Bansilal Ramnath Agarwal Charitable Trust's

Vishwakarma Institute of Technology, Pune-37

Department Of Artificial Intelligence and Data Science

COMPUTER NETWORK

AI2003

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Write a program using TCP socket for wired network for following:
a. Say Hello to Each other b. File transfer c. Calculator (Arithmetic)

Code :

Server.py

```
import socket
import threading

# Server configurations
HOST = '127.0.0.1'
PORT = 1234

# Handle client communication
def handle_client(client_socket):
    try:
        # Send greeting
        client_socket.send(b"Server: Hello!")
        print("Server: Hello sent")

        # File transfer
        file_name = "server_file.txt"

        # Create a sample file
        with open(file_name, "wb") as f:
            f.write(b"This is a sample file content.")

        # Send the file
        with open(file_name, "rb") as f:
            data = f.read(1024)
            while data:
                client_socket.send(data)
                data = f.read(1024)

        # Send marker to indicate the end of file transfer
        client_socket.send(b"<END_FILE>")
        print("File sent")

        # Calculator
        while True:
            expression = client_socket.recv(1024).decode('utf-8')

            if expression.lower() == "exit":
                print("Client disconnected.")
```

```
            break

        try:
            result = str(eval(expression))
        except Exception as e:
            result = f"Error: {str(e)}"

        client_socket.send(result.encode('utf-8'))

    except Exception as e:
        print(f"Error: {e}")
    finally:
        client_socket.close()

# Start server
server_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
server_socket.bind((HOST, PORT))
server_socket.listen(5)

print("Server started. Waiting for clients...")

while True:
    client, addr = server_socket.accept()
    print(f"Client connected: {addr}")
    thread = threading.Thread(target=handle_client, args=(client,))
    thread.start()
```

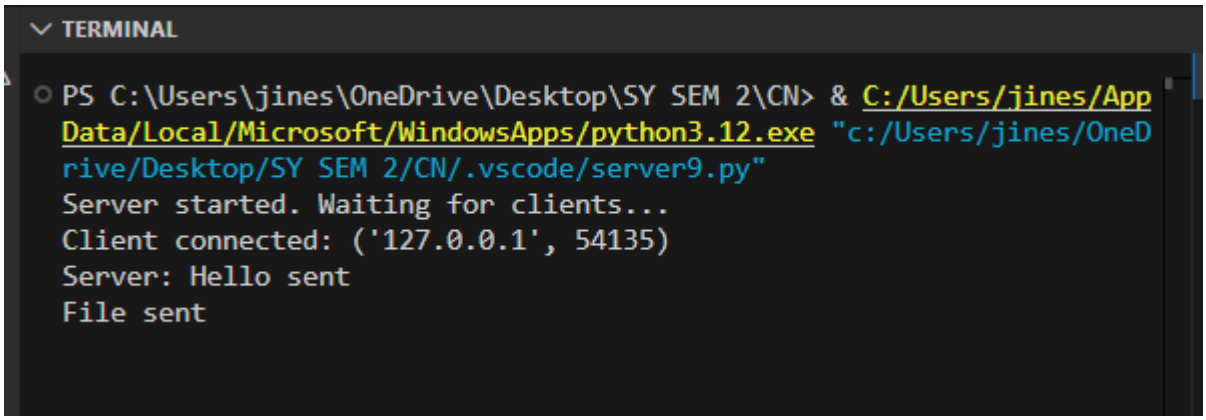
Client.py

```
import socket

# Server configurations
SERVER_IP = '127.0.0.1'
SERVER_PORT = 1234

# Connect to the server
client_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
client_socket.connect((SERVER_IP, SERVER_PORT))

# Receive greeting
greeting = client_socket.recv(1024).decode('utf-8')
print(f"Server: {greeting}")

# File reception
```

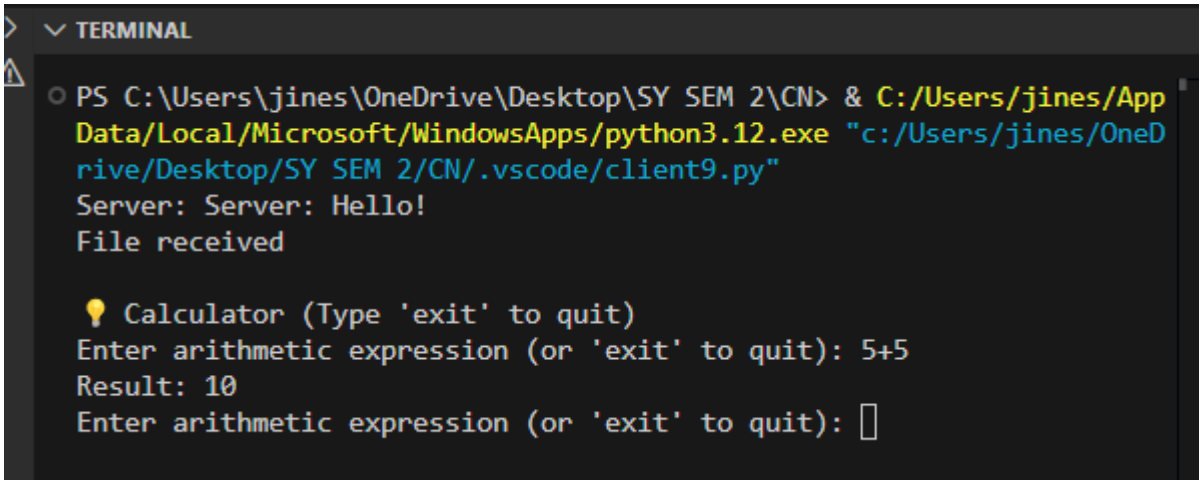
```
file_name = "received_file.txt"
with open(file_name, "wb") as f:
    while True:
        data = client_socket.recv(1024)
        if b"<END_FILE>" in data:
            # Remove the marker before writing the file
            f.write(data.replace(b"<END_FILE>", b""))
            break
        f.write(data)

print("File received")

print("\n💡 Calculator (Type 'exit' to quit)")

while True:
    expression = input("Enter arithmetic expression (or 'exit' to quit): ")

    client_socket.send(expression.encode('utf-8'))

    if expression.lower() == "exit":
        break

    result = client_socket.recv(1024).decode('utf-8')
    print(f"Result: {result}")

client_socket.close()
```

Output

Server



Client


TERMINAL
PS C:\Users\jines\OneDrive\Desktop\SY SEM 2\CN> & C:/Users/jines/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/jines/OneDrive/Desktop/SY SEM 2/CN/.vscode/client9.py"
Server: Server: Hello!
File received
Calculator (Type 'exit' to quit)
Enter arithmetic expression (or 'exit' to quit): 5+5
Result: 10
Enter arithmetic expression (or 'exit' to quit):