Penjelasan Source Code Challenge 4 Mar

Outline

Deskripsi Umum

- Karena terdapat dua tipe pesan yaitu pesan file dan pesan chat maka dibuat penanda sebuah pesan

```
TYPE_FILE = 'FILE'
TYPE_MESSAGE = 'MESG'
```

- Serta untuk menandakan bahwa file pesan tersebut telah sampai akhir maka dibuat flag

```
TYPE_END = 'EOF'
```

Client

- Jika pesan berupa pesan file, maka file tersebut dikirimkan dengan dibungkus dengan format `FILE:<nama file>|<binary file>EOF`
- Sehingga untuk mengirimkan file bisa menggunakan potongan kode berikut.

```
server_socket.send(TYPE_FILE+':'+message[5:]+'|')
with open(PATH_CLIENT+message[5:], 'rb') as f:
    chunk = f.read(MAX_BUFFER)
    while chunk:
        server_socket.send(chunk)
        chunk = f.read(MAX_BUFFER)
server_socket.send(TYPE_END)
sys.stdout.write("<You> : ")
sys.stdout.write("Send file with name "+ message[5:])
sys.stdout.write("\n")
sys.stdout.flush()
```

- Kemudian untuk penerimaan file hasil broadcast dari server, terlebih dahulu mengambil `<nama file>` dari pesan yang dikirimkan

```
message = socket.recv(MAX_BUFFER)
TYPE = message[:4]
if TYPE == TYPE_FILE:
    chunk = message.split('|')
    if len(chunk) == 2:
        filename = chunk[0][5:]
        chunk = chunk[1]
    else :
        chunk = ''
        filename = chunk[0][5:]
```

Dilanjutkan dengan membuat file dengan format `<random>_<nama file>`, kemudian menerima binary file dari server, perulangan penerimaan binary file dari server berhenti saat ditemui flag `TYPE_END` yang menandakan akhir dari file.

```
with open(PATH_CLIENT+hash_random+'_'+filename, 'wb') as f:
    lanjut = True
    f.write(chunk)
    if TYPE_END in chunk:
        chunk = chunk.replace(TYPE_END,'')
        f.write(chunk)
        lanjut = False
    while lanjut:
        chunk = socket.recv(MAX_BUFFER)
        if TYPE_END in chunk:
            chunk = chunk.replace(TYPE_END,'')
            f.write(chunk)
            break
        f.write(chunk)
print 'file received :' + hash_random+'_'+filename
```

- Sementara untuk message biasa dikirimkan dan diterima dengan format `MESG:<pesan>`

Server

- Jika pesan file maka file tersebut terbungkus dengan format `FILE:<nama file>|<binary file>EOF` seperti yang terdefinisi pada client
- Sehingga untuk menerimanya, kita perlu mengambil `<nama file>` dari format diatas menggunakan potongan kode berikut

```
chunk = message.split('|')
print chunk
if len(chunk) == 2:
    filename = chunk[0][5:]
    chunk = chunk[1]
else :
    filename = chunk[0][5:]
```

```
    chunk = ''
print PATH_SERVER+filename
```

- Setelah mengambil `nama file`, dilanjutkan dengan membuat file dengan nama file yang sama dengan client. Kemudian menerima file binary dari client sampai ditemui `TYPE_END`, kemudian membroadcast file tersebut.

```
with open(PATH_SERVER+filename, 'wb') as f:
    lanjut = True
    f.write(chunk)
    if TYPE_END in chunk:
        chunk = chunk.replace(TYPE_END,'')
        f.write(chunk)
        lanjut = False
    while lanjut:
        chunk = connection.recv(MAX_BUFFER)
        if TYPE_END in chunk:
            chunk = chunk.replace(TYPE_END,'')
            f.write(chunk)
            break
        f.write(chunk)
broadcast_file(PATH_SERVER+filename, connection)
```

