

**TUGAS – 4A**  
**IMPLEMENTASI PROGRAM SERVER DAN PROTOCOL**  
**MENGUNAKAN MULTI-PROCESS**



**Kelas : Pemrograman Jaringan D**  
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**Surabaya**  
**2021**

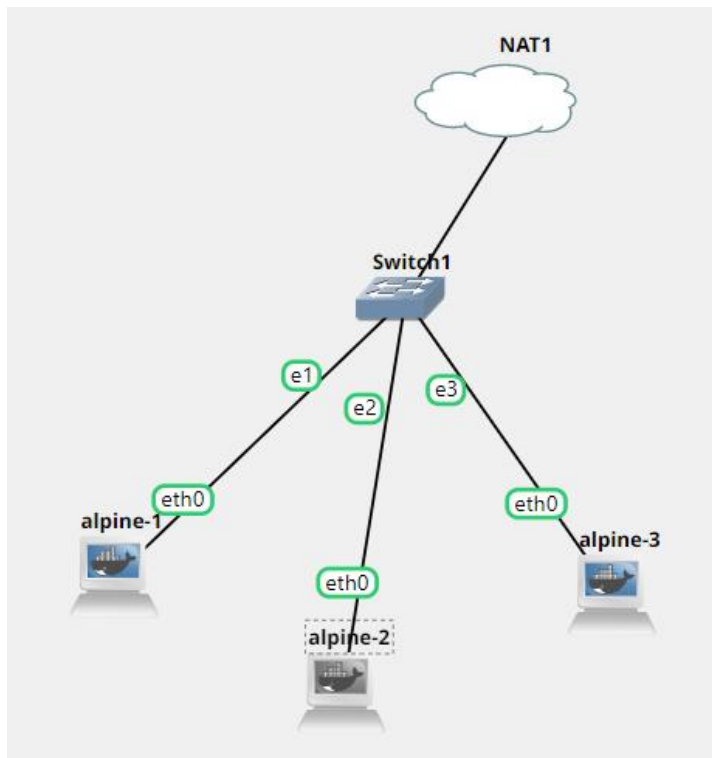
## SOAL

Implementasi program server sesuai contoh

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

- Gambar Arsitektur Jaringan (Dalam Simulator Gns3)



Note: Alpine-1 sebagai server, Alpine 2 sebagai client, Alpine-3 tidak digunakan

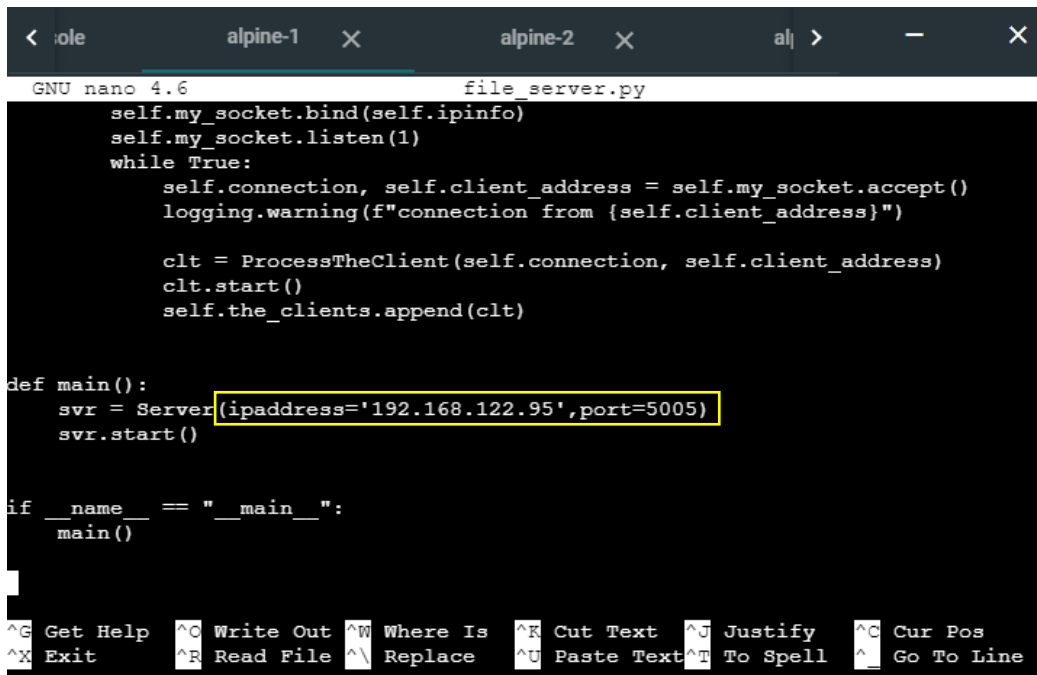
- Pertama, cek terlebih dahulu IP address dari server (Alpine-1)

```
< |ole      alpine-1  X      alpine-2  X      alpine-3  X      |>  -  X
/home/Pemrograman_Jaringan_D/progjar4a # ifconfig
eth0      Link encap:Ethernet  HWaddr CA:99:AD:8C:F7:11
          inet addr:192.168.122.95  Bcast:192.168.122.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:6122 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3006 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3674828 (3.5 MiB)  TX bytes:2289876 (2.1 MiB)

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)

/home/Pemrograman_Jaringan_D/progjar4a #
```

