CN CSL317

ASSIGNMENT-2

Name: **Swathi Sariputi**
Enrol: **BT19CSE098**

> ➢ **instructions that *clearly* describe how to run codes:**

Open the command prompt / power shell in windows. (prerequisite : python installed in it)

First, run the server code. (servers code are server1.py, server2.py, server3.py, server4.py)

Ex:

PS G:\6sem\CN\A2>python server1.py 127.0.0.1 3000

- a server is started on port 3000 and server address 127.0.0.1(localhost).

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
```

Then, in another terminal, run the client code. The client program is then given the server IP (in this case, localhost 127.0.0.1) and port (3000) as command-line inputs.

PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server :
```

To run server: python <server<1|2|3|4>.py> <ip_address_of_server> <port>

To run client: python <client.py> <ip_address_of_server> <port>

• **server1.py:**

-> **Valid input:**

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 52917
Client socket sent message:  2+3+4
Sending reply:  9
Client socket sent message:  3*4+4
Sending reply:  16
Client socket sent message:  4/2*1
Sending reply:  2.0
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 2+3+4
Received from the server : 9
Please enter the message to the server : 3*4+4
Received from the server : 16
Please enter the message to the server : 4/2*1
Received from the server : 2.0
Please enter the message to the server :
```

-> **Invalid Input, debugging, and closing a connection with ctrl+C:**

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 52970
Client socket sent message:  inval
Sending reply:  invalid input
Client socket sent message:  ert
Sending reply:  invalid input
Client socket sent message:  %
Sending reply:  unexpected EOF while parsing (<string>, line 1)
Client socket sent message:  \n
Sending reply:  invalid input
  disconnected from  52970
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : inval
Received from the server : invalid input
Please enter the message to the server : ert
Received from the server : invalid input
Please enter the message to the server : %
Received from the server : unexpected EOF while parsing (<string>, line 1)
Please enter the message to the server : \n
Received from the server : invalid input
Please enter the message to the server : Closing client
PS G:\6sem\CN\A2>
```

-> **Multiple clients check:**

-concurrently:

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 53013
Client socket sent message:  3*5
Sending reply:  15
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3*5
Received from the server : 15
Please enter the message to the server :
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Error!!Connection failed-connection to server refused
PS G:\6sem\CN\A2>
```

-after closing 1st client (one by one):

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 53013
Client socket sent message:  3*5
Sending reply:  15
  disconnected from  53013
Connected to : 127.0.0.1 : 53036
Client socket sent message:  8/9
Sending reply:  0.8888888888888888
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3*5
Received from the server : 15
Please enter the message to the server : Closing client
PS G:\6sem\CN\A2>
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Error!!Connection failed-connection to server refused
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 8/9
Received from the server : 0.8888888888888888
Please enter the message to the server :
```

• **server2.py:**

-Valid, invalid inputs, and closing connection with ctrl+c

```
PS G:\6sem\CN\A2> python server2.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53259
Client  ('127.0.0.1', 53259)  socket sent message:  4/2
Sending reply:  2.0
Client  ('127.0.0.1', 53259)  socket sent message:  dsf
Sending reply:  invalid input
Client  ('127.0.0.1', 53259)  socket sent message:  4+&
Sending reply:  unexpected EOF while parsing (<string>, line 1)
  disconnected from  53259
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 4/2
Received from the server : 2.0
Please enter the message to the server : dsf
Received from the server : invalid input
Please enter the message to the server : 4+&
Received from the server : unexpected EOF while parsing (<string>, line 1)
Please enter the message to the server : Closing client
PS G:\6sem\CN\A2>
```

- **Multiple clients (concurrently):**

```
PS G:\6sem\CN\A2> python server2.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53316
Connected to : 127.0.0.1 : 53328
Client ('127.0.0.1', 53316) socket sent message:  3+4
Sending reply:  7
Client ('127.0.0.1', 53328) socket sent message:  5+0
Sending reply:  5
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3+4
Received from the server : 7
Please enter the message to the server : []
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 5+0
Received from the server : 5
Please enter the message to the server : []
```

