

Server Code:

```
import socket

import random

s=socket.socket(socket.AF_INET,socket.SOCK_STREAM)

host = socket.gethostname()

port = 1255

server = 'ManojvServer'

s.bind((host,port))

s.listen(5)

socketclient, address = s.accept()

print("got connection from ",address)

con = True


print(server)

print(random.randint(0,100))

while con:

    msg = socketclient.recv(1024)

    msg = msg.decode("utf-8")

    num = input()

    print(msg)


if(con == "quit"):

    s.close()
```

The screenshot shows the Visual Studio Code interface with a file explorer on the left containing 'Server.py', 'client.py', and 'server.py'. The main editor displays the code for 'Server.py' (lines 27-38). Below the editor is a terminal window running Windows PowerShell. The terminal shows the command to run 'Server.py' and the output indicating a successful connection from '172.27.28.170' on port 57209.

```
27
28 import socket
29 import random
30 s=socket.socket(socket.AF_INET,socket.SOCK_STREAM)
31 host = socket.gethostname()
32 port = 1255
33 server = 'ManojvServer'
34 s.bind((host,port))
35 s.listen(5)
36 socketclient, address = s.accept()
37 print("got connection from ",address)
38 con = True
```

Windows PowerShell  
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PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming> python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB 3\Server.py"

got connection from ('172.27.28.170', 57209)  
ManojvServer  
47

Client Code :

```
import socket
```

```
import random
```

```
s=socket.socket(socket.AF_INET,socket.SOCK_STREAM)
```

```
host = socket.gethostname()
```

```
port = 1255
```

```
server = 'ManojvServer'
```

```
s.bind((host,port))
```

```
s.listen(5)
```

```
socketclient, address = s.accept()
```

```
print("got connection from ",address)
```

```
con = True
```

```
print(server)
```

```
print(random.randint(0,100))
```

```
while con:
```

```
    msg = socketclient.recv(1024)
```

```
    msg = msg.decode("utf-8")
```

```
    num = input()
```

```
    print(msg)
```

```
if(con=="quit"):
```

```
    s.close()
```

The screenshot shows the Visual Studio Code interface with the file 'Client.py' open. The code is a Python script for a client that connects to a server at a specific host and port (1255). It prompts the user to enter a message and sends it over the socket. The terminal window shows the command to run the script and the user's input 'hello'.

```
Client.py > ...
15 import socket
16 s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
17 host = socket.gethostname()
18 port = 1255
19 s.connect((host,port))
20 con = True
21 while con:
22     msg = input("Enter message: ")
23     s.send(msg.encode("utf-8"))
24     if msg == "quit":
25         s.close()
26
```

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PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3> python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3\client.py"  
Enter message: hello

The screenshot shows the Visual Studio Code interface with the file 'Server.py' open. The code is a Python script for a server that listens for connections on a specific port (1255). It prints the server address and a random number, then receives and prints the message from the client. The terminal window shows the command to run the script and the output of the server and client interaction.

```
Server.py > ...
34 server = 'ManojvServer'
35 s.bind((host,port))
36 s.listen(5)
37 socketclient, address = s.accept()
38 print("got connection from ",address)
39
40 print(server)
41 print(random.randint(0,100))
42 con = True
43 while con:
44     msg = socketclient.recv(1024)
45     msg = msg.decode("utf-8")
46     num = input()
```

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming> python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3\Server.py"  
got connection from ('172.27.28.170', 57515)  
ManojvServer  
86  
python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3\Server.py"  
hello

Question 2

```

import socket

import threading


HEADER = 64

PORT = 5050

SERVER = socket.gethostbyname(socket.gethostname())

ADDR = (SERVER, PORT)

FORMAT = 'utf-8'

DISCONNECT_MESSAGE = "!DISCONNECT"


server = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

server.bind(ADDR)


def handle_client(conn, addr):

    print(f"[NEW CONNECTION] {addr} connected.")


    connected = True

    while connected:

        msg_length = conn.recv(HEADER).decode(FORMAT)

        if msg_length:

            msg_length = int(msg_length)

            msg = conn.recv(msg_length).decode(FORMAT)

            if msg == DISCONNECT_MESSAGE:

