4A:8B:08:42:A3:F9
          inet addr:192.168.122.188  Bcast:192.168.122.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1056 errors:0 dropped:2 overruns:0 frame:0
          TX packets:845 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:859952 (839.7 KiB)  TX bytes:48846 (47.7 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

/Pemrograman_Jaringan_E/progjar4a #
```

3. Ubah file_server.py pada alpine-2 menjadi sebagai berikut:

- Ubah Ipaddress pada bagian Server() menjadi ipaddress yang sudah kita catat sebelumnya (192.168.122.188).

```

GNU nano 4.6                                     file_server.py
logging.warning(f"server berjalan di ip address {self.ipinfo}")
self.my_socket.bind(self.ipinfo)
self.my_socket.listen(1)
while True:
    self.connection, self.client_address = self.my_socket.accept()
    logging.warning(f"connection from {self.client_address}")

    clt = ProcessTheClient(self.connection, self.client_address)
    clt.start()
    self.the_clients.append(clt)

def main():
    svr = Server(ipaddress='192.168.122.188',port=6666)
    svr.start()

if __name__ == "__main__":
    main()

```

^G Get Help ^O Write Out ^W Where Is ^R Cut Text ^J Justify ^C Cur Pos
 ^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line

4. Ubah file_client_cli.py pada alpine-1 agar dapat melakukan 100 request get pada dalam satu saat untuk operasi get file "pokijan.jpg". Disini saya menambahkan fungsi pokijan_download untuk memanggil fungsi remote_get("pokijan.jpg") 100 kali menggunakan multiprocessing. Saya juga mencatat waktu yang dibutuhkan untuk menyelesaikan operasi ini.

```
GNS3 console    alpine-1  X    alpine-2  X    -    X
GNU nano 4.6    file_client_cli.py
    print("Gagal")
    return False
def pokijan_download():
    process = dict()
    pokijan_file = 'pokijan.jpg'
    start_time = datetime.datetime.now()
    for i in range(100):
        print(f"Iteration - {i} Download {pokijan_file} \n")
        process[i] = Process(target=remote_get, args=(pokijan_file,))
        process[i].start()
    for i in range(100):
        process[i].join()
    end_time = datetime.datetime.now()
    duration = end_time - start_time
    print(f"Total time needed: {duration} seconds")

#fungsi download_gambar akan dijalankan secara multi process
if __name__=='__main__':
    pokijan_download()

^G Get Help    ^C Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos
^X Exit        ^R Read File    ^\ Replace     ^U Paste Text ^T To Spell   ^_ Go To Line
```

5. Ubah juga server_address agar IP dan port sesuai dengan IP dan port pada server (192.168.122.188, 6666)

```
GNS3 console    alpine-1  X    alpine-2  X    -    X
GNU nano 4.6    file_client_cli.py
import socket
import json
import base64
import logging
import time
import datetime
from multiprocessing import Process