- Ubah IP pada file\_server.py dengan IP address dari alpine-1 sebagai server.



```

GNU nano 4.6 file_server.py
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}")

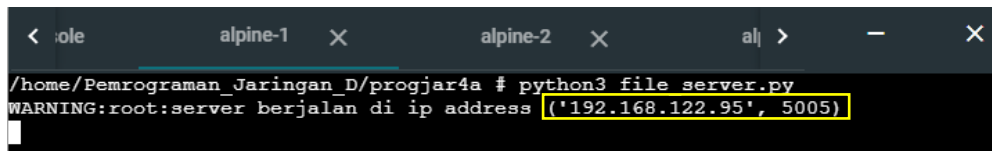
    clt = ProcessTheClient(self.connection, self.client_address)
    clt.start()
    self.the_clients.append(clt)

def main():
    svr = Server(ipaddress='192.168.122.95', port=5005)
    svr.start()

if __name__ == "__main__":
    main()

```

- Coba jalankan file\_server.py, maka hasilnya seperti berikut.

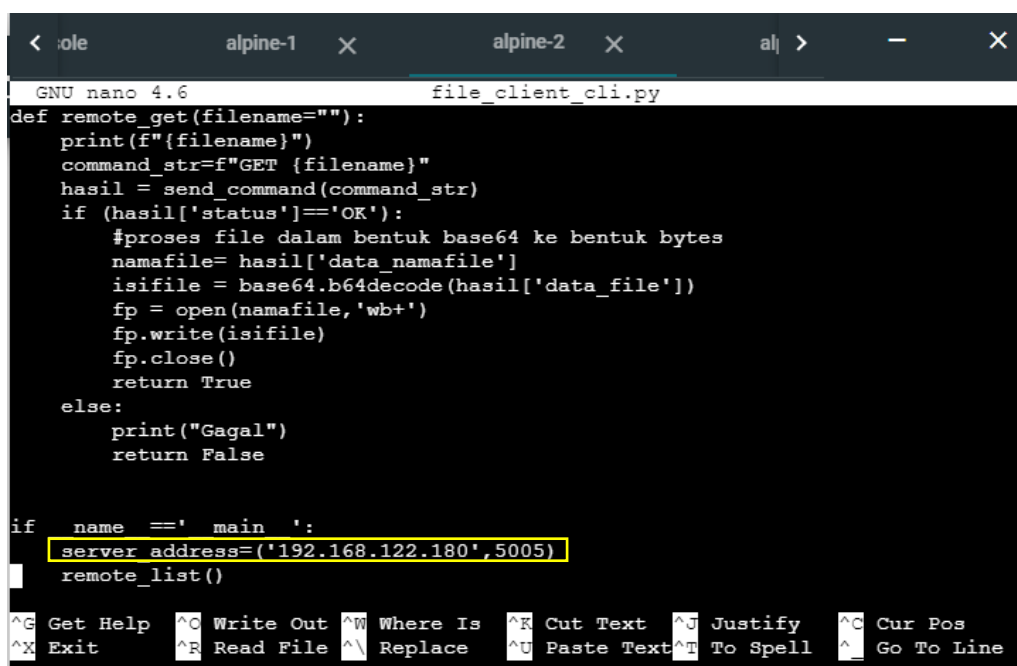


```

/home/Pemrograman_Jaringan_D/progjar4a # python3 file_server.py
WARNING:root:server berjalan di ip address ('192.168.122.95', 5005)

