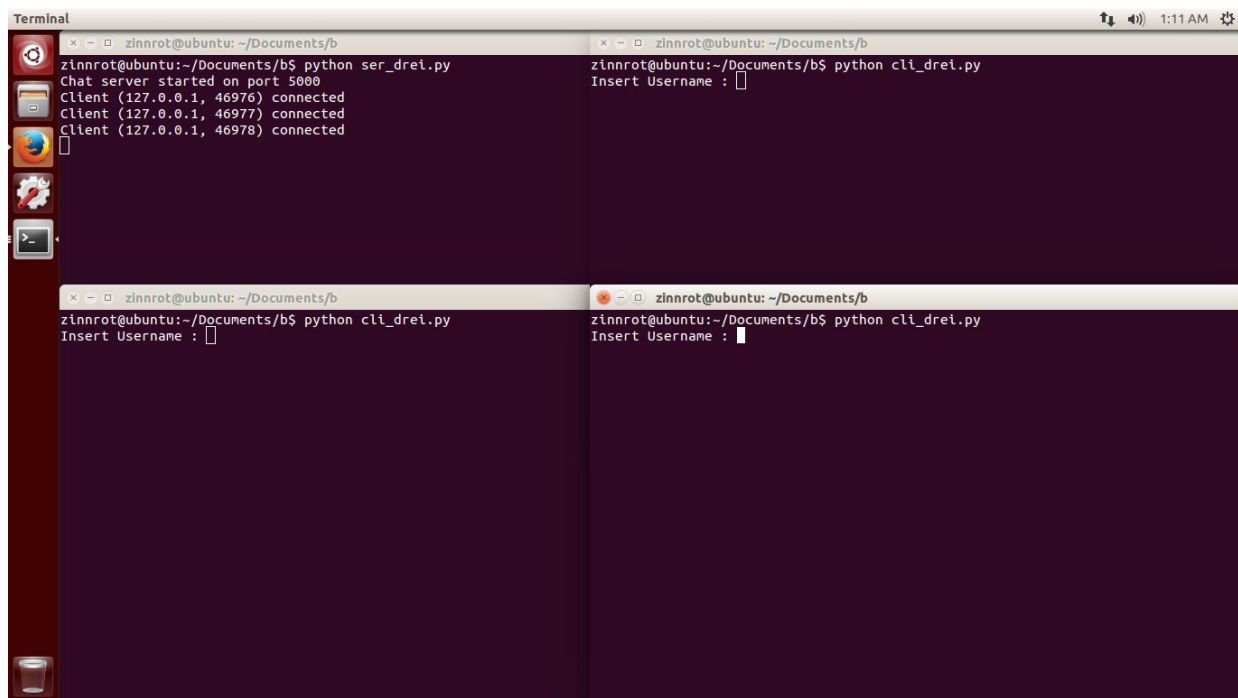


Dokumentasi Tugas 2 Pemrograman Jaringan B
Enhanced Python-Based Multi-Client Server Chat room
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Tugas kedua dari pemrograman jaringan kelas B ini adalah membuat sebuah Multi-Client Server Chat yang berbasis python. Dimana Server berperan sebagai pure server sehingga hanya melayani beberapa client. Dan ada beberapa fungsi yang perlu di implement kedalam chat room seperti fungsi log-in, fungsi send-all, send-to dan list serta beberapa fungsi tambahan yang bisa diimplementasikan juga.

1. Fungsi Register dan Login

Fungsi Register dan Fungsi login ada pada bagian awal dari script.



