

CS 359

COMPUTER NETWORK LAB

ASSIGNMENT 5

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Multi Threaded Server

A multithreaded server that can open concurrent connections with more than one client.

Demo

Running server.py script:

The screenshot displays a code editor with a menu bar (File, Edit, Selection, View, Go, Run, Terminal, Help) and a sidebar with icons for file operations, search, and testing. The main editor area shows a Python script named `server.py` with the following content:

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[+] Listening as 0.0.0.0:1234
```

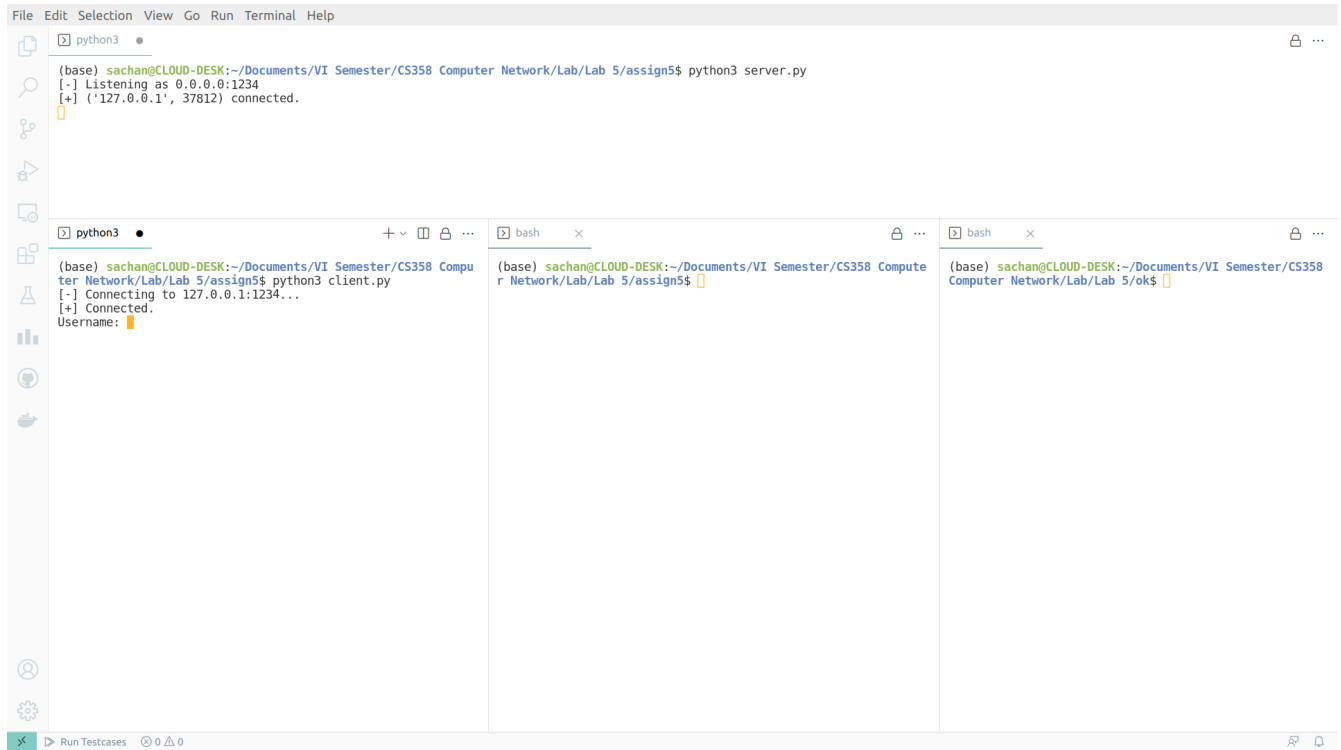
Below the code editor, there are three terminal windows, each with a title bar indicating the current shell is `bash`. The first terminal window shows the same command and output as the code editor. The second and third terminal windows show the same command and output, but the output is truncated, showing only the first line of the output.

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$
```

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$
```

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok$
```

Running client.py script for 1st client (Mango):



