Distributed Systems

Lab 4

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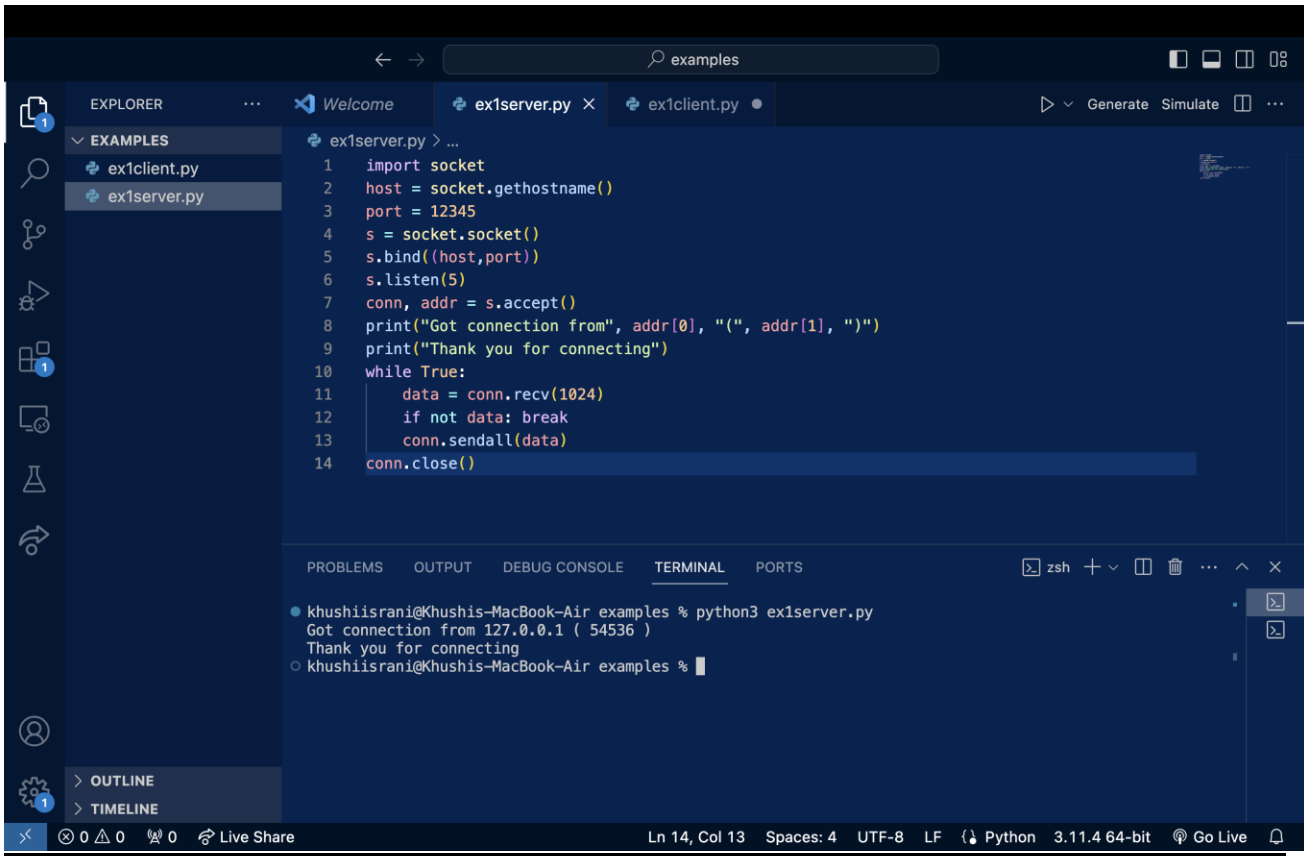
Sem – VI