```

```

        connected = False

    print(f"[{addr}] {msg}")

    conn.send("Msg received".encode(FORMAT))

conn.close()

def start():
    server.listen()

    print(f"[LISTENING] Server is listening on {SERVER}")

    while True:
        conn, addr = server.accept()

        thread = threading.Thread(target=handle_client, args=(conn, addr))

        thread.start()

        print(f"[ACTIVE CONNECTIONS] {threading.activeCount() - 1}")

print("[STARTING] server is starting...")

start()

```

The screenshot shows a Visual Studio Code window with a file explorer on the left containing 'Server.py', 'client.py', and 'server.py'. The main editor displays the code for 'Server.py' with line numbers 55 to 66. The code imports 'socket' and 'threading', sets 'HEADER = 64' and 'PORT = 5050', gets the local hostname for 'SERVER', and binds a 'server' object to '(SERVER, PORT)'. The terminal at the bottom shows the command 'python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB 3\Server.py"' being executed, with output messages '[STARTING] server is starting...' and '[LISTENING] Server is listening on 172.27.20.170'.

```
55 import socket
56 import threading
57
58 HEADER = 64
59 PORT = 5050
60 SERVER = socket.gethostbyname(socket.gethostname())
61 ADDR = (SERVER, PORT)
62 FORMAT = 'utf-8'
63 DISCONNECT_MESSAGE = "!DISCONNECT"
64
65 server = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
66 server.bind(ADDR)
```

Windows PowerShell  
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PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming> python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB 3\Server.py"

[STARTING] server is starting...

[LISTENING] Server is listening on 172.27.20.170

Client code:

```
import socket
```

```
HEADER = 64
```

```
PORT = 5050
```

```
DISCONNECT_MESSAGE = "!DISCONNECT"
```

```
SERVER = "192.168.1.26"
```

```
ADDR = (SERVER, PORT)
```

```
client = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
```

```
client.connect(ADDR)
```

```
def send(msg):
```

```
message = msg.encode("utf-8")  
msg_length = len(message)  
send_length = str(msg_length).encode("utf-8")  
send_length += b' ' * (HEADER - len(send_length))  
client.send(send_length)  
client.send(message)  
print(client.recv(2048).decode("utf-8"))
```

```
send("Hello World!")  
input()  
send("Hello Everyone!")  
input()  
send("Hello Tim!")
```

```
send(DISCONNECT_MESSAGE)
```



The image shows a Visual Studio Code editor window with a file named 'Client.py' open. The code in the editor is as follows:

```
38 client.connect(AJUK)
39
40
41 def send(msg):
42     message = msg.encode("utf-8")
43     msg_length = len(message)
44     send_length = str(msg_length).encode("utf-8")
45     send_length += b' ' * (HEADER - len(send_length))
46     client.send(send_length)
47     client.send(message)
48     print(client.recv(2048).decode("utf-8"))
49
50
```

The terminal window at the bottom shows the command prompt output:

```
PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3> python -u "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programmin
g\LAB3\Client.py"
Traceback (most recent call last):
  File "c:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3\Client.py", line 38, in <module>
    client.connect(AJUK)
TimeoutError: [WinError 10060] A connection attempt failed because the connected party did not properly respond after a period of time, or established connection
failed because connected host has failed to respond
PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3> 12
PS C:\Users\Manoj Kumar\OneDrive\Desktop\VS Code\python\Socket Programming\LAB3>
```

The status bar at the bottom indicates the file is 'Client.py' in the 'LAB3' folder, with a Python 3.10.7 64-bit interpreter selected. The system tray shows the date and time as 24-01-2023, 16:08.