

Assignment- 2

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Part 1

So, we begin with our observations first.

Let's see first table. In this table we are updating the values of time taken by the get request of a given key, 3 times each, at the end we have an average time column which does what it says, averages all the values. We used the excel sheet average function to do this. The time that we write in each block is in **milli seconds**.

Key	Req1 (first time)	Req2 (second time)	Req3 (third time)	Average Time
Key1	2.039	1.379	2.351	1.923
Key2	2.105	1.335	1.319	1.586
Key3	1.291	1.867	1.244	1.467
Key4	1.375	1.554	1.906	1.612
Key5	1.776	1.598	1.292	1.555
Key6	1.556	1.16	1.275	1.33

Table 1

Analysis and Observations

- We can see that all the time values are almost the same as it is simply the interaction between client and server.
- The average time here is slightly decreasing from 1st request to the last, we can say that as the connection between them would be well established as the requests keep on increasing.

Part 2

Next let us look at the 2nd table. In this table we are updating the values of the time taken by the 3GET requests from each key of H1. But the key difference here is that from 2nd get request the time updated would be fetch time from cache. The time that we write in each block is in **milli seconds**.

Key	Req1 (first time)	Req2 (second time)	Req3 (third time)
Key1	3.174	1.092	0.78
Key2	2.769	1.412	1.211
Key3	2.592	1.048	1.199
Key4	3.159	1.183	0.599
Key5	3.152	0.948	1.013
Key6	3.034	1.142	0.803
Average Time	2.98	1.137	0.934

Table 2

Analysis and Observations

- The main observation here would be the time difference between req1 and req2.
 - a. We can clearly see that the time is almost half of the former
 - b. The main reason for this would be that the data or the key-value pair is now loaded into cache and hence it lowers the fetch time.
 - c. Initially when they are not loaded, the client requests cache which in turn requests server which would lead to a bigger fetch time.
 - d. When we fetch the data from server, the same data is now loaded into cache.
 - e. So, the next time if we request for the same data, it would directly return from this cache
 - f. Which would reduce the fetch time.

- The average time for req1 is much more than that for req2 and req3 as former establishes connection between server<->cache<->client, while the latter only establishes the connection between cache<->client

Part 3

Important!!!

Now let's see how our program works after readme.

- Let's see for BASIC part.
- in terminal 1(h1) it asks us to choose the type of command we want.
 - 1) PUT
 - 2) GET
 - 3) DELETE
 - 4) EXIT
- These are options for the request type and choosing a different number would result in error.
- While exit is simply exiting the terminal
- Let's say we chose to put, it would ask the directory name (example: "assignment2")
- Then it would ask the type of HTTP request we want to send (example: "HTTP/1.1")
- Now we will be asked to input the key and value and it will be updated.
- Any discrepancies in the HTTP request would be reported to the client through c.send()
- The same would be going on for GET and DELETE and the only difference would be in
 - a. The HTTP request syntax
 - b. No need to input value
- Now Let's go to the STAR part:
- In terminal 1(h1) it asks us to choose the type of command we want
 - 1) PUT
 - 2) GET
 - 3) EXIT
- The rest of these would be same as that of BASIC.

PS: The files not_needed and not_needed(2) are dummy files and We were unable to delete them
They would not affect this assignment in any manner

The Following are examples of some error messages

- HTTP/1.1 400 Bad Request: In case of invalid user input
- HTTP/1.1 200 OK: In case of correct execution
- HTTP/1.1 404 Not Found: In case of asking to find unavailable data

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