Section – A

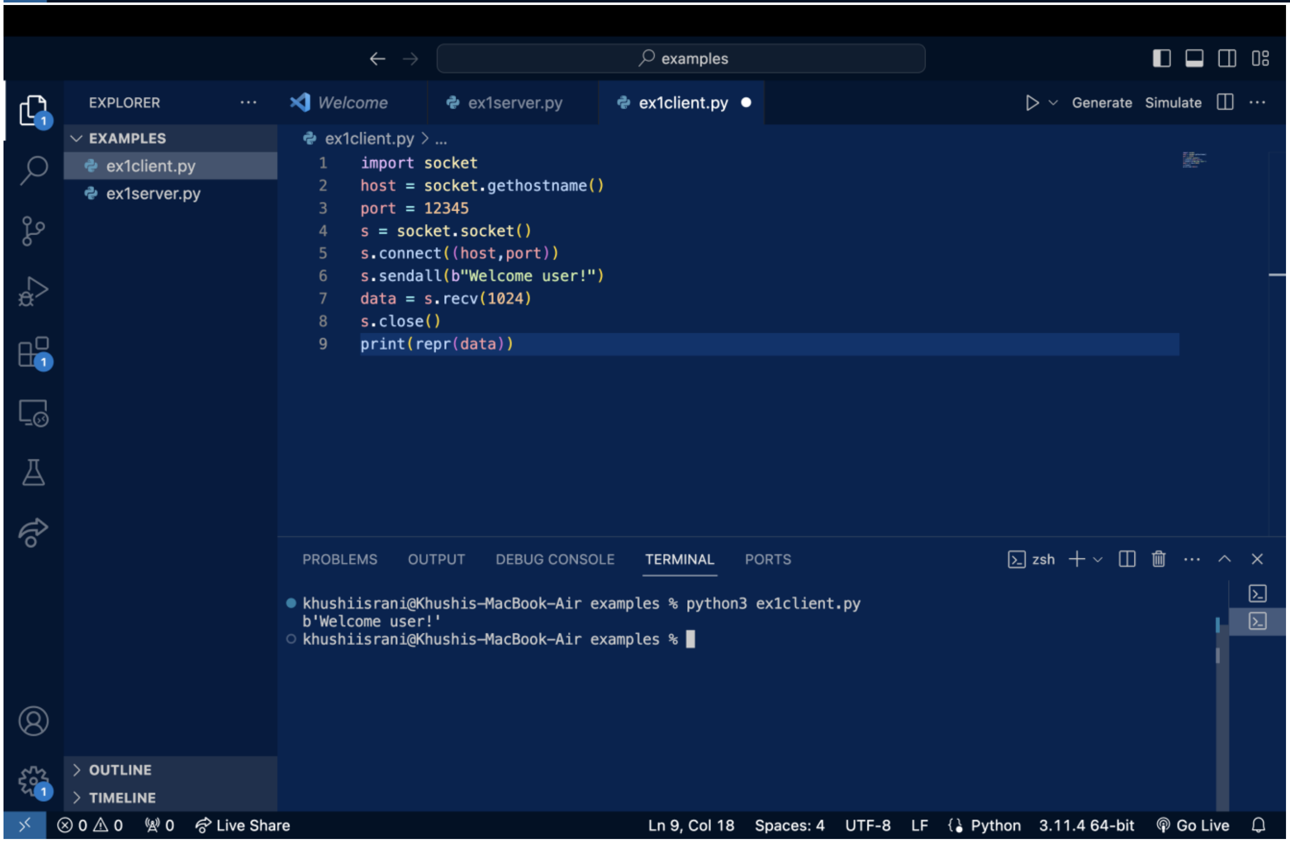
Roll No. - 25

Ex1)



```python
import socket
host = socket.gethostname()
port = 12345
s = socket.socket()
s.bind((host,port))
s.listen(5)
conn, addr = s.accept()
print("Got connection from", addr[0], "(", addr[1], ")")
print("Thank you for connecting")
while True:
    data = conn.recv(1024)
    if not data: break
    conn.sendall(data)
conn.close()
```

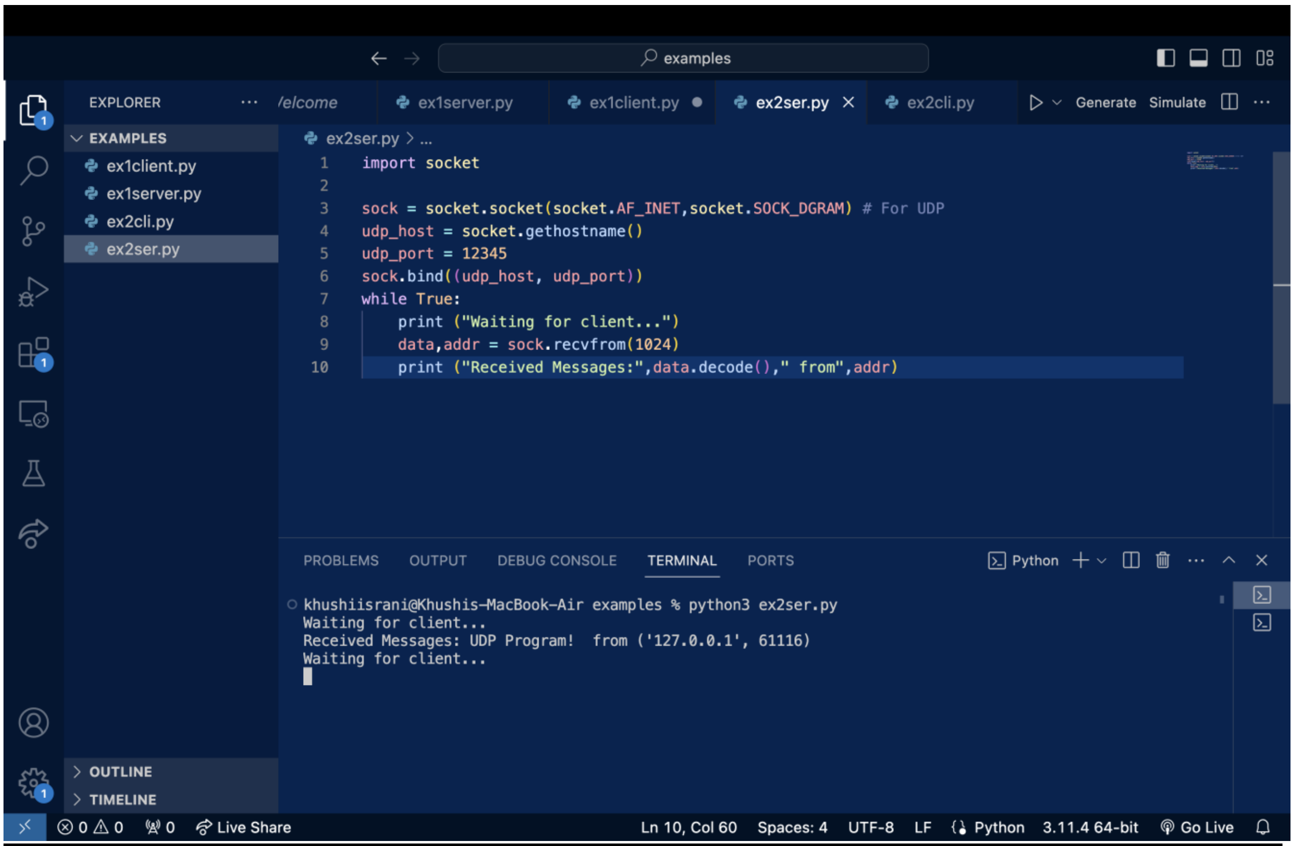
```
khushiisrani@Khushis-MacBook-Air examples % python3 ex1server.py
Got connection from 127.0.0.1 ( 54536 )
Thank you for connecting
khushiisrani@Khushis-MacBook-Air examples %
```



```python
import socket
host = socket.gethostname()
port = 12345
s = socket.socket()
s.connect((host,port))
s.sendall(b"Welcome user!")
data = s.recv(1024)
s.close()
print(repr(data))
```

```
khushiisrani@Khushis-MacBook-Air examples % python3 ex1client.py
b'Welcome user!'
khushiisrani@Khushis-MacBook-Air examples %
```