- Broadcast file dilakukan dengan mengirimkan file ke setiap client non pengirim, dengan membungkusnya dengan format `FILE:<nama file>|<binary file>EOF`.

```
for client in list_of_clients:
    if client != connection:
        print filename
        with open(filename, 'rb') as f :
            filename_new = filename.replace(PATH_SERVER, '')
            try :
                client.send(TYPE_FILE+':'+filename_new+'|')
                chunk = f.read(MAX_BUFFER)
                while chunk:
                    client.send(chunk)
                    chunk = f.read(MAX_BUFFER)
                client.send(TYPE_END)
            except:
                client.close()
                remove_from_list(client)
```

- Sementara untuk message biasa dikirimkan dan diterima dengan format `MESG:<pesan>`

Screenshot

- Client 1 mengirimkan `lagu.mp3` dan `halo.txt`

```
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File  Edit  View  Search  Terminal  Help
ferdinand@ferdinand-X456UQK ~ $ cd Code/network-programming/week-4/
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-client.py
SEND lagu.mp3
<You> : Send file with name lagu.mp3
SEND halo.txt
<You> : Send file with name halo.txt
```

- Client 2 menerima `lagu.mp3` dan `halo.txt`

```
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File  Edit  View  Search  Terminal  Help
ferdinand@ferdinand-X456UQK ~ $ cd Code/network-programming/week-4/
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-client.py
file received :GC5M_lagu.mp3
file received :8BAL_halo.txt
```

- Server

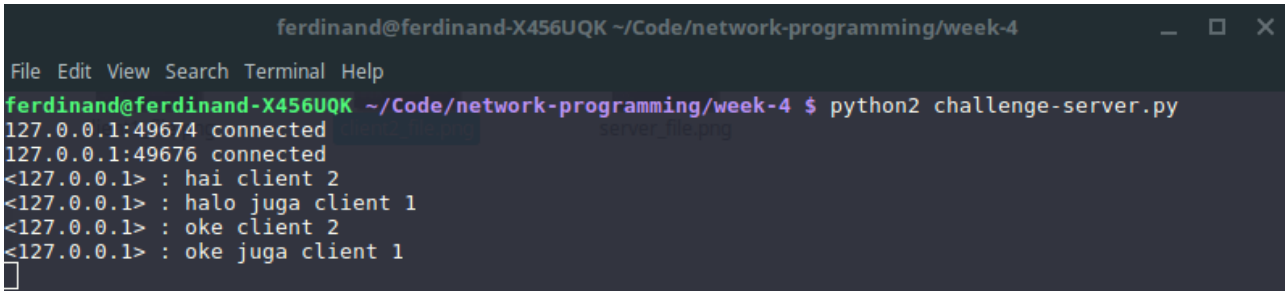
```
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File  Edit  View  Search  Terminal  Help
ferdinand@ferdinand-X456UQK ~ $ cd Code/network-programming/week-4/
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-server.py
127.0.0.1:49648 connected
127.0.0.1:49650 connected
['FILE:lagu.mp3', '']
./server/lagu.mp3
./server/lagu.mp3
['FILE:halo.txt', '']
./server/halo.txt
./server/halo.txt
```

- Client 1 & Client 2 chat

```
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File  Edit  View  Search  Terminal  Help
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-client.py
hai client 2
<You> : hai client 2
<127.0.0.1> : halo juga client 1
oke client 2
<You> : oke client 2
<127.0.0.1> : oke juga client 1
```

```
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File  Edit  View  Search  Terminal  Help
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-client.py
<127.0.0.1> : hai client 2
halo juga client 1
<You> : halo juga client 1
<127.0.0.1> : oke client 2
oke juga client 1
<You> : oke juga client 1
```

- Server


ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4
File Edit View Search Terminal Help
ferdinand@ferdinand-X456UQK ~/Code/network-programming/week-4 $ python2 challenge-server.py
127.0.0.1:49674 connected
127.0.0.1:49676 connected
<127.0.0.1> : hai client 2
<127.0.0.1> : halo juga client 1
<127.0.0.1> : oke client 2
<127.0.0.1> : oke juga client 1