The screenshot shows a terminal window with three tabs. The first tab, titled 'python3', shows the output of a Python server script. The second tab, titled 'bash', shows the command 'python3 client.py' being executed. The third tab, titled 'bash', shows the command 'python3 client.py' being executed. The terminal output shows the server listening on 0.0.0.0:1234 and a client connecting from 127.0.0.1:37812. The client script is then executed, and the server output shows the client connecting and sending a message.

```
File Edit Selection View Go Run Terminal Help

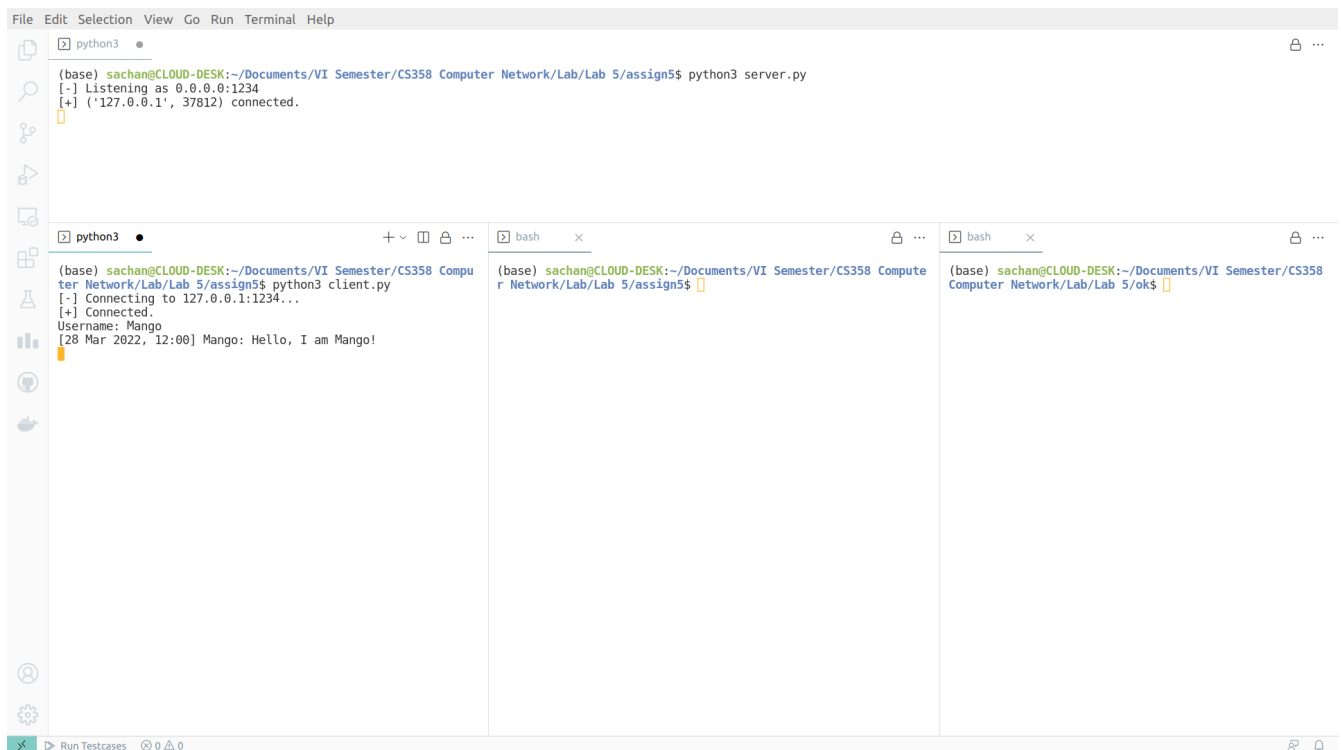
python3
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[-] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.

python3
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username:

bash
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$

bash
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok$
```

Inserting username and text by 1st client (Mango):



The screenshot shows a terminal window with three tabs. The first tab, titled 'python3', shows the output of a Python server script. The second tab, titled 'bash', shows the command 'python3 client.py' being executed. The third tab, titled 'bash', shows the command 'python3 client.py' being executed. The terminal output shows the server listening on 0.0.0.0:1234 and a client connecting from 127.0.0.1:37812. The client script is then executed, and the server output shows the client connecting and sending a message. The client script is then executed again, and the server output shows the client connecting and sending a message.

```
File Edit Selection View Go Run Terminal Help

python3
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[-] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.

python3
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!

bash
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$

bash
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok$
```

Running client.py for 2nd client (Orange):

The screenshot shows a terminal window with three tabs: 'python3', 'python3', and 'bash'. The first 'python3' tab shows a server running 'python3 server.py' which is listening on 0.0.0.0:1234. It has received two connections: one from 127.0.0.1:37812 and another from 127.0.0.1:37814. The second 'python3' tab shows a client running 'python3 client.py' which is connecting to 127.0.0.1:1234. It has successfully connected and is prompted for a username. The third 'bash' tab shows the same client prompt. The terminal window has a menu bar with 'File', 'Edit', 'Selection', 'View', 'Go', 'Run', 'Terminal', and 'Help'. The status bar at the bottom shows 'Run Testcases' and '0 0 0'.

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[+] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.
[+] ('127.0.0.1', 37814) connected.

