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COURSE: Bsc. IT.

## NETWORK PROGRAMMING. CAT 1

BIT03205-PT/DL-ALL-MUSIKAFREDRICK > New section

CAT 1

### CAT 1

Opened: Saturday, 19 July 2025, 12:00 AM

Due: Saturday, 26 July 2025, 12:00 AM

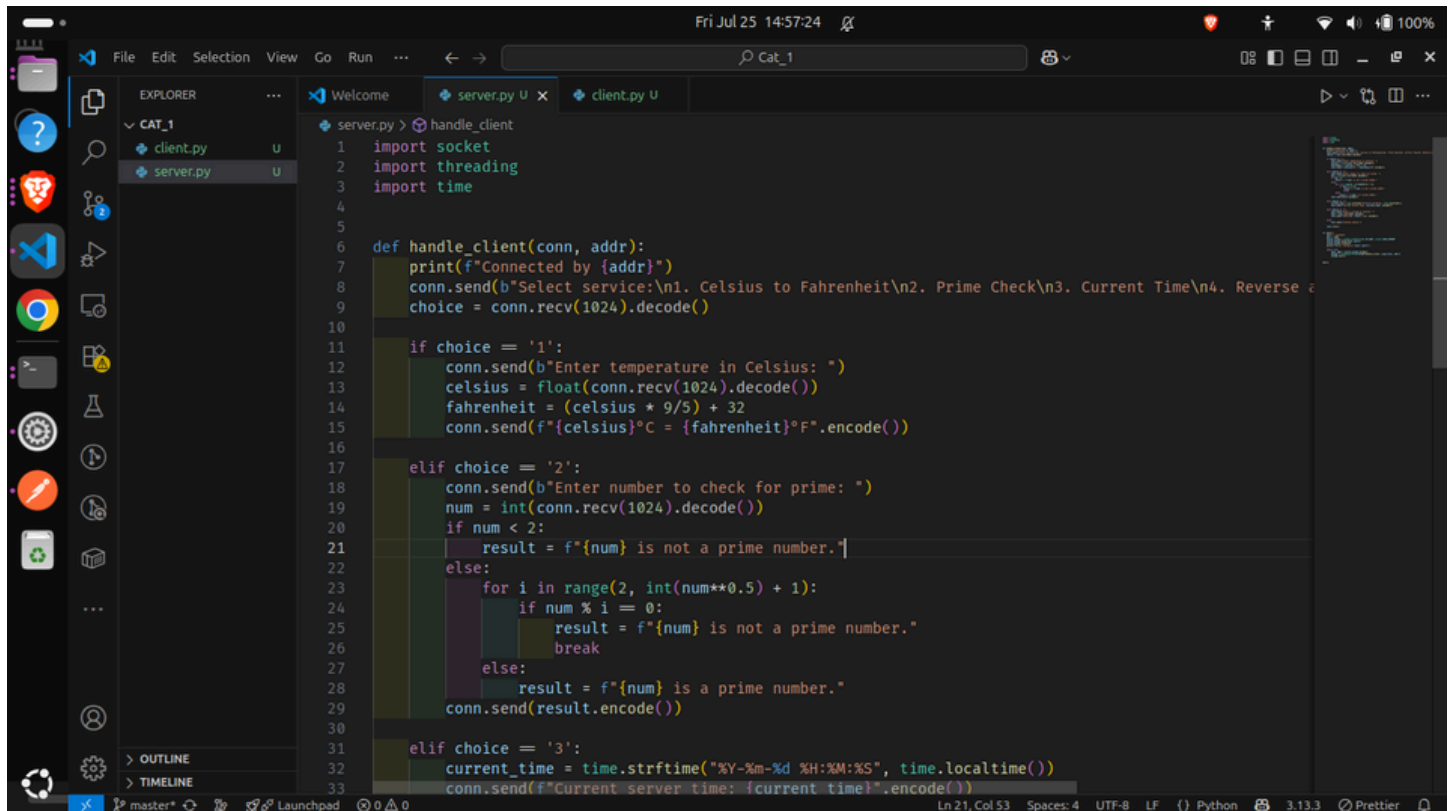
read on threads and write a client program of your choice that uses 4 threads to provide different services to the clients

