Programming Assignment 2 Report
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Program Functionality:

  The client and server programs work, communicate, and perform all operations correctly.

Compilation and Execution Instructions:

<u>Compilation:</u>

 Compile in bash:

$	javac Request.java
$	javac RequestEncoder.java
$	javac RequestDecoder.java
$	javac ServerTCP.java
$	javac ClientTCP.java

<u>Execution:</u>

 Run the client/server with tux machine and port 10028:

  $ java ServerTCP 10028

 Transition to client

  $ java ClientTCP tux**???**.eng.auburn.edu 10028

  $ Enter opCode: … Operand1: ….

Running Analysis:

  The client will prompt for the operation code (OpCode), the first operand, and the second operand. After inputting these values, the client will send the request to the server, display the request in hexadecimal format, wait for the server's response, and display the response along with the round-trip time.
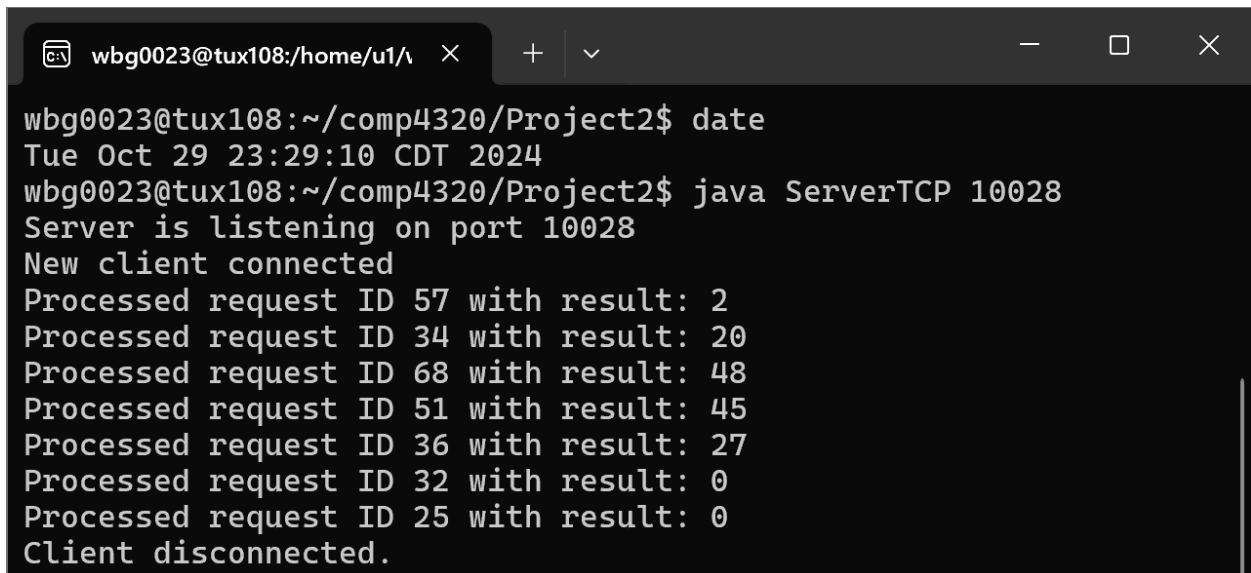
Screenshots of Runs