The image shows four terminal windows arranged in a 2x2 grid. The top-left window shows the server script being executed, displaying 'Chat server started on port 5000' and three client connections. The top-right window shows the client script being executed, prompting for a username. The bottom-left window shows the client script being executed, prompting for a username. The bottom-right window shows the client script being executed, prompting for a username.

```
zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username :
```

“Tampilan sebelum login dan register”

Fungsi register yang command yang diperlukan adalah **“regist [nama user] [kata kunci]”** dan berfungsi dalam mendaftarkan pengguna client kedalam list orang yang bisa berinteraksi dalam chat-room. Dalam fungsi ini akan dilakukan apakah nama user yang ingin didaftarkan sudah ada pada server atau belum, jika sudah maka akses akan ditolak dan user akan dipaksa untuk menutup client sedangkan apabila belum terdaftar user akan bisa masuk ke chat-room dan menggunakan nama pilihannya.

```
Terminal
zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to logging in with us
Client (127.0.0.1, 46981) connected
Client (127.0.0.1, 46982) connected
Client ('127.0.0.1', 46981) is successfully registered as test2
Client ('127.0.0.1', 46982) is successfully registered as test3
Client test1 is offline
Client (127.0.0.1, 46986) connected

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test2 test
Connected to remote host. Start sending messages
[test2] : test3 entered room
[test1] : hello test guys
[test1] : hello test2
[test2] : Client test1 is offline
[test2] :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 tes
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : sendall hello test guys
[test1] : sendto test2 hello test2
[test1] : sendto test4 hello non-existed guy
[test1] : SERVER: Recipient is not exist
[test1] : logout
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 tes
SERVER:Register failed, using existed username
Client will be closed
zinnrot@ubuntu:~/Documents/b$
```

“Tampilan dimana ditemukan error pada saat login, mendaftarkan nama yang ada”

Sedangkan pada fungsi login akan diperlukan **“login [nama user] [kata sandi]”** sebagai command yang digunakan. Dan akan dilakukan beberapa pengecekan dimana apakah nama yang akan digunnnakan untuk masuk ada dalam daftar user atau tidak, jika ada apakah kata sandi yang dimasukan sama dengan yang dimiliki user tersebut atau tidak.

```
Terminal
zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to logging in with us

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : login test1 tes
SERVER:Login failed, username already used by someone else
Client will be closed
zinnrot@ubuntu:~/Documents/b$

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : login test2 test
SERVER:Login failed, username didn't exist
Client will be closed
zinnrot@ubuntu:~/Documents/b$
```

“Tampilan saat terjadi register yang berhasil, dan beberapa kesalahan login”

```
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
chat server started on port 5000
client (127.0.0.1, 47200) connected
client ('127.0.0.1', 47200) is using wrong log-in or register com
client (127.0.0.1, 47209) connected
client ('127.0.0.1', 47209) is using wrong log-in or register com
client (127.0.0.1, 47210) connected
client (127.0.0.1, 47211) connected
client ('127.0.0.1', 47211) is successfully registered as test
client test is offline
client (127.0.0.1, 47212) connected
client ('127.0.0.1', 47212) is successfully logged in with test as

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : register test test
Connected to remote host. Start sending messages
[test] : logout
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : login test test
Connected to remote host. Start sending messages
[test] :
```

“Tampilan berhasil login”

Ada kemungkinan terjadinya kesalahan command pada saat log-in atau register maka untuk menghandle error seperti itu command yang diinput user akan terjadi pengecekan, dan jika terjadi kesalahan command client akan secara paksa di tutup

```
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
chat server started on port 5000
client (127.0.0.1, 47200) connected
client ('127.0.0.1', 47200) is using wrong log-in or register com
client (127.0.0.1, 47209) connected
client ('127.0.0.1', 47209) is using wrong log-in or register com

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : test wrong command
SERVER:Login or register failed, wrong command input
Client will be closed
zinnrot@ubuntu:~/Documents/b$
```

“Tampilan kesalahan command saat register atau login”

2. Fungsi Send-all dan Send-to

Fungsi send dapat dilakukan user pada saat setelah memasuki chat-room, dan fungsi ini digunakan untuk mengirim pesan kepada client lain. Ada dua versi pada fungsi send ini yaitu send-all untuk mengirim kesemua orang, atau send-to jika diperlukan mengirim surat pribadi ke satu client.