```

- Ubah server address pada file\_client\_cli.py menjadi alamat server berjalan.



```

GNU nano 4.6 file_client_cli.py
def remote_get(filename=""):
    print(f"{filename}")
    command_str=f"GET {filename}"
    hasil = send_command(command_str)
    if (hasil['status']=='OK'):
        #proses file dalam bentuk base64 ke bentuk bytes
        namafile= hasil['data_namafile']
        isifile = base64.b64decode(hasil['data_file'])
        fp = open(namafile,'wb+')
        fp.write(isifile)
        fp.close()
        return True
    else:
        print("Gagal")
        return False

if __name__ == '__main__':
    server_address=('192.168.122.180', 5005)
    remote_list()

```

- Buat file baru untuk multi process yang melakukan 100 request get file 'pokijan.jpg' dalam satu saat pada program client. Berikut gambar serta penjelasan.

```

GNU nano 4.6 multi_process.py
from file_client_cli import remote_get
import time
import datetime
from multiprocessing import Process

def download_100():
    texec = dict()
    catat_awal = datetime.datetime.now()
    filename = 'pokijan.jpg'
    for k in range(100):
        print(f"download get {k}")
        waktu = time.time()
        # bagian ini merupakan bagian yang menginstruksikan eksekusi fungsi down
        texec[k] = Process(target=remote_get, args=(filename,))
        texec[k].start()
    # setelah menyelesaikan tugasnya, dikembalikan ke main process dengan join
    for k in range(100):
        texec[k].join()
    catat_akhir = datetime.datetime.now()
    selesai = catat_akhir - catat_awal

[ Read 26 lines ]
^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
  
```

Import fungsi remote\_get pada file\_client\_cli.py

Masukkan nama file

Perulangan sampai 100x

Panggil fungsi remote\_get dengan argumen filename menggunakan multi proses, yang diulang sebanyak 100x.

```

GNU nano 4.6 file_client_cli.py
def remote_get(filename=""):
    print(f"{filename}")
    command_str=f"GET {filename}"
    hasil = send_command(command_str)
    if (hasil['status']=='OK'):
        #proses file dalam bentuk base64 ke bentuk bytes
        namafile= hasil['data_namafile']
        isifile = base64.b64decode(hasil['data_file'])
        fp = open(namafile,'wb+')
        fp.write(isifile)
        fp.close()
        return True
    else:
        print("Gagal")
        return False

if __name__=='__main__':
    server_address=('192.168.122.180',5005)
    remote_list()
  
```

Fungsi yang dipanggil dalam multi\_process.py yaitu remote\_get dan filename yang dikirimkan ke server.

## HASIL RUN

Hasil run dari multi\_process.py pada client (alpine-2), berjalan request get sebanyak 100x yaitu mulai 0-99.

```

< role alpine-1 x alpine-2 x alpine-3 x > - x
pokijan.jpg
WARNING:root:data received from server:
download get 94
pokijan.jpg
download get 95
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
WARNING:root:data received from server:
WARNING:root:data received from server:
WARNING:root:connecting to ('192.168.122.95', 5005)
download get 96
WARNING:root:sending message
download get 97
WARNING:root:data received from server:
WARNING:root:data received from server:
download get 98
WARNING:root:data received from server:
pokijan.jpg
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
WARNING:root:data received from server:
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
download get 99