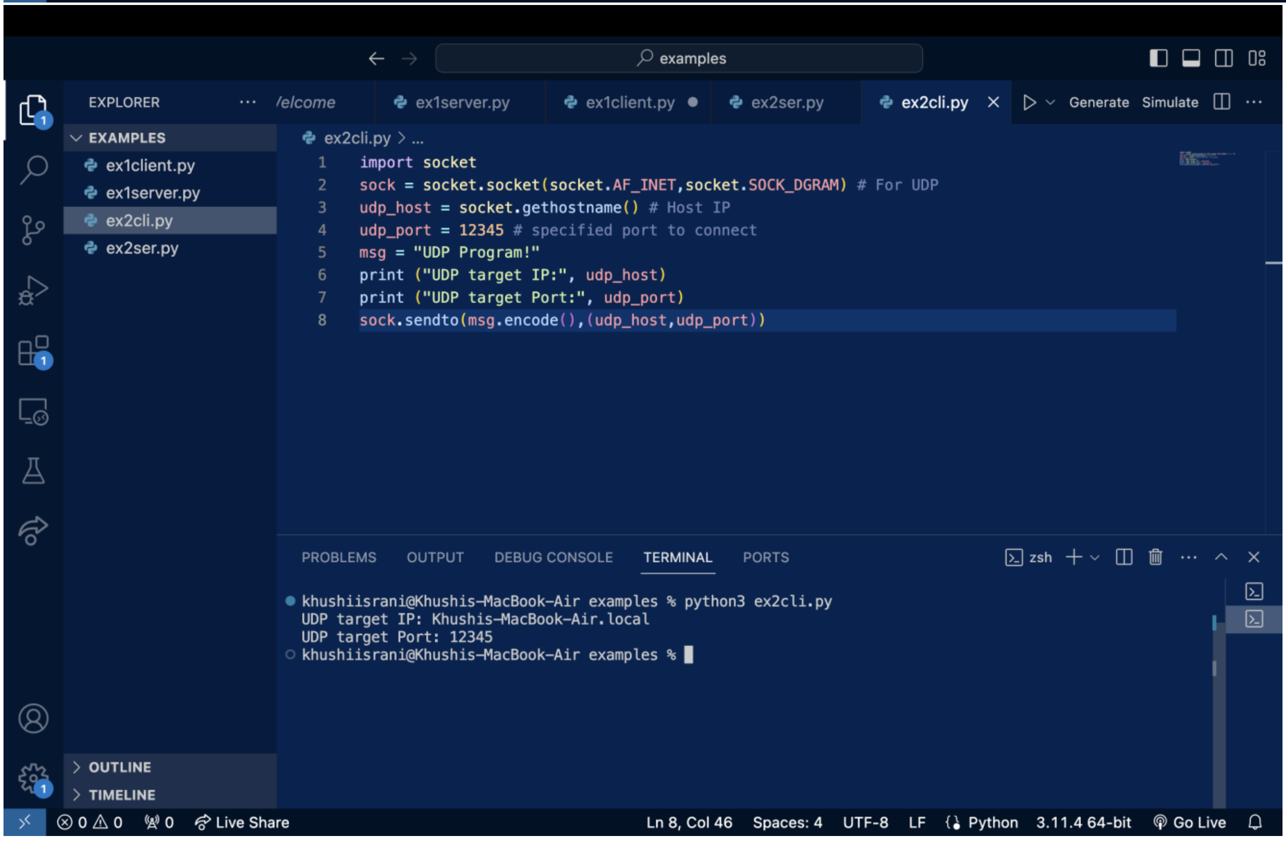
Ex2)



```python
import socket

sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM) # For UDP
udp_host = socket.gethostname()
udp_port = 12345
sock.bind((udp_host, udp_port))
while True:
    print ("Waiting for client...")
    data,addr = sock.recvfrom(1024)
    print ("Received Messages:",data.decode()," from",addr)
```