Fungsi Send-all dapat digunakan dengan menuliskan command **“sendall [pesan]”**, yang terjadi pada fungsi ini ialah client pengirim akan mengirim command dan pesan pada server, lalu server akan membaca bahwa client meminta sendall dan membaca pesan yang akan dikirim. Lalu server akan men-broadcast pesan dari pengirim ke semua client yang aktif

```
Terminal
x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to login with us
Client (127.0.0.1, 46981) connected
Client (127.0.0.1, 46982) connected
Client ('127.0.0.1', 46981) is successfully registered as test2
Client ('127.0.0.1', 46982) is successfully registered as test3
[]

x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test2 test
Connected to remote host. Start sending messages
[test2] : test3 entered room
[test1] : hello test guys
[test2] : []

x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : sendall hello test guys
[test1] : []

x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test3 test
Connected to remote host. Start sending messages
[test1] : hello test guys
[test3] : []
```

“Tampilan pada saat sendall berhasil”

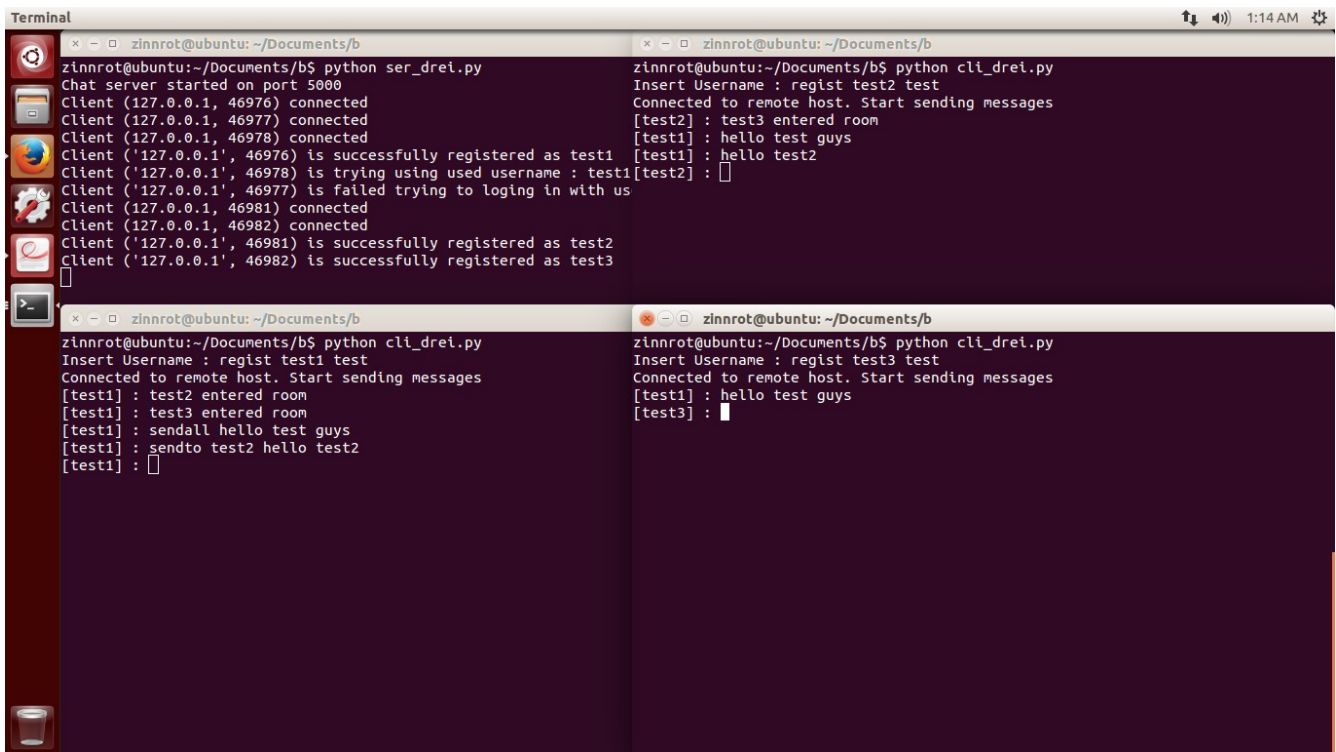
Fungsi send-to untuk menggunakannya diperlukan command **“sendto [penerima] [pesan]”**. Untuk mekanisme kerja send-to ini tidak berbeda jauh dengan sendall, hanya saja akan dicek apakah penerima online atau tidak

```
Terminal
x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to login with us
Client (127.0.0.1, 46981) connected
Client (127.0.0.1, 46982) connected
Client ('127.0.0.1', 46981) is successfully registered as test2
Client ('127.0.0.1', 46982) is successfully registered as test3
[]

x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : sendall hello test guys
[test1] : sendto test2 hello test2
[test1] : sendto test4 hello non-existed guy
[test1] : SERVER: Recipient is not exist
[test1] : []

x - zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test3 test
Connected to remote host. Start sending messages
[test1] : hello test guys
[test3] : []
```