server_address=('192.168.122.188',6666)
```

6. Jalankan file_server.py pada alpine-2 dan file_client_cli pada alpine-1 :

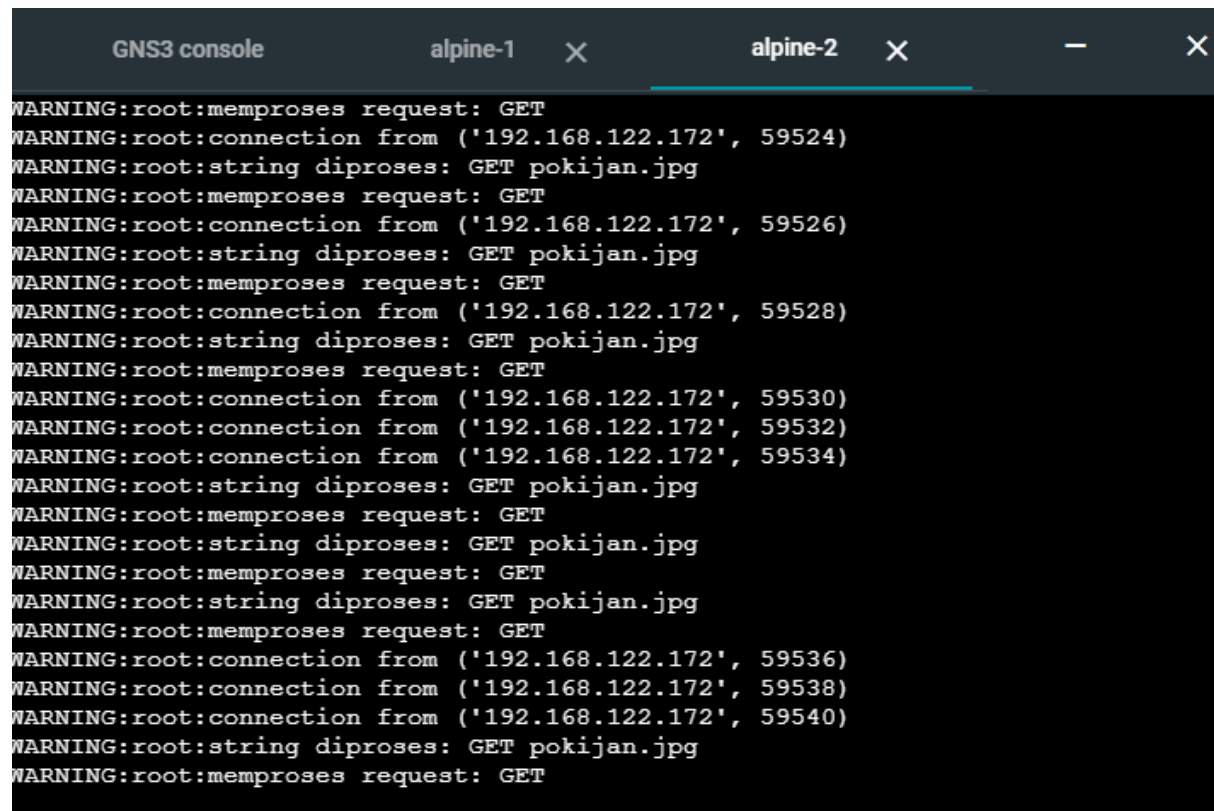
```
GNS3 console      alpine-1  X      alpine-2  X      -
WARNING:root:connection from ('192.168.122.172', 59346)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
^ZException ignored in: <module 'threading' from '/usr/lib/python3.8/thre
y'>
Traceback (most recent call last):
  File "/usr/lib/python3.8/threading.py", line 1388, in _shutdown
    lock.acquire()
KeyboardInterrupt:
/Pemrograman_Jaringan_E/progjar4a # git pull
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (1/1), done.
remote: Total 4 (delta 3), reused 4 (delta 3), pack-reused 0
Unpacking objects: 100% (4/4), done.
From https://github.com/josepheric/Pemrograman_Jaringan_E
  7a55a79..4c6a79e  master    -> origin/master
Updating 7a55a79..4c6a79e
Fast-forward
 progjar4a/file_client_cli.py | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
/Pemrograman_Jaringan_E/progjar4a # python3 file_server.py
WARNING:root:server berjalan di ip address ('192.168.122.188', 6666)
```

7. Pada screenshot dibawah, dapat dilihat bahwa client berhasil merequest sebanyak 100 kali dan menerima data dari server:

```
GNS3 console      alpine-1  X      alpine-2  X      -      X
Iteration - 99 Download pokijan.jpg

WARNING:root:sending message
WARNING:root:connecting to ('192.168.122.188', 6666)
WARNING:root:sending message
WARNING:root:data received from server:
WARNING:root:connecting to ('192.168.122.188', 6666)
WARNING:root:sending message
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:connecting to ('192.168.122.188', 6666)
WARNING:root:data received from server:
WARNING:root:connecting to ('192.168.122.188', 6666)
WARNING:root:sending message
WARNING:root:sending message
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:data received from server:
Total time needed: 0:00:01.733519 seconds
/Pemrograman_Jaringan_E/progjar4a #
```

8. Pada server juga dapat dilihat bahwa server berhasil memproses request dari client secara berkali-kali:



```
GNS3 console      alpine-1  X      alpine-2  X      -      X
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.172', 59524)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.172', 59526)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.172', 59528)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.172', 59530)
WARNING:root:connection from ('192.168.122.172', 59532)
WARNING:root:connection from ('192.168.122.172', 59534)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.172', 59536)
WARNING:root:connection from ('192.168.122.172', 59538)
WARNING:root:connection from ('192.168.122.172', 59540)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
```