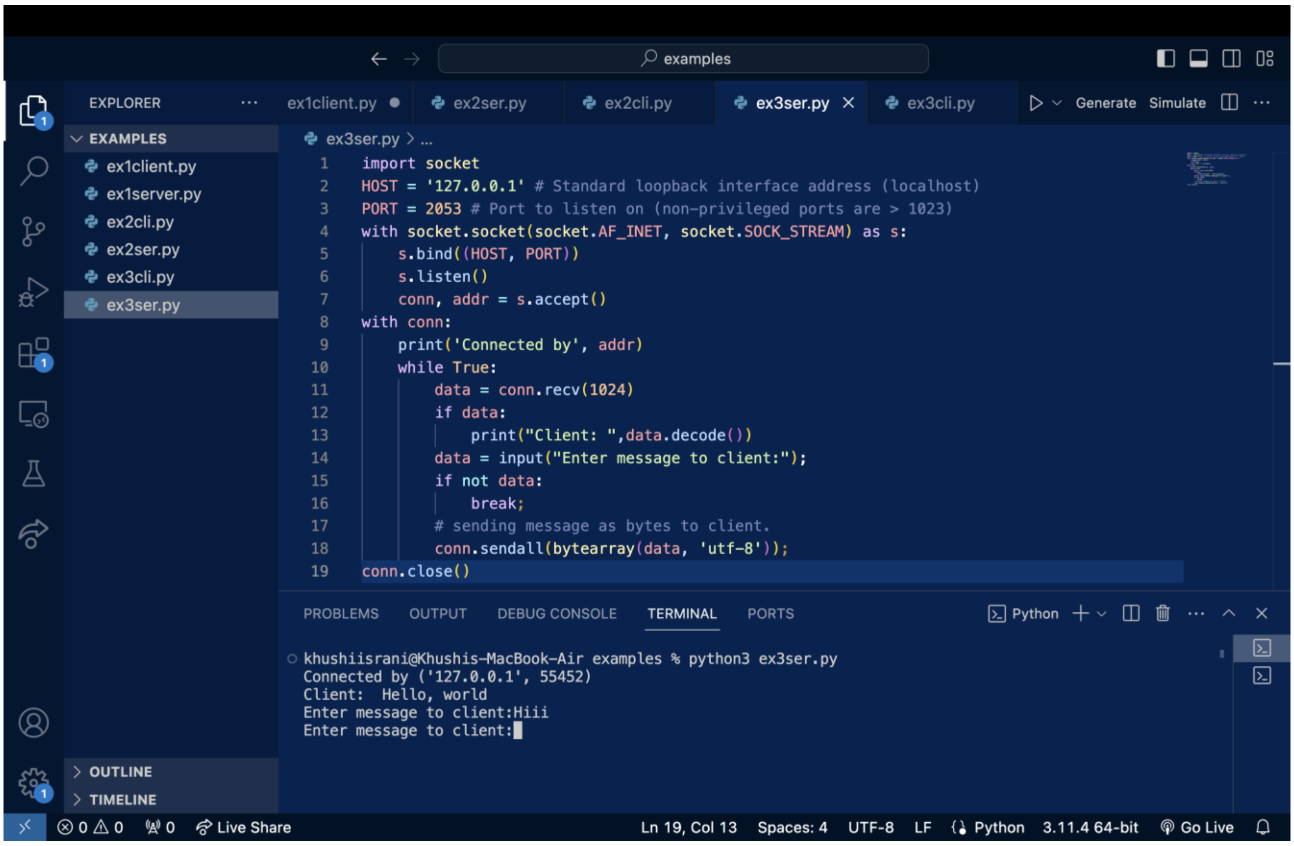
```
khushiisrani@Khushis-MacBook-Air examples % python3 ex2ser.py
Waiting for client...
Received Messages: UDP Program!  from ('127.0.0.1', 61116)
Waiting for client...
```



```python
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM) # For UDP
udp_host = socket.gethostname() # Host IP
udp_port = 12345 # specified port to connect
msg = "UDP Program!"
print ("UDP target IP:", udp_host)
print ("UDP target Port:", udp_port)
sock.sendto(msg.encode(),(udp_host,udp_port))
```

