

1.

a.

M1 Pro chips used in all other 14 and 16-inch MacBook Pro models have 10 cores. According to Apple, the M1 Pro's 10-core CPU is up to 70 percent faster than the 8-core CPU in the original M1 chip.

I am using a 14-inch MacBook Pro for this assignment. According to the stats on the website, it has 10 cores. Therefore, $w = 10 - 2 = 8$.

b.

I first classified the report message by threads.

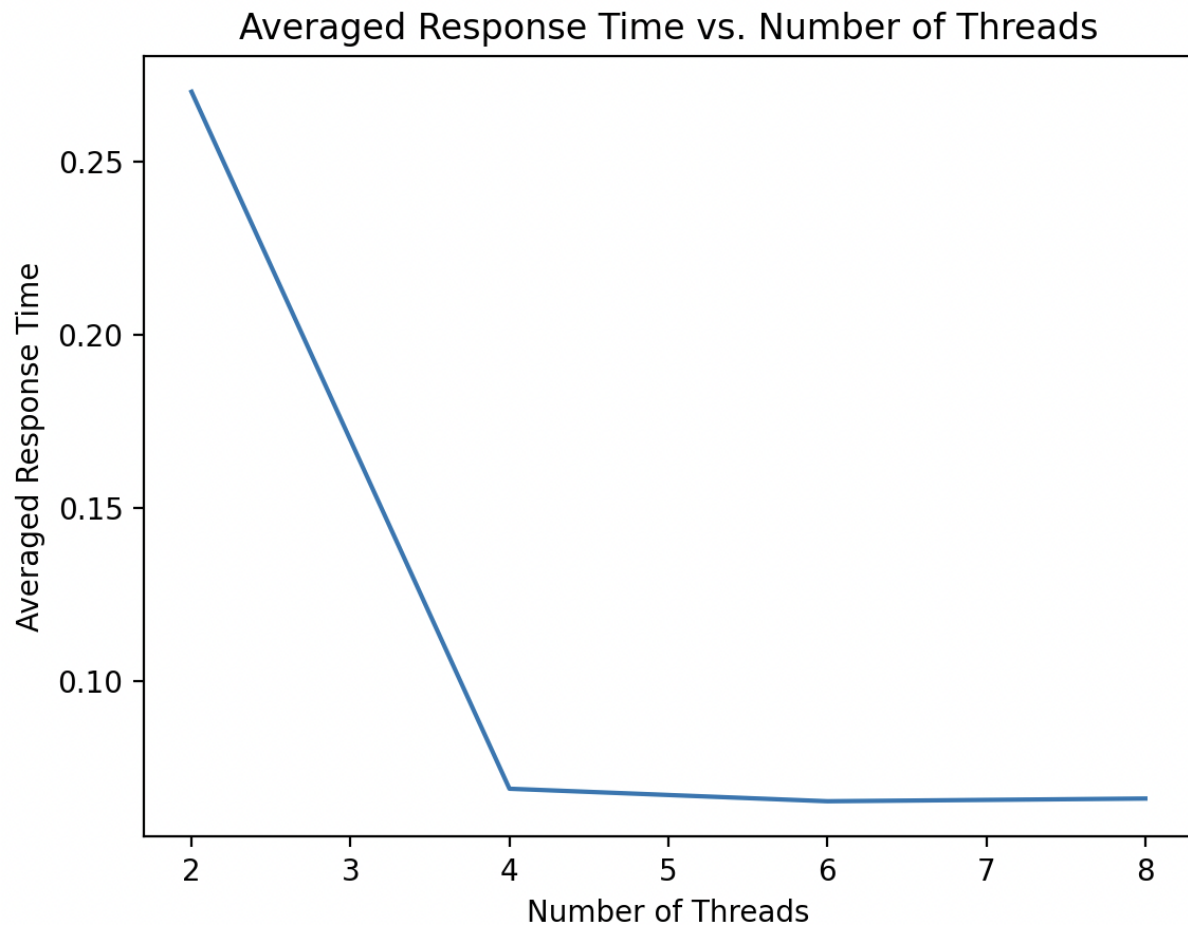
Then I used the model from hw3 eval to calculate the utilization for each thread.

Utilization of T0 = 0.9058

Utilization of T1 = 0.9086

Yes. The workload is balanced between two threads.

c.



The improvement in response time is linear according to the graph. There is no sign of superlinear improvement where the improvement is increasing.

d.

Rejection rate for $w=1$ is 0.35333, and rejection rate for $w=2$ is 0 (no request is rejected).

I don't agree that X/W is the rejection rate with W workers. If the server can easily handle all the requests with enough queue size, there will no requests be rejected. after the workers are capable of reaching this state, adding more workers does not change the rejection rate.

To put it simply, if the claim works, rejection rate when $w=1$ is 0.35333. Then the rejection rate when $w=2$ should be 0.1767. But it is 0.