“Tampilan pada saat sendto gagal karena penerima tidak online atau tidak ada”



The screenshot shows a terminal window with three tabs. The leftmost tab shows the output of `python ser_drei.py`, which is a chat server. It displays several clients connecting and registering. The middle tab shows the output of `python cli_drei.py`, where a user registers as 'test2' and sends messages. The rightmost tab shows another instance of `python cli_drei.py`, where a user registers as 'test3' and sends messages.

```
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to login in with us
Client (127.0.0.1, 46981) connected
Client (127.0.0.1, 46982) connected
Client ('127.0.0.1', 46981) is successfully registered as test2
Client ('127.0.0.1', 46982) is successfully registered as test3

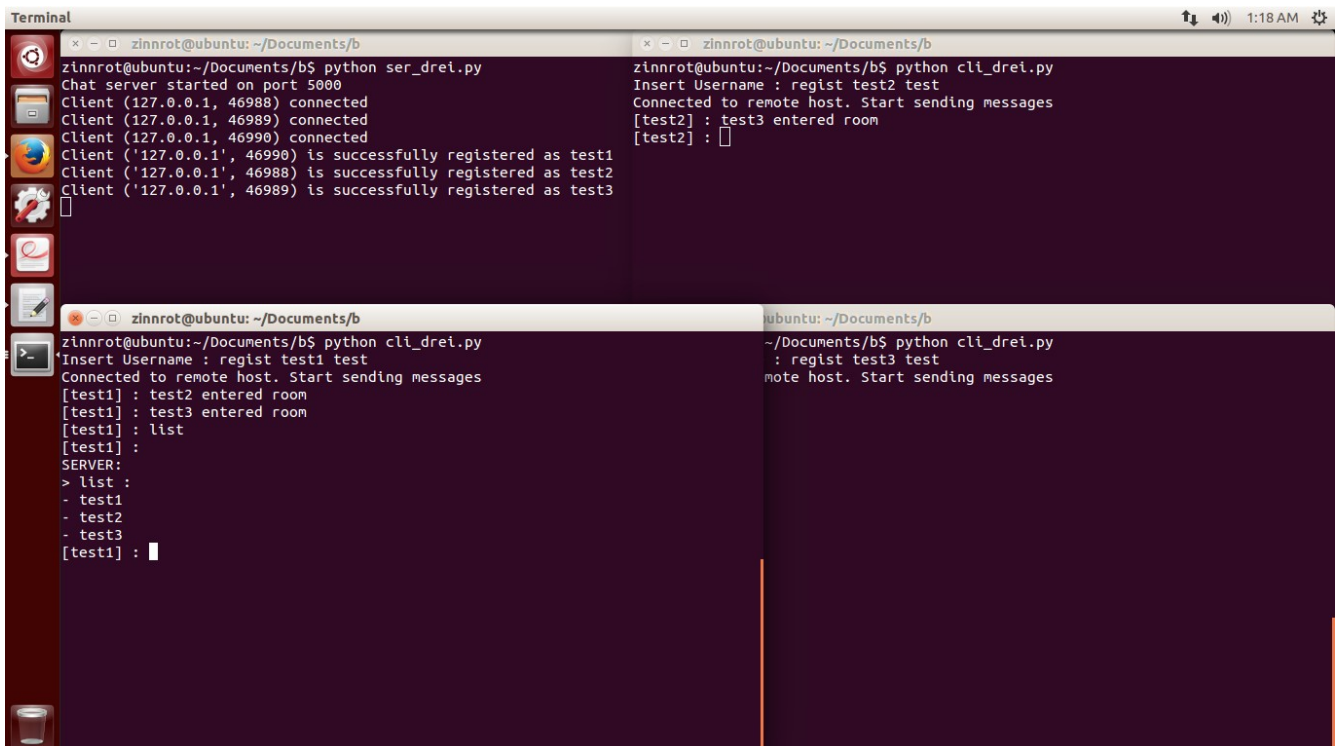
zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : sendall hello test guys
[test1] : sendto test2 hello test2
[test1] :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test2 test
Connected to remote host. Start sending messages
[test2] : test3 entered room
[test1] : hello test guys
[test2] :
```

