# CLIENT SERVER CALCULATOR USING SOCKET PROGRAMMING

## PALAK TOTALA - 2001CS84

### 1. Client.py and Server-1

**INSTRUCTIONS TO RUN THE CODES**

Open two terminals side by side.

On the first terminal, cd to the code folder location, then type
**python server1.py (port-no)**
eg) **python server1.py 8080**

On the second terminal, cd to the code folder location, then type
**python client.py (ip-address-of-local-machine) (port-no)**
eg) **python client.py 172.20.10.4 8080**

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In order to test whether error is shown when another client tries to connect with the server, open a 3rd terminal and repeat
**python client.py (ip-address-of-local-machine) (port-no)**
And you will get error since a client is already connected with server

## SCREENSHOTS OF OUTPUT

```
Anaconda Prompt (anaconda)

(base) C:\Users\Palak Totala>cd C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03> python client.py 172.16.172.58 8080
Connected to server
Please enter an arithmetic equation to the server or type out Q to quit: 2*2/7
The answer is: 0.5714285714285714
Please enter an arithmetic equation to the server or type out Q to quit: 8+5*2
The answer is: 18
Please enter an arithmetic equation to the server or type out Q to quit: 2%6
The answer is: 2
Please enter an arithmetic equation to the server or type out Q to quit: 2/6%8
The answer is: 0.3333333333333333
Please enter an arithmetic equation to the server or type out Q to quit: 2+5+6/7
The answer is: 7.857142857142857
Please enter an arithmetic equation to the server or type out Q to quit: Q
Closing client connection!

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>
```
*(CLIENT (1))*

```
Anaconda Prompt (anaconda)

(base) C:\Users\Palak Totala>cd C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>python server1.py 8080
Server has started yay!
Got connection from ('172.16.172.58', 62521)
Client has given this equation: 2*2/7
Sending reply: 0.5714285714285714
Client has given this equation: 8+5*2
Sending reply: 18
Client has given this equation: 2%6
Sending reply: 2
Client has given this equation: 2/6%8
Sending reply: 0.3333333333333333
Client has given this equation: 2+5+6/7
Sending reply: 7.857142857142857
Server has started yay!
```
*(SERVER)*

```
Anaconda Prompt (anaconda)

(base) C:\Users\Palak Totala>cd C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>python client.py 172.16.172.58 8080
Error: Another client is already connected to server1

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>
```

## 2. Client.py and Server-2, Server-3 and Server-4

**INSTRUCTIONS TO RUN THE CODES**

Open three terminals side by side.

On the first terminal, cd to the code folder location, then type
**python server2.py (port-no)**
eg) **python server2.py 8080**

On the second terminal, cd to the code folder location, then type
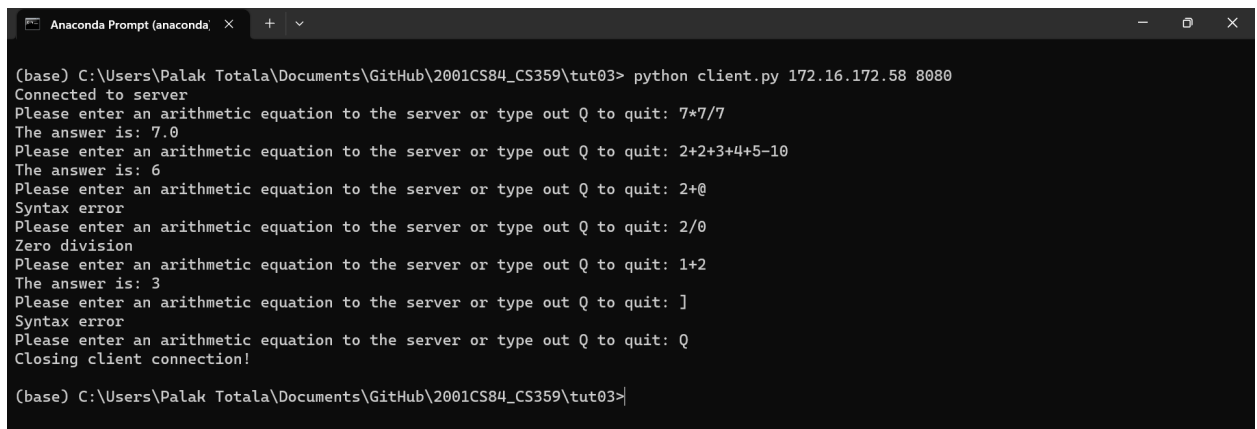**python client.py (ip-address-of-local-machine) (port-no)**
eg) **python client.py 172.16.172.58 8080**