Add submission

GITUB LINK =>

 [GitHub - CodesByEtemesi/Network-Programming-Cat1: The CAT is about threading.](#)

Server.py:



```
1 import socket
2 import threading
3 import time
4
5
6 def handle_client(conn, addr):
7     print(f"Connected by {addr}")
8     conn.send(b"Select service:\n1. Celsius to Fahrenheit\n2. Prime Check\n3. Current Time\n4. Reverse a")
9     choice = conn.recv(1024).decode()
10
11     if choice == '1':
12         conn.send(b"Enter temperature in Celsius: ")
13         celsius = float(conn.recv(1024).decode())
14         fahrenheit = (celsius * 9/5) + 32
15         conn.send(f"{celsius}°C = {fahrenheit}°F".encode())
16
17     elif choice == '2':
18         conn.send(b"Enter number to check for prime: ")
19         num = int(conn.recv(1024).decode())
20         if num < 2:
21             result = f"{num} is not a prime number."
22         else:
23             for i in range(2, int(num**0.5) + 1):
24                 if num % i == 0:
25                     result = f"{num} is not a prime number."
26                     break
27             else:
28                 result = f"{num} is a prime number."
29         conn.send(result.encode())
30
31     elif choice == '3':
32         current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
33         conn.send(f"Current server time: {current_time}".encode())
```

## Server.py: continued last part.

```
server.py > handle_client
6 def handle_client(conn, addr):
7     elif choice == '1':
8         current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
9         conn.send(f"Current server time: {current_time}".encode())
10
11     elif choice == '2':
12         conn.send(b"Enter a string to reverse: ")
13         text = conn.recv(1024).decode()
14         conn.send(f"Reversed: {text[::-1]}".encode())
15
16     else:
17         conn.send(b"Invalid choice.")
18
19     conn.close()
20
21 def main():
22     host = 'localhost'
23     port = 5050
24     server_socket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
25     server_socket.bind((host, port))
26     server_socket.listen(5)
27     print(f"Server running on {host}:{port}")
28
29     while True:
30         conn, addr = server_socket.accept()
31         thread = threading.Thread(target=handle_client, args=(conn, addr))
32         thread.start()
33
34 main()
```

## Client.py

```
client.py > ...
1 import socket
2
3
4 def main():
5     host = 'localhost'
6     port = 5050
7
8     with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
9         s.connect((host, port))
10
11         # Display menu
12         menu = s.recv(1024).decode()
13         print(menu)
14         choice = input("Your choice: ")
15         s.send(choice.encode())
16
17         if choice in ['1', '2', '4']:
18             prompt = s.recv(1024).decode()
19             value = input(prompt)
20             s.send(value.encode())
21
22         result = s.recv(1024).decode()
23         print("Result:", result)
24
25 main()
```

## THE TERMINAL:

```
server.py
6 def handle_client(conn, addr):
31     elif choice == '3':
32         current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
33         conn.send(f"Current server time: {current_time}".encode())
34
35     elif choice == '4':
36         conn.send(b"Enter a string to reverse: ")
37         text = conn.recv(1024).decode()
38         conn.send(f"Reversed: {text[::-1]}".encode())
39
```

```
Terminal
Cat_1 git:(master) x python3 server.py
Server running on localhost:5050
Connected by ('127.0.0.1', 45110)

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 
```

**Service 1:** Converting temperatures from degrees Celsius to Fahrenheit.

```
Terminal
Cat_1 git:(master) x python3 server.py
Server running on localhost:5050
Connected by ('127.0.0.1', 45110)

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 1
Enter temperature in Celsius: 33
Result: 33.0°C = 91.4°F
Cat_1 git:(master) x
```