User: wbg0023
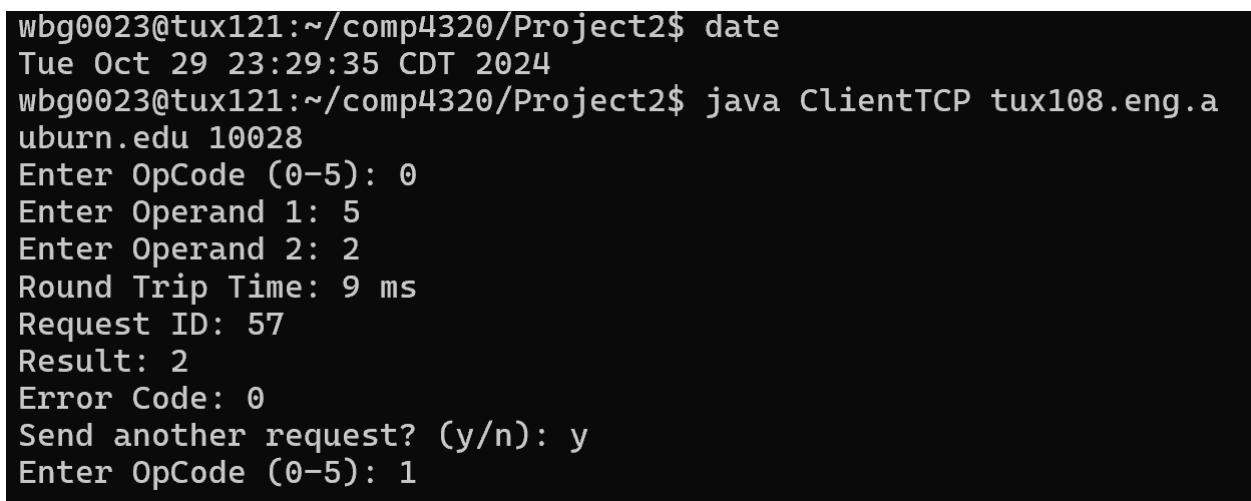
Client tux: 121

Server tux: 108

Date included

Server Side:

```
wbg0023@tux108:/home/u1/\    ✕    +  ∨                    —   ☐   ✕

wbg0023@tux108:~/comp4320/Project2$ date
Tue Oct 29 23:29:10 CDT 2024
wbg0023@tux108:~/comp4320/Project2$ java ServerTCP 10028
Server is listening on port 10028
New client connected
Processed request ID 57 with result: 2
Processed request ID 34 with result: 20
Processed request ID 68 with result: 48
Processed request ID 51 with result: 45
Processed request ID 36 with result: 27
Processed request ID 32 with result: 0
Processed request ID 25 with result: 0
Client disconnected.
```
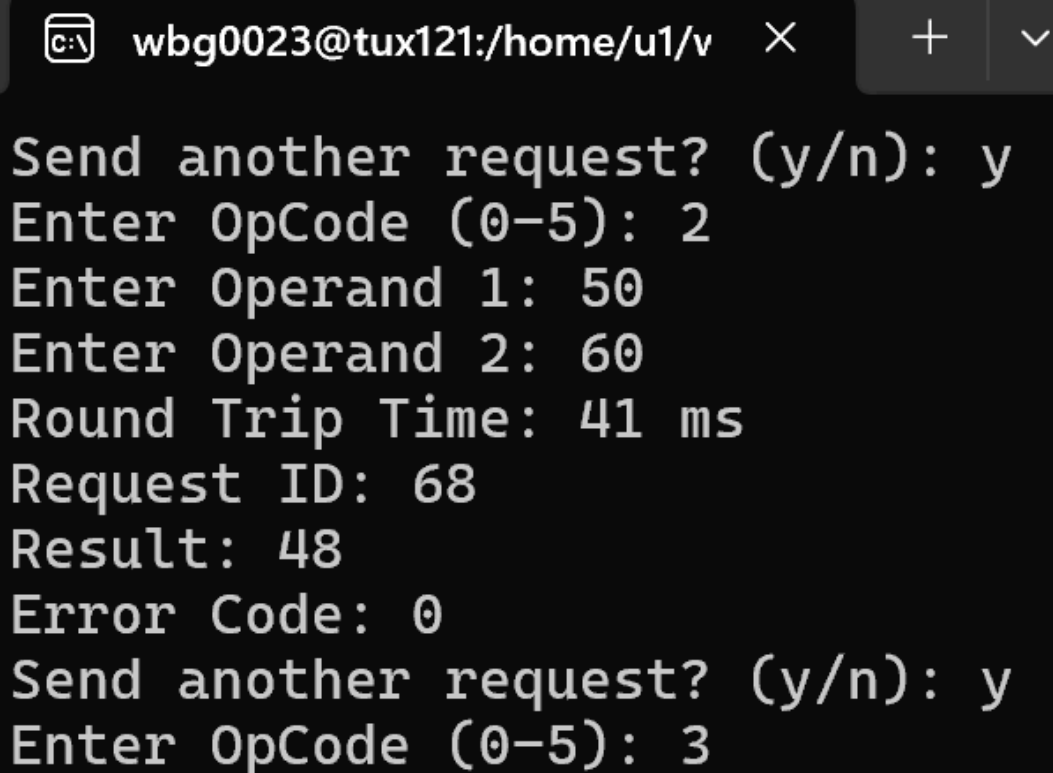
OpCode 0:

```
wbg0023@tux121:~/comp4320/Project2$ date
Tue Oct 29 23:29:35 CDT 2024
wbg0023@tux121:~/comp4320/Project2$ java ClientTCP tux108.eng.a
uburn.edu 10028
Enter OpCode (0-5): 0
Enter Operand 1: 5
Enter Operand 2: 2
Round Trip Time: 9 ms
Request ID: 57
Result: 2
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 1
```

Additional Screenshots (showcasing all operations):

OpCode 1:

```
Send another request? (y/n): y
Enter OpCode (0-5): 1
Enter Operand 1: 10
Enter Operand 2: 2
Round Trip Time: 43 ms
Request ID: 34
Result: 20
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 2
```

OpCode 2:

wbg0023@tux121:/home/u1/v ×   +   ⌄

```
Send another request? (y/n): y
Enter OpCode (0-5): 2
Enter Operand 1: 50
Enter Operand 2: 60
Round Trip Time: 41 ms
Request ID: 68
Result: 48
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 3
```

OpCode3:

```
Send another request? (y/n): y
Enter OpCode (0-5): 3
Enter Operand 1: 45
Enter Operand 2: 5
Round Trip Time: 42 ms
Request ID: 51
Result: 45
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 4
```

OpCode 4:

```
Send another request? (y/n): y
Enter OpCode (0-5): 4
Enter Operand 1: 25
Enter Operand 2: 2
Round Trip Time: 41 ms
Request ID: 36
Result: 27
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 5
```

OpCode 5 + Error 127 (division by 0) + end of program:

```
wbg0023@tux121:/home/u1/v  ×      +    ∨

Enter OpCode (0-5): 5
Enter Operand 1: 3
Enter Operand 2: 3
Round Trip Time: 42 ms
Request ID: 32
Result: 0
Error Code: 0
Send another request? (y/n): y
Enter OpCode (0-5): 0
Enter Operand 1: 0
Enter Operand 2: 0
Round Trip Time: 41 ms
Request ID: 25
Result: 0
Error Code: 127
Send another request? (y/n): n
wbg0023@tux121:~/comp4320/Project2$
```

Round Trip Time Analysis:

Min: 9 ms
Max: 43 ms

Average: 37 ms