“Tampilan pada saat sendto berhasil terkirim”

3. Fungsi List

Fungsi list ini berfungsi dimana akan ditampilkan daftar user apa saja yang online pada chat-room, command yang digunakan hanya **“list”**



The screenshot shows a terminal window with three tabs. The leftmost tab shows the output of `python ser_drei.py`, which is a chat server. It displays several clients connecting and registering. The middle tab shows the output of `python cli_drei.py`, where a user registers as 'test1' and sends messages. The rightmost tab shows another instance of `python cli_drei.py`, where a user registers as 'test3' and sends messages.

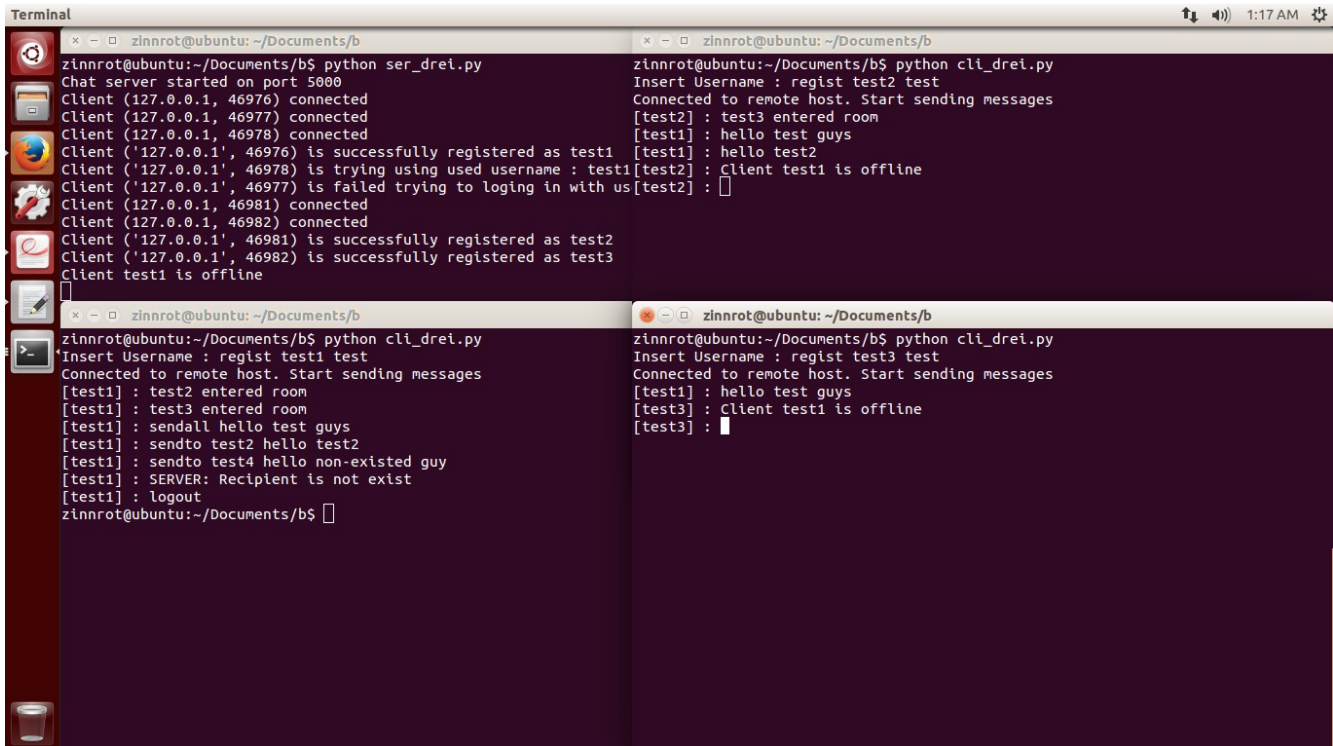
```
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46988) connected
Client (127.0.0.1, 46989) connected
Client (127.0.0.1, 46990) connected
Client ('127.0.0.1', 46990) is successfully registered as test1
Client ('127.0.0.1', 46988) is successfully registered as test2
Client ('127.0.0.1', 46989) is successfully registered as test3

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : list
[test1] :
SERVER:
> list :
- test1
- test2
- test3
[test1] :
```