**Service 2:** Checking whether a number is a prime number or not.

The screenshot shows the VS Code editor with the `server.py` file open. The `handle_client` function is defined with a `choice` variable. The terminal shows the server running on localhost:5050 and receiving connections from '127.0.0.1'. The client.py is also running, showing the service menu and the user's choice of 1 (Current Time). The server's response is: "Result: 33.0°C = 91.4°F".

```
def handle_client(conn, addr):
    choice = 1
    current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
    conn.send(f"Current server time: {current_time}".encode())
```

```
Cat_1 git:(master) x python3 server.py
Server running on localhost:5050
Connected by ('127.0.0.1', 45110)
Connected by ('127.0.0.1', 34830)

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 1
Enter temperature in Celsius: 33
Result: 33.0°C = 91.4°F
```

Service 3: Checking for the current time in the server.

The screenshot shows the VS Code editor with the `server.py` file open. The `handle_client` function is defined with a `choice` variable. The terminal shows the server running on localhost:5050 and receiving connections from '127.0.0.1'. The client.py is also running, showing the service menu and the user's choice of 3 (Reverse a String). The server's response is: "Result: Current server time: 2025-07-25 15:00:34".

```
def handle_client(conn, addr):
    choice = 1
    current_time = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
    conn.send(f"Current server time: {current_time}".encode())
```

```
Cat_1 git:(master) x python3 server.py
Server running on localhost:5050
Connected by ('127.0.0.1', 45110)
Connected by ('127.0.0.1', 34830)
Connected by ('127.0.0.1', 38914)

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 1
Enter temperature in Celsius: 33
Result: 33.0°C = 91.4°F

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 2
Enter number to check for prime: 873472
Result: 873472 is not a prime number.

Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 3
Result: Current server time: 2025-07-25 15:00:34
```

Service 4: Reversing a string of characters.

The screenshot shows a Visual Studio Code editor window with a dark theme. The Explorer sidebar on the left shows a project named 'CAT\_1' containing files: 'client.png', 'client.py', 'server.py', 'server1.png', and 'server2.png'. The 'server.py' file is open in the editor, showing a function 'def handle\_client(conn, addr):'. The output pane at the bottom shows the server's execution: it runs on localhost:5050 and receives two connections from '127.0.0.1' at ports 45110 and 38914. The terminal pane on the right shows the output of running 'python3 client.py'. It displays a menu with four options: 1. Celsius to Fahrenheit, 2. Prime Check, 3. Current Time, and 4. Reverse a String. The user has selected option 2, entered the number 873472, and the result is '873472 is not a prime number.' The user has then selected option 3, and the result is 'Current server time: 2025-07-25 15:00:34'. Finally, the user has selected option 4, entered the string 'MUSIKA', and the result is 'Reversed: AKISUM'. The status bar at the bottom indicates the file is at line 43, column 17, using UTF-8 encoding, and the editor is configured for Python with Prettier formatting.

```
server.py > handle_client
6 def handle_client(conn, addr):
    PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS

Cat_1 git:(master) x python3 server.py
Server running on localhost:5050
Connected by ('127.0.0.1', 45110)
Connected by ('127.0.0.1', 38914)
Connected by ('127.0.0.1', 37510)
[]

Result: 33.0°C = 91.4°F
Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 2
Enter number to check for prime: 873472
Result: 873472 is not a prime number.
Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 3
Result: Current server time: 2025-07-25 15:00:34
Cat_1 git:(master) x python3 client.py
Select service:
1. Celsius to Fahrenheit
2. Prime Check
3. Current Time
4. Reverse a String
Enter choice (1-4):
Your choice: 4
Enter a string to reverse: MUSIKA
Result: Reversed: AKISUM
Cat_1 git:(master) x
```

END.