Repeat above, On the third terminal, cd to the code folder location, then type
**python client.py (ip-address-of-local-machine) (port-no)**
eg) **python client.py 172.16.172.58 8080**

**SCREENSHOTS OF OUTPUT FOR SERVER 2**



*(CLIENT (1))*

*(CLIENT (2) + CLIENT(3))*



*(SERVER 2 )*

## SCREENSHOTS OF OUTPUT FOR SERVER 3



*(CLIENT (1))*

*(CLIENT (2) + CLIENT(3))*



*(SERVER 3)*

## SCREENSHOTS OF OUTPUT FOR SERVER 4

```
(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03> python client.py 172.16.172.58 8080
Connected to server
Please enter an arithmetic equation to the server or type out Q to quit: 9+0
The answer is: 9+0
Please enter an arithmetic equation to the server or type out Q to quit: 7*6
The answer is: 7*6
Please enter an arithmetic equation to the server or type out Q to quit: 0*0
The answer is: 0*0
Please enter an arithmetic equation to the server or type out Q to quit: quit
Closing client connection!

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>
```

*(CLIENT (1))*

```
(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03> python client.py 172.16.172.58 8080
Connected to server
Please enter an arithmetic equation to the server or type out Q to quit: 2+2+3
The answer is: 2+2+3
Please enter an arithmetic equation to the server or type out Q to quit: 4%6
The answer is: 4%6
Please enter an arithmetic equation to the server or type out Q to quit: 4+2+3/7
The answer is: 4+2+3/7
Please enter an arithmetic equation to the server or type out Q to quit: quit
Closing client connection!

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03> python client.py 172.16.172.58 8080
Connected to server
Please enter an arithmetic equation to the server or type out Q to quit: 2+2
The answer is: 2+2
Please enter an arithmetic equation to the server or type out Q to quit: Q
Closing client connection!

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>
```

*(CLIENT (2) + CLIENT(3))*

```
(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>python server4.py 8080
Server4 has started yay!
Connected to : 172.16.172.58 : 62721
Connected to : 172.16.172.58 : 62722
Client has given this equation: 2+2+3
Sending reply: 2+2+3
Client has given this equation: 4%6
Sending reply: 4%6
Client has given this equation: 4+2+3/7
Sending reply: 4+2+3/7
Client has given this equation: 9+0
Sending reply: 9+0
Client has given this equation: 7*6
Sending reply: 7*6
Client has given this equation: 0*0
Sending reply: 0*0
Sending reply: Quit
Sending reply: Quit
Connected to : 172.16.172.58 : 62729
Client has given this equation: 2+2
Sending reply: 2+2
Sending reply: Quit
```

*(SERVER 4 )*

## 3. SPECIAL FEATURES

1. I used the eval() function to calculate output for equation entered by user, so the server can handle arithmetic operations between more than 2 operands as well as complicated arithmetic expressions consisting of %,/,* all together.

2. I have included 4 types of error returns as well incase the user enters an incorrect input, namely :
   - Zero Division Error
   - Arithmetic Error
   - Syntax Error
   - Name Error

3. After the user enters a single input and receives an output from the server, I keep prompting him for more inputs until he types Q/quit.

## 4. YOUTUBE VIDEO LINK

https://www.youtube.com/playlist?list=PLfyRzaziTtcfPsTiljIjDGhMU2ZN5Ks RI