“Tampilan saat fungsi list dipanggil”

4. Fungsi Log-out

Fungsi logout digunakan oleh user untuk keluar dari chat-room, walau telah keluar data nama user masih tersimpan pada server guna untuk masuk kembali melewati log-in



The screenshot shows a terminal window with two panes. The left pane displays the output of running `python ser_drel.py`, showing a chat server starting on port 5000 and handling several client connections and registrations. The right pane displays the output of running `python cli_drel.py`, showing a client interacting with the server, including logging in, sending messages, and logging out.

```
zinnrot@ubuntu:~/Documents/b$ python ser_drel.py
Chat server started on port 5000
Client (127.0.0.1, 46976) connected
Client (127.0.0.1, 46977) connected
Client (127.0.0.1, 46978) connected
Client ('127.0.0.1', 46976) is successfully registered as test1
Client ('127.0.0.1', 46978) is trying using used username : test1
Client ('127.0.0.1', 46977) is failed trying to logging in with us
Client (127.0.0.1, 46981) connected
Client (127.0.0.1, 46982) connected
Client ('127.0.0.1', 46981) is successfully registered as test2
Client ('127.0.0.1', 46982) is successfully registered as test3
Client test1 is offline

zinnrot@ubuntu:~/Documents/b$ python cli_drel.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : sendall hello test guys
[test1] : sendto test2 hello test2
[test1] : sendto test4 hello non-existed guy
[test1] : SERVER: Recipient is not exist
[test1] : logout
zinnrot@ubuntu:~/Documents/b$
```