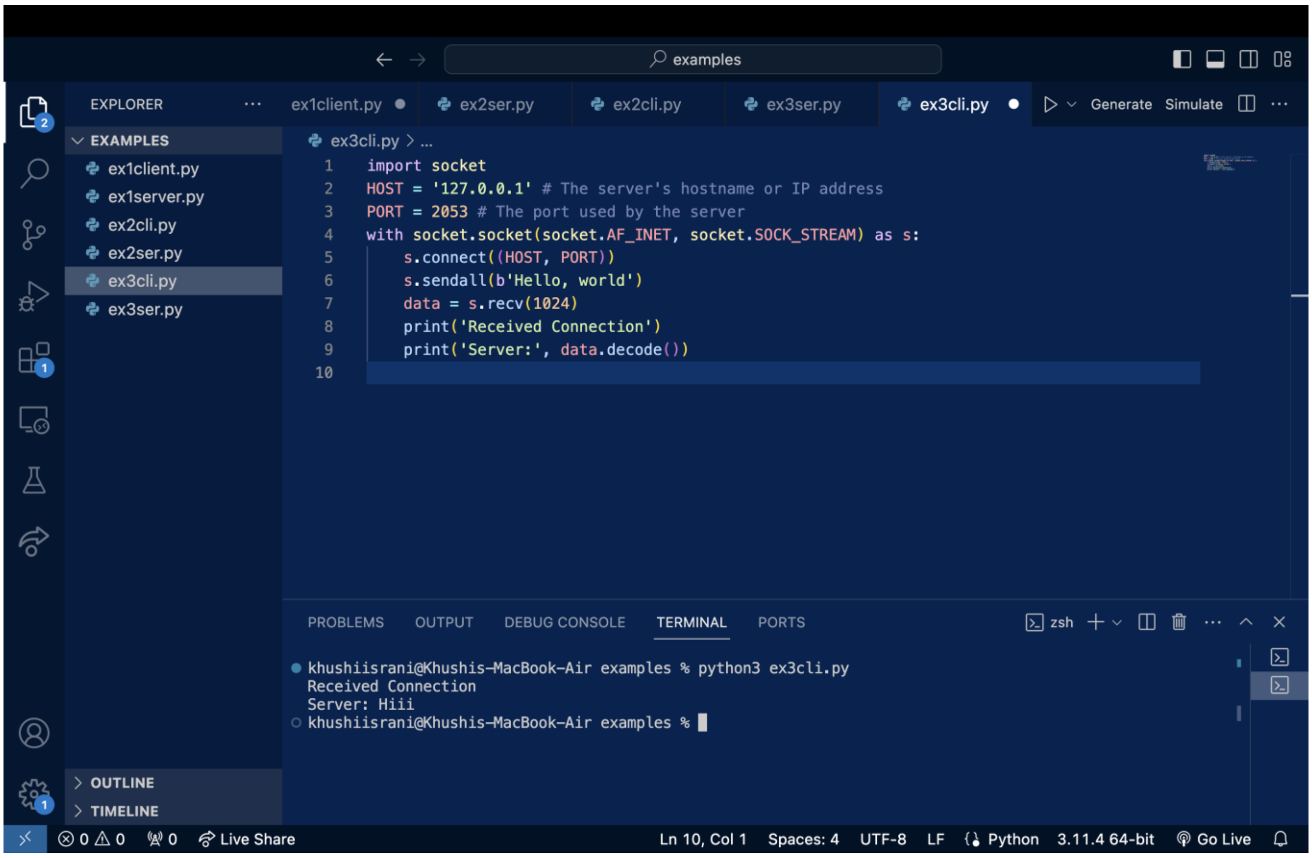
```
khushiisrani@Khushis-MacBook-Air examples % python3 ex2cli.py
UDP target IP: Khushis-MacBook-Air.local
UDP target Port: 12345
khushiisrani@Khushis-MacBook-Air examples %
```

Ex3)



```python
import socket
HOST = '127.0.0.1' # Standard loopback interface address (localhost)
PORT = 2053 # Port to listen on (non-privileged ports are > 1023)
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.bind((HOST, PORT))
    s.listen()
    conn, addr = s.accept()
with conn:
    print('Connected by', addr)
    while True:
        data = conn.recv(1024)
        if data:
            print("Client: ",data.decode())
        data = input("Enter message to client:");
        if not data:
            break;
        # sending message as bytes to client.
        conn.sendall(bytearray(data, 'utf-8'));
conn.close()
```

```
khushiisrani@Khushis-MacBook-Air examples % python3 ex3ser.py
Connected by ('127.0.0.1', 55452)
Client:  Hello, world
Enter message to client:Hiii
Enter message to client:
```