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[+] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!
```

Entering the username and text by 2nd client (Orange):

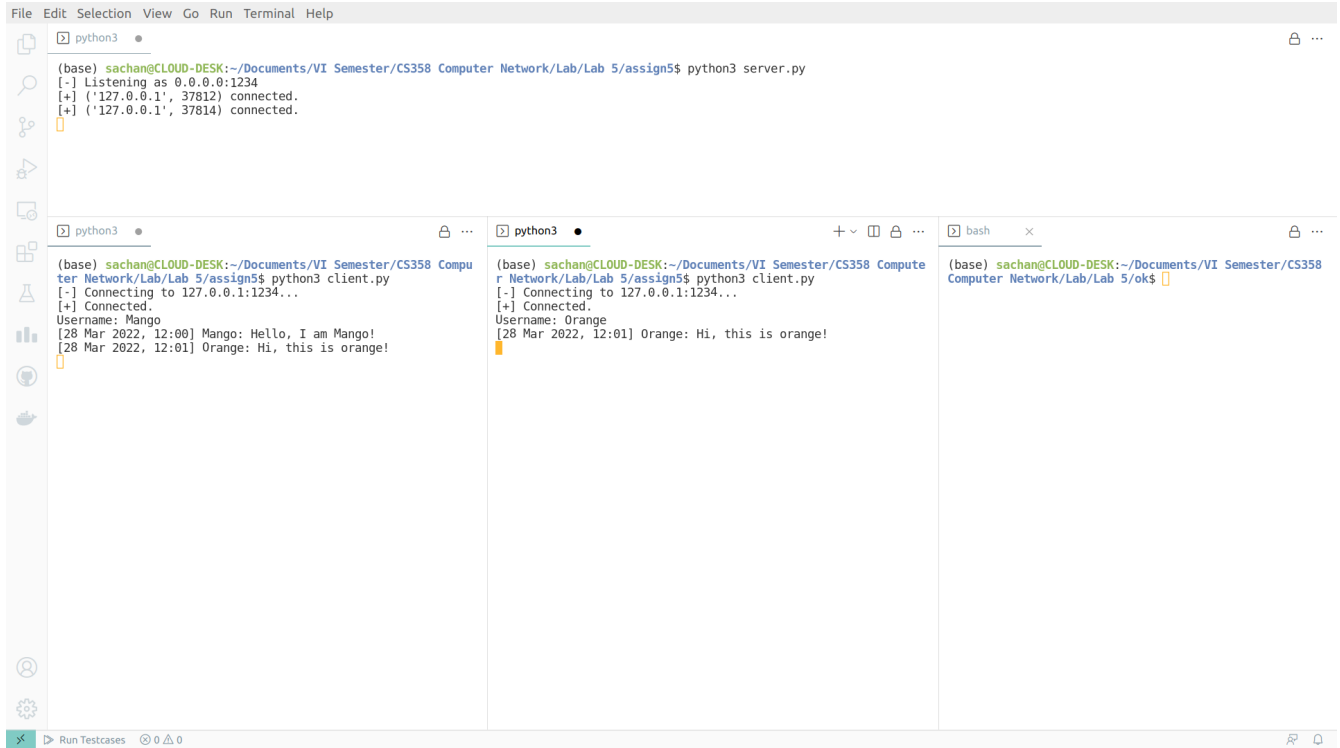
The screenshot shows the same terminal window as before, but with the second 'python3' tab now showing the client's input. The client has entered the username 'Orange' and the text 'Hi, this is orange!'. The third 'bash' tab remains empty. The terminal window has a menu bar with 'File', 'Edit', 'Selection', 'View', 'Go', 'Run', 'Terminal', and 'Help'. The status bar at the bottom shows 'Run Testcases' and '0 0 0'.

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[+] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.
[+] ('127.0.0.1', 37814) connected.

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[+] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!
```

```
(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[+] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Orange
Hi, this is orange!
```

