Report: Homework1, Rudy

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September 14, 2022

Introduction:

Being a beginner with the networks and distributed systems, I could understand the working of a 2 tier architecture which involves TCP, Socket API etc. I could also understand the working process inside the server. Understanding the HTTP protocol in very important since it is widely used.

Main problems and solutions:

Increasing the throughput was a problem. The solution I figured out was increasing the number of handlers so that we have concurrency and the response time can be decreased.

Evaluation:

Results with Single Handler :

I tried to note down the request rate and the response rate with different conditions, combinations like with print statements, without print statements, with Fibonacci of different numbers, with sleep timer and also combinations of these.

No. Of Handlers	With	Request rate	Response rate(ms)
1	Print statements	1	1
		10	11
		100	117
		1000	1224
		10000	11289
	No print statements	1	2
		10	10
		100	74
		1000	731
		10000	7359
		100000	74344
	No print, sleep(40)	1	84
		2	123
		5	240
		10	479

		100	4684
	No print, sleep(20)	1	22363
	No print, fib(10)	1	12
		10	113
		100	1114
	No print, fib(30)	1	31
		10	114
		100	1117
	No print, fib(50)	1	144110
		2	285315
	With print, fib(10)	1	142499

Conclusion:

1. Response rate was linearly increasing with the request rate.

2. The response rate was relatively higher with the print statements.

3. The response rate was directly proportional to the number of unnecessary functions like Fibonacci, sleep etc. As these functions increase, the response rate was increasing linearly with request rate.

Evaluation:
Results with Multiple Handlers :
I tried to note down the response rate with multiple handlers, multiple clients and multiple requests.

No. Of Handlers	No. Of clients	Request rate	Response rate(ms)
2	1	1	21
		10	11
		100	74
		1000	905
		10000	7778
	5	1	4
		10	16
		100	148

		1000	1189
		10000	12894
5	1	1	18
		10	11
		100	100
		1000	738
		10000	10375
	5	1	3
		10	14
		100	126
		1000	1122
		10000	11041
10	1	1	23
		10	10
		100	75
		1000	933
		10000	7827

Conclusions:

1. Adding multiple handlers had no difference in the response rate in case of a single client.
2. In case of multiple clients, the throughput has increased.
3. For the initial request, the response rate was high. That could be because of the time taken to make a connection.
4. The response rate depends on many other factors like the network connection, size of the message, acceptance etc.

The homework was very useful in understanding the concepts practically. Thank You!