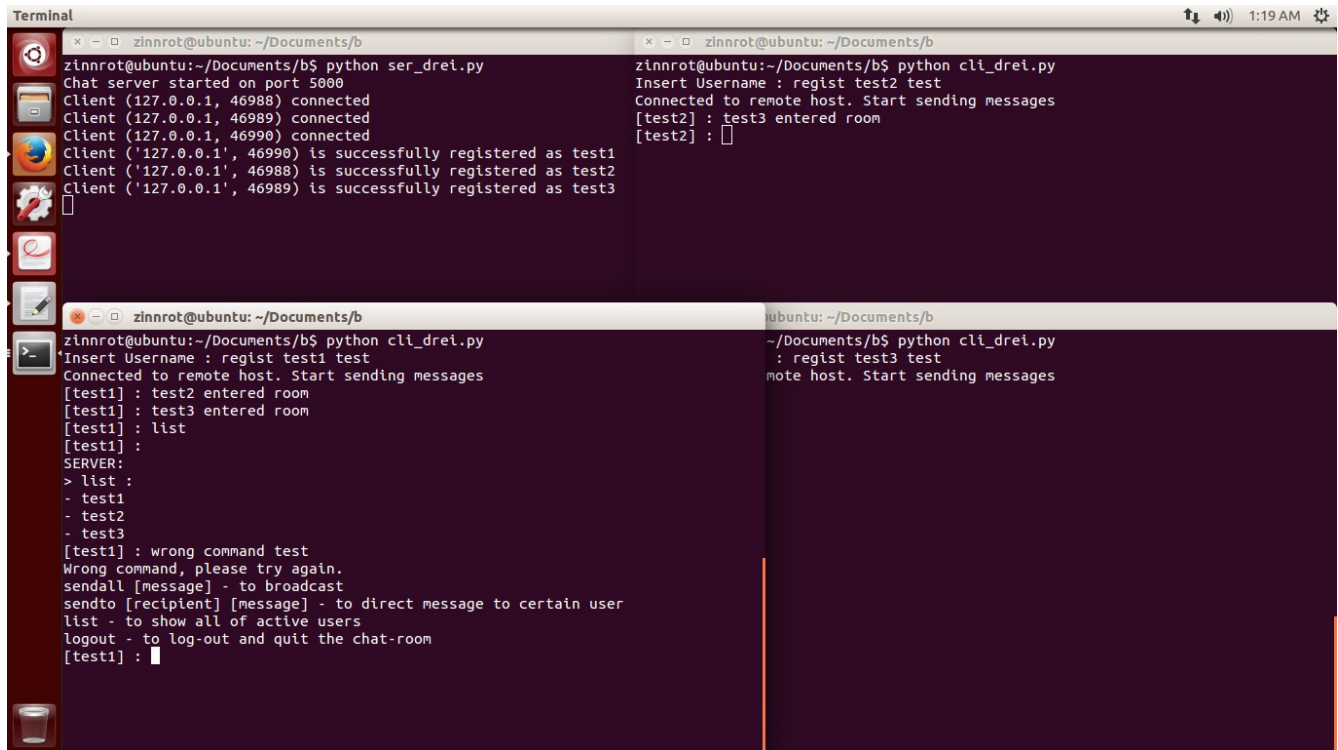
```
zinnrot@ubuntu:~/Documents/b$ python cli_drel.py
Insert Username : regist test2 test
Connected to remote host. Start sending messages
[test2] : test3 entered room
[test1] : hello test guys
[test1] : hello test2
[test2] : client test1 is offline
[test2] :
```

```
zinnrot@ubuntu:~/Documents/b$ python cli_drel.py
Insert Username : regist test3 test
Connected to remote host. Start sending messages
[test1] : hello test guys
[test3] : client test1 is offline
[test3] :
```

“Tampilan pada saat dilakukan logout oleh user:Test1”

5. Lain-lain

Jika user menggunakan command yang tidak ada pada daftar diatas, server akan handle dengan cara mengirim daftar fungsi yang ada. Hal ini dapat terjadi apabila server membaca command yang tidak dikenal.



```
Terminal
zinnrot@ubuntu: ~/Documents/b
zinnrot@ubuntu:~/Documents/b$ python ser_drei.py
Chat server started on port 5000
Client (127.0.0.1, 46988) connected
Client (127.0.0.1, 46989) connected
Client (127.0.0.1, 46990) connected
Client ('127.0.0.1', 46990) is successfully registered as test1
Client ('127.0.0.1', 46988) is successfully registered as test2
Client ('127.0.0.1', 46989) is successfully registered as test3

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test2 test
Connected to remote host. Start sending messages
[test2] : test3 entered room
[test2] :

zinnrot@ubuntu:~/Documents/b$ python cli_drei.py
Insert Username : regist test1 test
Connected to remote host. Start sending messages
[test1] : test2 entered room
[test1] : test3 entered room
[test1] : list
[test1] :
SERVER:
> list :
- test1
- test2
- test3
[test1] : wrong command test
Wrong command, please try again.
sendall [message] - to broadcast
sendto [recipient] [message] - to direct message to certain user
list - to show all of active users
logout - to log-out and quit the chat-room
[test1] :
```

“Tampilan yang terjadi apa bila command tidak dikenal dimasukan oleh user”