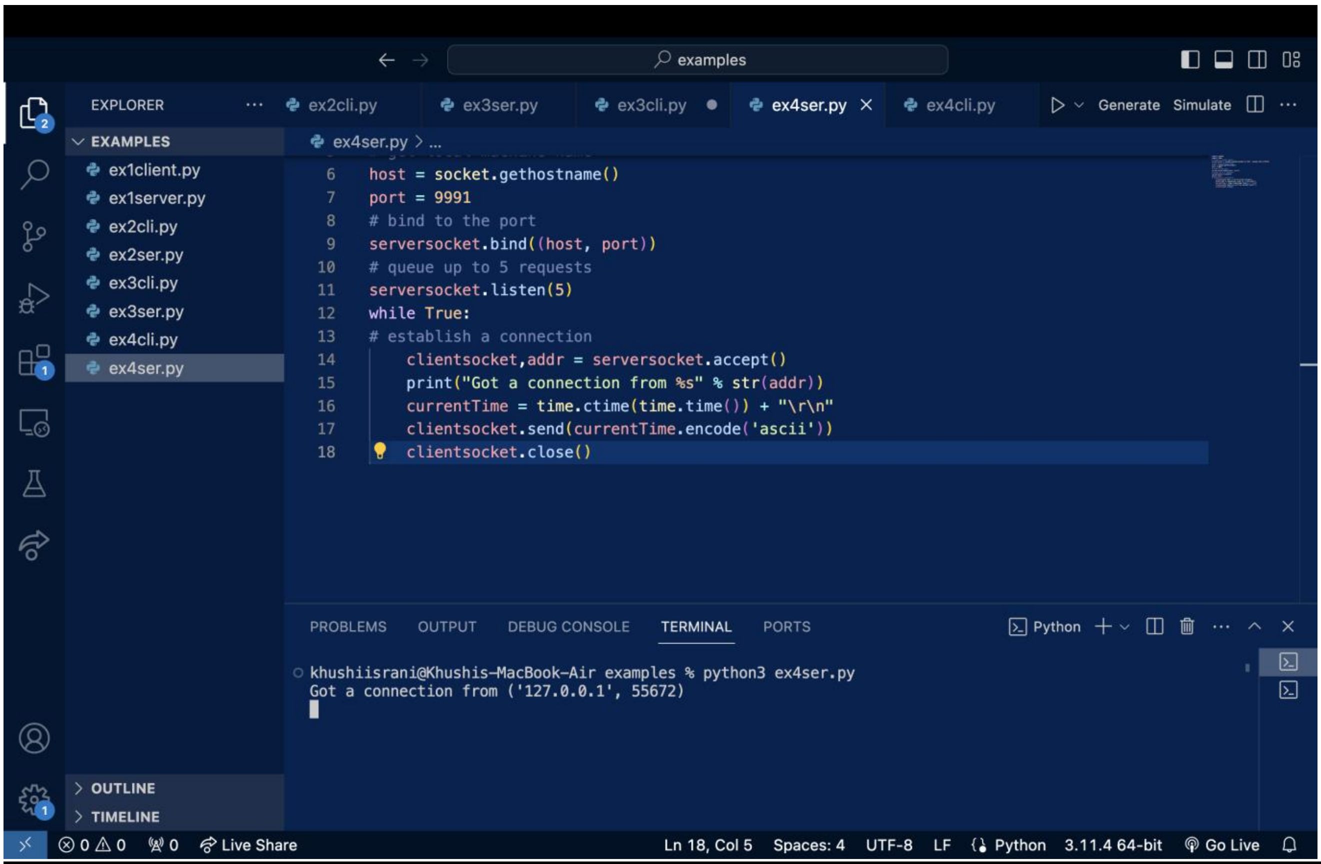


```python
import socket
HOST = '127.0.0.1' # The server's hostname or IP address
PORT = 2053 # The port used by the server
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.connect((HOST, PORT))
    s.sendall(b'Hello, world')
    data = s.recv(1024)
    print('Received Connection')
    print('Server:', data.decode())