Sending this text to server broadcasts it to all clients:



```
File Edit Selection View Go Run Terminal Help

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[-] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.
[+] ('127.0.0.1', 37814) connected.

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!
[28 Mar 2022, 12:01] Orange: Hi, this is orange!

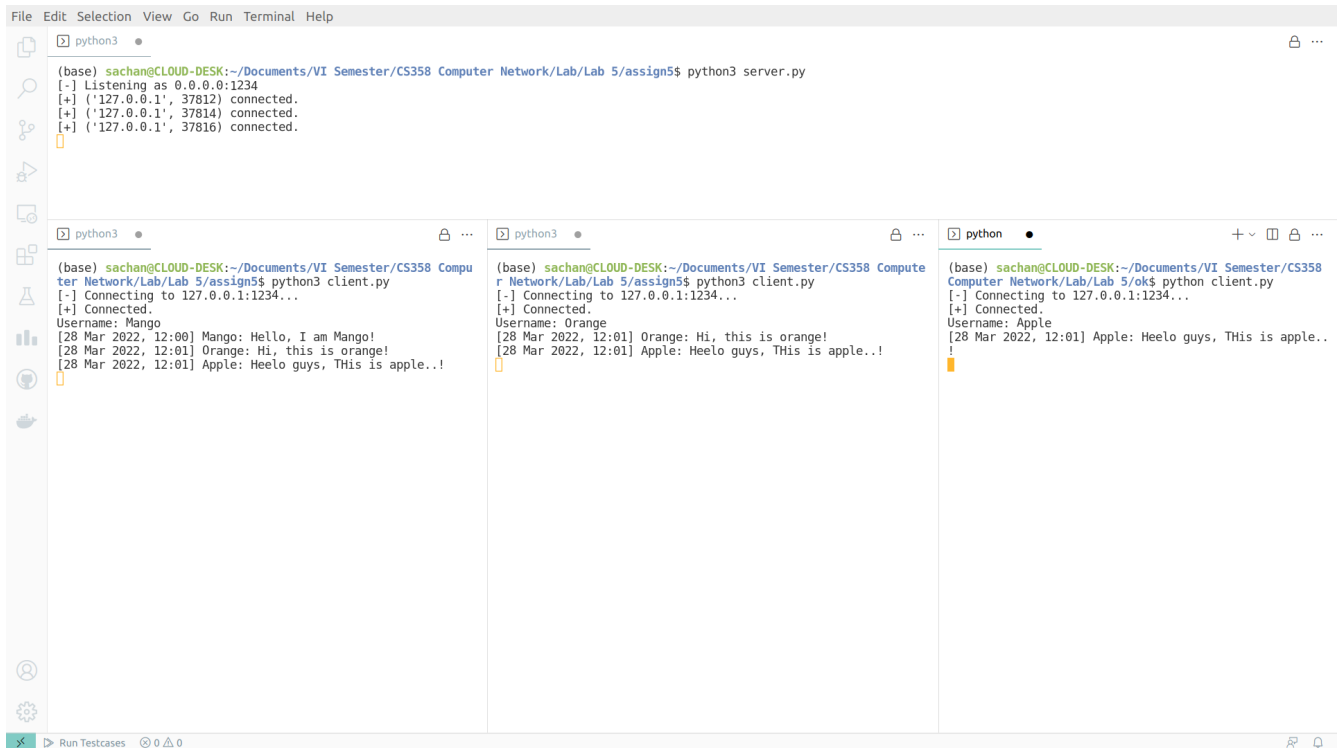
python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Orange
[28 Mar 2022, 12:01] Orange: Hi, this is orange!

bash

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok$
```

Running client.py for 3rd client (Apple), sending a text and broadcasting it through all clients:



```
File Edit Selection View Go Run Terminal Help

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 server.py
[-] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.
[+] ('127.0.0.1', 37814) connected.
[+] ('127.0.0.1', 37816) connected.

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!
[28 Mar 2022, 12:01] Orange: Hi, this is orange!
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5$ python3 client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Orange
[28 Mar 2022, 12:01] Orange: Hi, this is orange!
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!

python

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok$ python client.py
[-] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Apple
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!

!
```

1st client (Mango) sends another message:

FileEditSelectionViewGoRunTerminalHelp

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5\$ python3 server.py
[.] Listening as 0.0.0.0:1234
[+] ('127.0.0.1', 37812) connected.
[+] ('127.0.0.1', 37814) connected.
[+] ('127.0.0.1', 37816) connected.
[]

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5\$ python3 client.py
[.] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Mango
[28 Mar 2022, 12:00] Mango: Hello, I am Mango!
[28 Mar 2022, 12:01] Orange: Hi, this is orange!
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!
[28 Mar 2022, 12:01] Mango: Welcometo chat app!
[]

python3

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/assign5\$ python3 client.py
[.] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Orange
[28 Mar 2022, 12:01] Orange: Hi, this is orange!
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!
[28 Mar 2022, 12:01] Mango: Welcometo chat app!
[]

python

(base) sachan@CLOUD-DESK:~/Documents/VI Semester/CS358 Computer Network/Lab/Lab 5/ok\$ python client.py
[.] Connecting to 127.0.0.1:1234...
[+] Connected.
Username: Apple
[28 Mar 2022, 12:01] Apple: Heelo guys, This is apple..!
[28 Mar 2022, 12:01] Mango: Welcometo chat app!
[]

Run Testcases