

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**

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) X + v

(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) X + v

(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) X + v

(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>
```

(CLIENT (2) - SINCE ANOTHER CLIENT WAS ALREADY CONNECTED TO SERVER)

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)

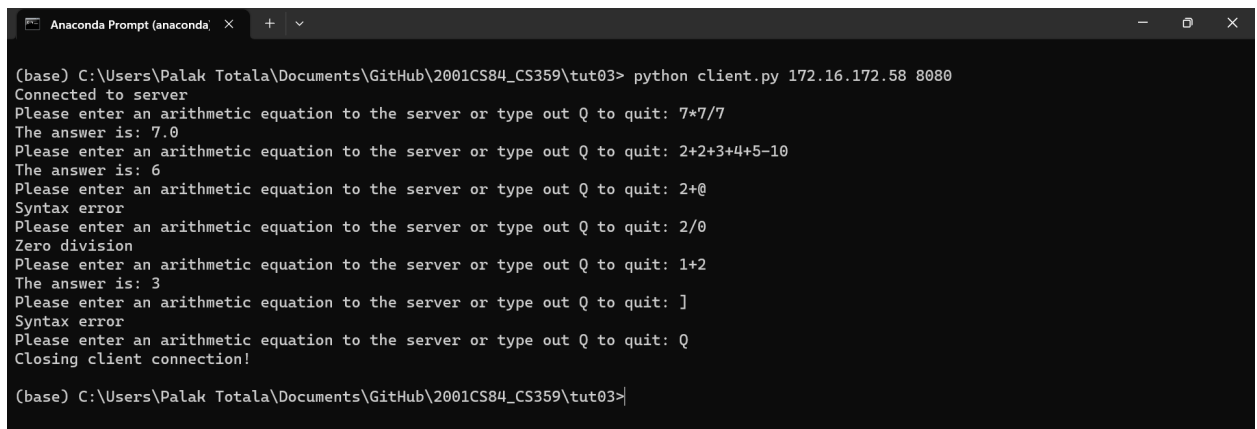
eg) **python client.py 172.16.172.58 8080**

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



```
(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: 7*7/7
The answer is: 7.0
Please enter an arithmetic equation to the server or type out Q to quit: 2+2+3+4+5-10
The answer is: 6
Please enter an arithmetic equation to the server or type out Q to quit: 2+@
Syntax error
Please enter an arithmetic equation to the server or type out Q to quit: 2/0
Zero division
Please enter an arithmetic equation to the server or type out Q to quit: 1+2
The answer is: 3
Please enter an arithmetic equation to the server or type out Q to quit: ]
Syntax error
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) x + v

(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: 16
Please enter an arithmetic equation to the server or type out Q to quit: 2/4+7.5
The answer is: 8.0
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> 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: 3+3
The answer is: 6
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))

```
Anaconda Prompt (anaconda) x + v

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>python server2.py 8080
Server2 has started yay!
Connected to : 172.16.172.58 : 62572
Connected to : 172.16.172.58 : 62573
Client has given this equation: 2+2*7
Sending reply: 16
Client has given this equation: 2/4+7.5
Sending reply: 8.0
Client has given this equation: 7*7/7
Sending reply: 7.0
Client has given this equation: 2+2+3+4+5-10
Sending reply: 6
Client has given this equation: 2+@
Client has given this equation: 2/0
Client has given this equation: 1+2
Sending reply: 3
Connected to : 172.16.172.58 : 62587
Client has given this equation: 3+3
Sending reply: 6
Client has given this equation: ]
|
```

(SERVER 2)

SCREENSHOTS OF OUTPUT FOR SERVER 3

```
Anaconda Prompt (anaconda) x + v

(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*2
The answer is: 8
Please enter an arithmetic equation to the server or type out Q to quit: 1*0
The answer is: 0
Please enter an arithmetic equation to the server or type out Q to quit: 1/0
Zero division
Please enter an arithmetic equation to the server or type out Q to quit: n
Name error
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) x + v

(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: x+y
Name error
Please enter an arithmetic equation to the server or type out Q to quit: 666
The answer is: 666
Please enter an arithmetic equation to the server or type out Q to quit: 6+7=8
Syntax error
Please enter an arithmetic equation to the server or type out Q to quit: 7*(7+6)
The answer is: 91
Please enter an arithmetic equation to the server or type out Q to quit: boo
Name error
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> 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: hi
Name error
Please enter an arithmetic equation to the server or type out Q to quit: 2+2
The answer is: 4
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))

```
Anaconda Prompt (anaconda) x + v

(base) C:\Users\Palak Totala\Documents\GitHub\2001CS84_CS359\tut03>python server3.py 8080
Server3 has started yay!
Connected to : 172.16.172.58 : 62668
Connected to : 172.16.172.58 : 62673
Client has given this equation: 2*2*2
Sending reply: 8
Client has given this equation: 1*0
Sending reply: 0
Client has given this equation: 1/0
Sending reply: ZD
Client has given this equation: n
Sending reply: NE
Client has given this equation: x+y
Sending reply: NE
Client has given this equation: 666
Sending reply: 666
Client has given this equation: 6+7=8
Sending reply: SE
Client has given this equation: 7*(7+6)
Sending reply: 91
Client has given this equation: boo
Sending reply: NE
Sending reply: Quit
Connected to : 172.16.172.58 : 62686
Client has given this equation: hi
Sending reply: NE
Client has given this equation: 2+2
Sending reply: 4
Sending reply: Quit
Sending reply: Quit
```

(SERVER 3)

SCREENSHOTS OF OUTPUT FOR SERVER 4

```
Anaconda Prompt (anaconda) x + v

(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))

```
Anaconda Prompt (anaconda) x + v

(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))

```
Anaconda Prompt (anaconda) x + v

(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=PLfyRzaziTtcfPsTiljljDGhMU2ZN5KsRI>