```

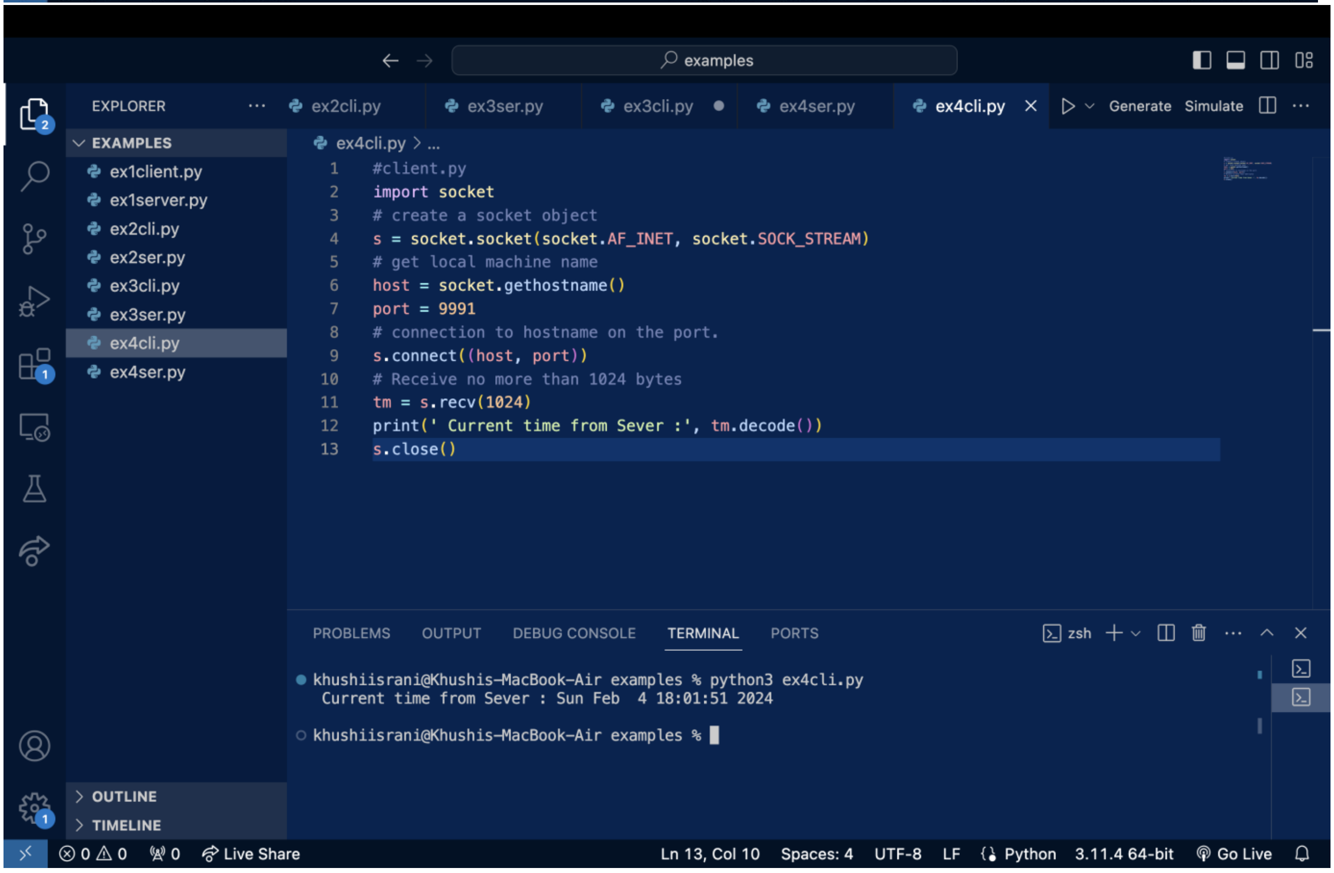
```
khushiisrani@Khushis-MacBook-Air examples % python3 ex3cli.py
Received Connection
Server: Hiii
khushiisrani@Khushis-MacBook-Air examples %
```

Ex4)



```python
host = socket.gethostname()
port = 9991
# bind to the port
serversocket.bind((host, port))
# queue up to 5 requests
serversocket.listen(5)
while True:
# establish a connection
    clientsocket,addr = serversocket.accept()
    print("Got a connection from %s" % str(addr))
    currentTime = time.ctime(time.time()) + "\r\n"
    clientsocket.send(currentTime.encode('ascii'))
    clientsocket.close()
```

```
khushiisrani@Khushis-MacBook-Air examples % python3 ex4ser.py
Got a connection from ('127.0.0.1', 55672)
```



```python
#client.py
import socket
# create a socket object
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
# get local machine name
host = socket.gethostname()
port = 9991
# connection to hostname on the port.
s.connect((host, port))
# Receive no more than 1024 bytes
tm = s.recv(1024)
print(' Current time from Sever :', tm.decode())
s.close()
```

```
khushiisrani@Khushis-MacBook-Air examples % python3 ex4cli.py
 Current time from Sever : Sun Feb  4 18:01:51 2024

khushiisrani@Khushis-MacBook-Air examples %
```

Ex5)

<u>Server program</u>

```
# server.py

import socket

HOST = '127.0.0.1' # Standard loopback interface address (localhost)

PORT = 12345 # Port to listen on (non-privileged ports are > 1023)

s = socket.socket()

s.bind((HOST, PORT))

s.listen()

print("\nWaiting for incoming connections...\n")

conn, addr = s.accept()

print("Received connection from ", addr[0], "(", addr[1], ")\n")

s_name = conn.recv(1024)

s_name = s_name.decode()

print(s_name, "has connected to the chat room\nEnter [e] to exit chat room\n")

name = input(str("Enter your name: "))

conn.send(name.encode())

while True:

message = input(str("Me : "))

if message == "[e]":

message = "Left chat room!"

conn.send(message.encode())

print("\n")

break

conn.send(message.encode())

message = conn.recv(1024)

message = message.decode()

print(s_name, ":", message)
```

<u>Client program</u>

```
import socket

HOST = '127.0.0.1' # Standard loopback interface address (localhost)

PORT = 12345 # Port to listen on (non-privileged ports are > 1023)

s = socket.socket()

name = input(str("\nEnter your name: "))

print("\nTrying to connect to ", HOST, "(", PORT, ")\n")

s.connect((HOST, PORT))

print("Connected...\n")

s.send(name.encode())

s_name = s.recv(1024)

s_name = s_name.decode()

print(s_name, "has joined the chat room\nEnter [e] to exit chat room\n")

while True:

message = s.recv(1024)

message = message.decode()

print(s_name, ":", message)

message = input(str("Me : "))

if message == "[e]":

message = "Left chat room!"

s.send(message.encode())

print("\n")

break

s.send(message.encode())
```