• **server3.py:**

-Valid, invalid inputs, and closing connection with ctrl+c:

```
PS G:\6sem\CN\A2> python server3.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53433
Client ('127.0.0.1', 53433) socket sent message:  9/4
Sending reply:  2.25
Client ('127.0.0.1', 53433) socket sent message:  kk
Sending reply:  invalid input
Client ('127.0.0.1', 53433) socket sent message:  4+#
Sending reply:  unexpected EOF while parsing (<string>, line 1)
  disconnected from 53433
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 9/4
Received from the server : 2.25
Please enter the message to the server : kk
Received from the server : invalid input
Please enter the message to the server : 4+#
Received from the server : unexpected EOF while parsing (<string>, line 1)
Please enter the message to the server : Closing client
PS G:\6sem\CN\A2> []
```

- **Multiple clients (concurrently):**

```
PS G:\6sem\CN\A2> python server3.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53374
Connected to : 127.0.0.1 : 53383
Client ('127.0.0.1', 53383) socket sent message:  4+3
Sending reply:  7
Client ('127.0.0.1', 53383) socket sent message:  3+5
Sending reply:  8
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 4+3
Received from the server : 7
Please enter the message to the server : []
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3+5
Received from the server : 8
Please enter the message to the server : []
```

• **server4.py:**

-check echo reply from server:

```
PS G:\6sem\CN\A2> python server4.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53459
Client ('127.0.0.1', 53459) socket sent message:  ee
Sending reply:  b'ee'
Client ('127.0.0.1', 53459) socket sent message:  3+9
Sending reply:  b'3+9'
Client ('127.0.0.1', 53459) socket sent message:  %
Sending reply:  b'%'
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : ee
Received from the server : ee
Please enter the message to the server : 3+9
Received from the server : 3+9
Please enter the message to the server : %
Received from the server : %
Please enter the message to the server : []
```

- **Multiple clients (concurrently):**

```
PS G:\6sem\CN\A2> python server4.py 127.0.0.1 3000
socket binded to port 3000
Connected to : 127.0.0.1 : 53481
Connected to : 127.0.0.1 : 53482
Client ('127.0.0.1', 53482) socket sent message:  echo1
Sending reply:  b'echo1'
Client ('127.0.0.1', 53482) socket sent message:  echo1 from
client2
Sending reply:  b'echo1 from client2'
Client ('127.0.0.1', 53482) socket sent message:  c1
Sending reply:  b'c1'
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : echo1
Received from the server : echo1
Please enter the message to the server : c1
Received from the server : c1
Please enter the message to the server : []
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : echo1 from client2
Received from the server : echo1 from client2
Please enter the message to the server : []
```

➔ **Error Handling like divide by zero.**

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 53566
Client socket sent message:  3/0
Sending reply:  division by zero
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3/0
Received from the server : division by zero
Please enter the message to the server : █
```

➔ **Used regex to match valid input strings and eval function to evaluate the input expression.**

```
reg_ex = r"^[0-9 -+/*(.)]+$"   # reg_ex
if bool(re.match(reg_ex , inp)):
    try:
        temp = str(eval(inp))
```

➔ **Evaluates mathematical expressions with multiple operands.**

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 53566
Client socket sent message:  3/0
Sending reply:  division by zero
Client socket sent message:  3*5/2+9
Sending reply:  16.5
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3/0
Received from the server : division by zero
Please enter the message to the server : 3*5/2+9
Received from the server : 16.5
Please enter the message to the server : █
```

➔ **Used logging for debug purposes.**

```
PS G:\6sem\CN\A2> python server1.py 127.0.0.1 3000
socket binded to port  3000
Connected to : 127.0.0.1 : 53566
Client socket sent message:  3/0
Sending reply:  division by zero
Client socket sent message:  3*5/2+9
Sending reply:  16.5
Client socket sent message:  3+#
Sending reply:  unexpected EOF while parsing (<string>, line 1)
```

```
PS G:\6sem\CN\A2> python client.py 127.0.0.1 3000
Connected to server
Please enter the message to the server : 3/0
Received from the server : division by zero
Please enter the message to the server : 3*5/2+9
Received from the server : 16.5
Please enter the message to the server : 3+#
Received from the server : unexpected EOF while parsing (<string>, line 1)
Please enter the message to the server : █
```