```

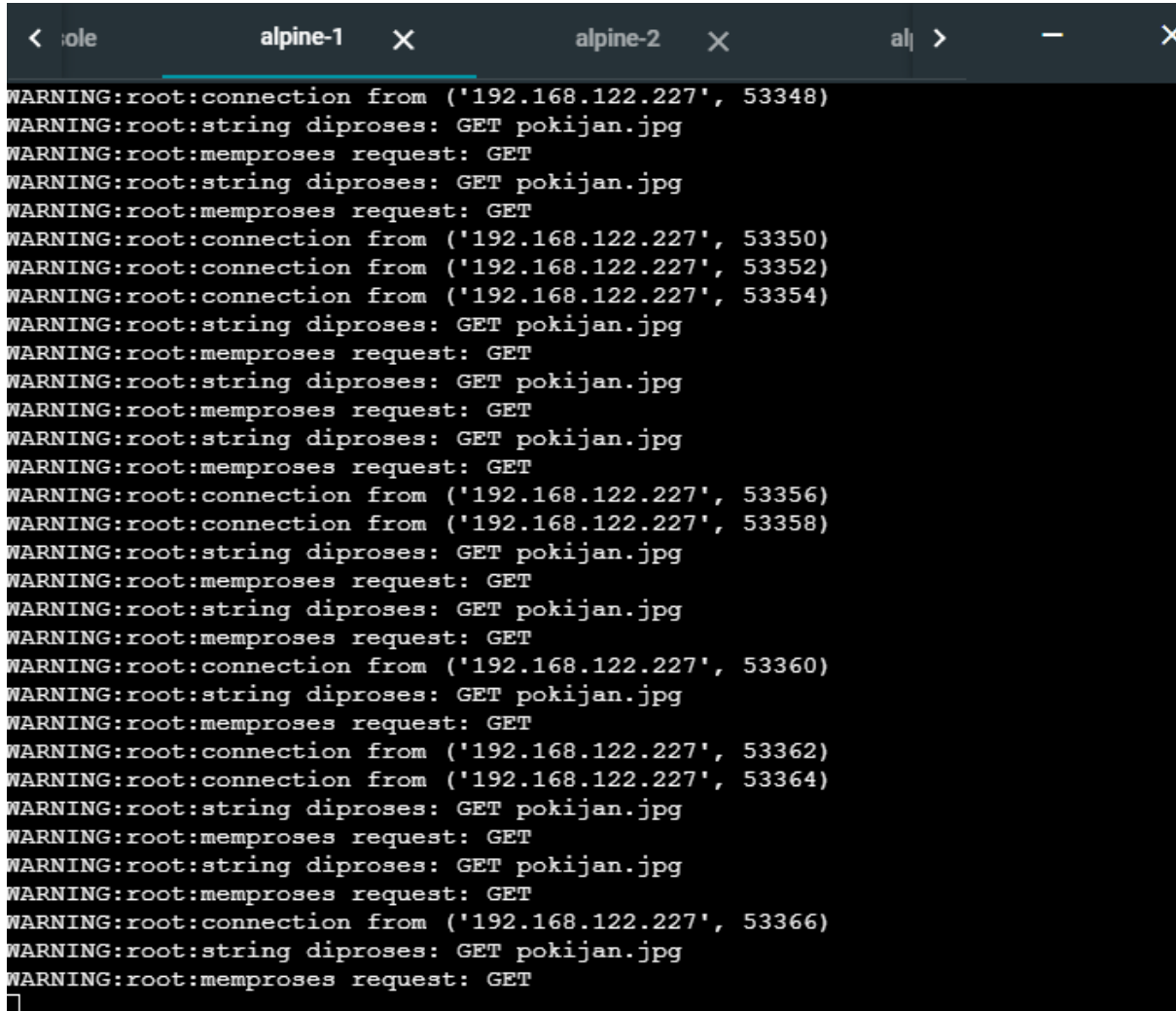
```

< alpine-1 x alpine-2 x alpine-3 x > - x
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
WARNING:root:data received from server:
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
download get 99
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:data received from server:
pokijan.jpg
pokijan.jpg
WARNING:root:sending message
WARNING:root:data received from server:
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:sending message
WARNING:root:sending message
pokijan.jpg
WARNING:root:connecting to ('192.168.122.95', 5005)
WARNING:root:data received from server:
WARNING:root:data received from server:
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:
Waktu TOTAL yang dibutuhkan 0:00:04.748203 detik 2021-05-15 13:36:12.377032 s/d
2021-05-15 13:36:17.125235
/home/Pemrograman_Jaringan_D/progjar4a #

```

Hasil yang diterima pada server (alpine-1) saat client di jalankan

Menerima request dan koneksi dari alamat client.



```
< role alpine-1 X alpine-2 X alj > - X
WARNING:root:connection from ('192.168.122.227', 53348)
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 ('192.168.122.227', 53350)
WARNING:root:connection from ('192.168.122.227', 53352)
WARNING:root:connection from ('192.168.122.227', 53354)
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 ('192.168.122.227', 53356)
WARNING:root:connection from ('192.168.122.227', 53358)
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 ('192.168.122.227', 53360)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
WARNING:root:connection from ('192.168.122.227', 53362)
WARNING:root:connection from ('192.168.122.227', 53364)
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 ('192.168.122.227', 53366)
WARNING:root:string diproses: GET pokijan.jpg
WARNING:root:memproses request: GET
```