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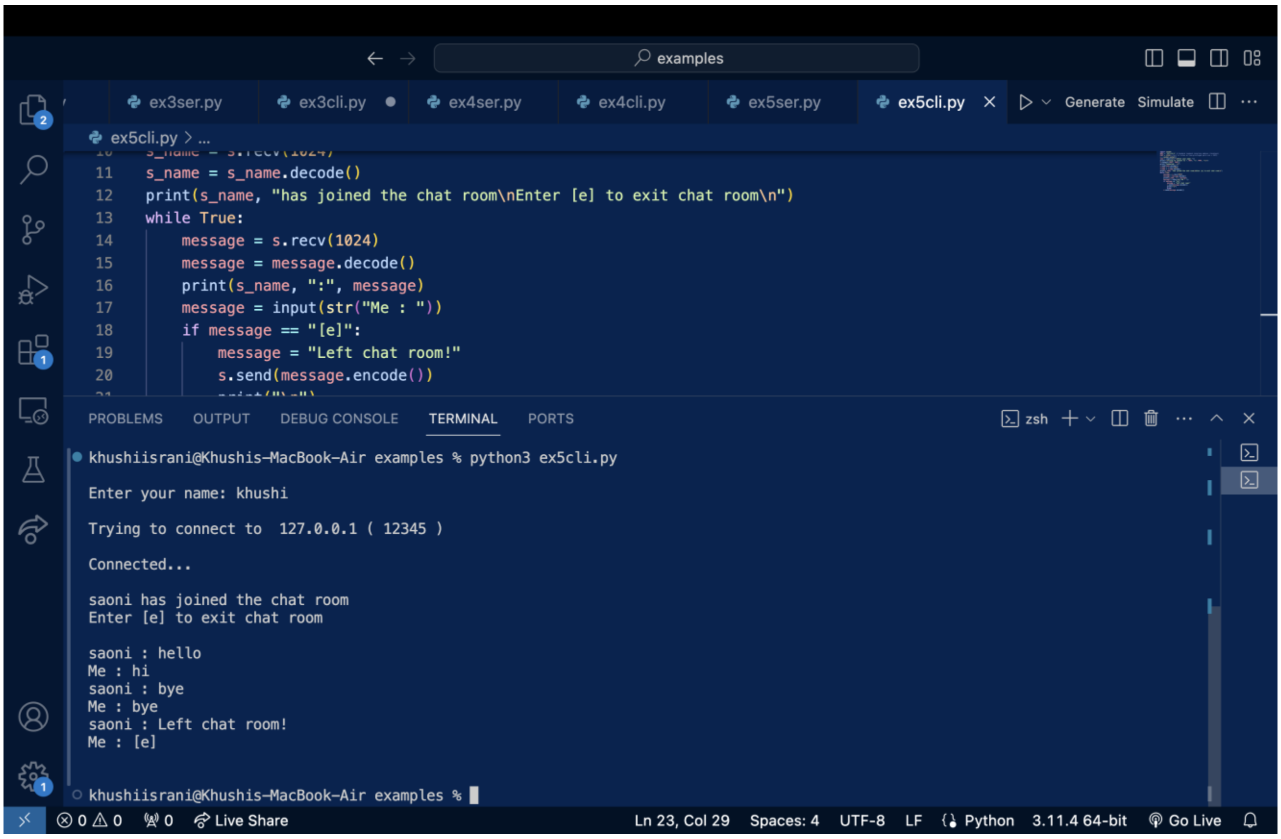

```python
s_name = s_name.decode()
print(s_name, "has joined the chat room\nEnter [e] to exit chat room\n")
while True:
    message = s.recv(1024)
    message = message.decode()
    print(s_name, ":", message)
    message = input(str("Me : "))
    if message == "[e]":
        message = "Left chat room!"
        s.send(message.encode())
```

```
khushiisrani@Khushis-MacBook-Air examples % python3 ex5cli.py

Enter your name: khushi

Trying to connect to  127.0.0.1 ( 12345 )

Connected...

saoni has joined the chat room
Enter [e] to exit chat room

saoni : hello
Me : hi
saoni : bye
Me : bye
saoni : Left chat room!
Me : [e]

khushiisrani@Khushis-MacBook-Air examples %
```

Ex6)

Server program

```python
import socket

import os

from _thread import *


ServerSocket = socket.socket()

host = '127.0.0.1'

port = 11596

ThreadCount = 0

try:

ServerSocket.bind((host, port))

except socket.error as e:

print(str(e))


print('Waiting for a Connection..')
```

```
ServerSocket.listen(5)


def threaded_client(connection):
connection.send(str.encode('Welcome to the Server'))
while True:
data = connection.recv(2048)
print('Received from client :' + str(ThreadCount)+data.decode())
Inputs = input('Server Says: ')
if not data:
break
connection.sendall(Inputs.encode())
connection.close()
while True:
Client, address = ServerSocket.accept()
print('Connected to: ' + address[0] + ':' + str(address[1]))
start_new_thread(threaded_client, (Client, ))
ThreadCount += 1
print('Thread Number: ' + str(ThreadCount))
ServerSocket.close()
```

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⊗ 0 ⚠ 0 0 Live Share Ln 17, Col 1 Spaces: 4 UTF-8 LF Python 3.11.4 64-bit Go Live