CS5331: Mobile Data Management and Privacy

Spring 2023

Project #3: A Pull-based Cache Invalidation

Himaja_Madala

Instructions how to run the program:

Download and install GlobalProtect from the raiderlink to access the ttu vpn.

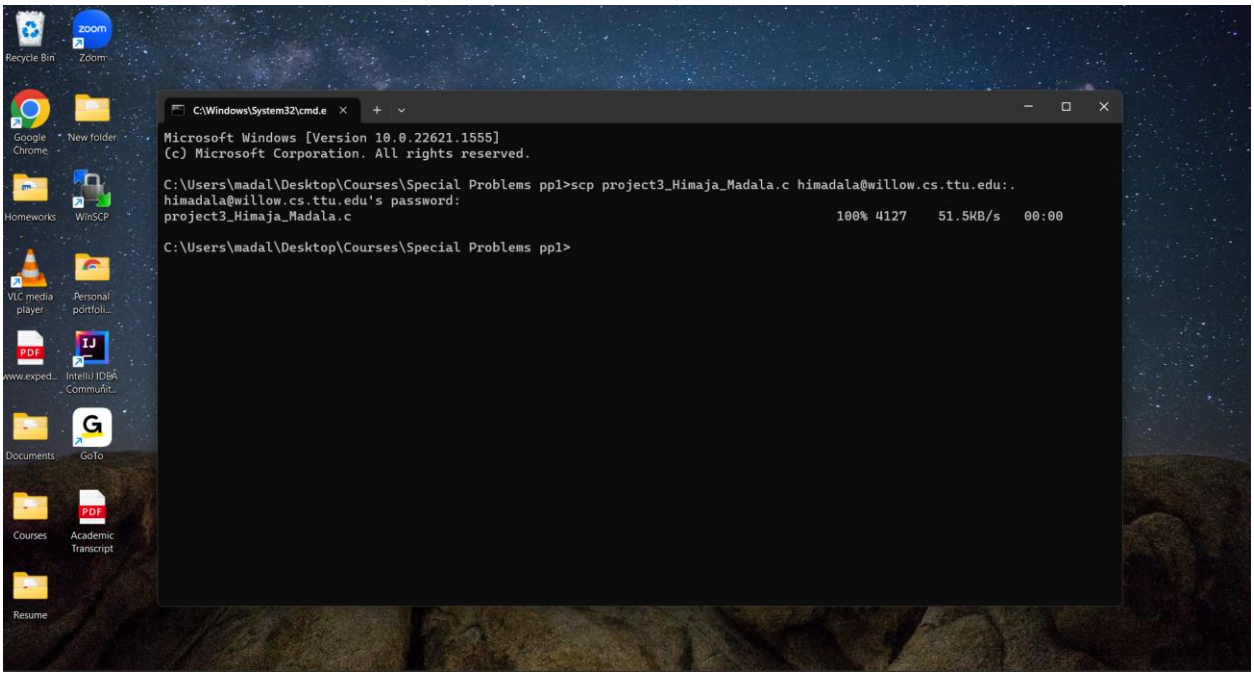
Download and install Winscp to access willow server. Also, download Xming to use PuTTY.

Now create a folder and save the project code with .c extension on desktop.

Open cmd in the path of the folder created on desktop.

Run the following command in cmd:

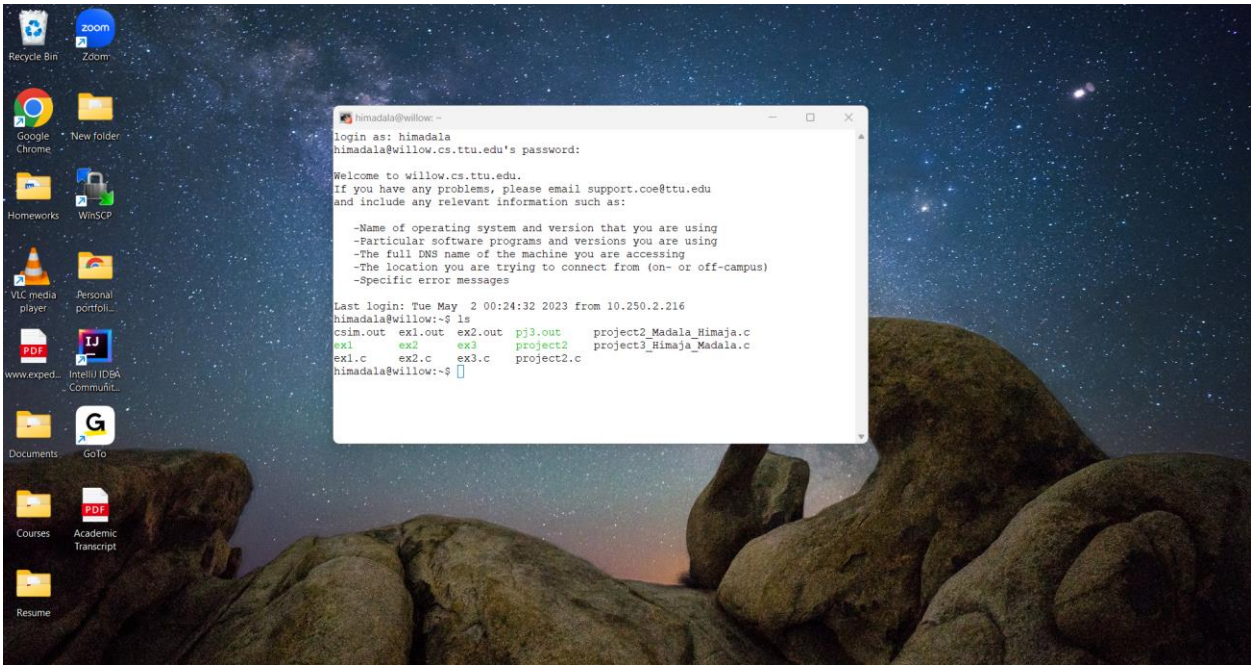
scp project3_ Himaja_Madala.c himadala@willow.cs.ttu.edu:.



Now, open Xming and run PuTTY.

Login to PuTTY using your credentials.

Enter the command ‘ls’ to see all the saved files and verify whether you can see the project code folder.

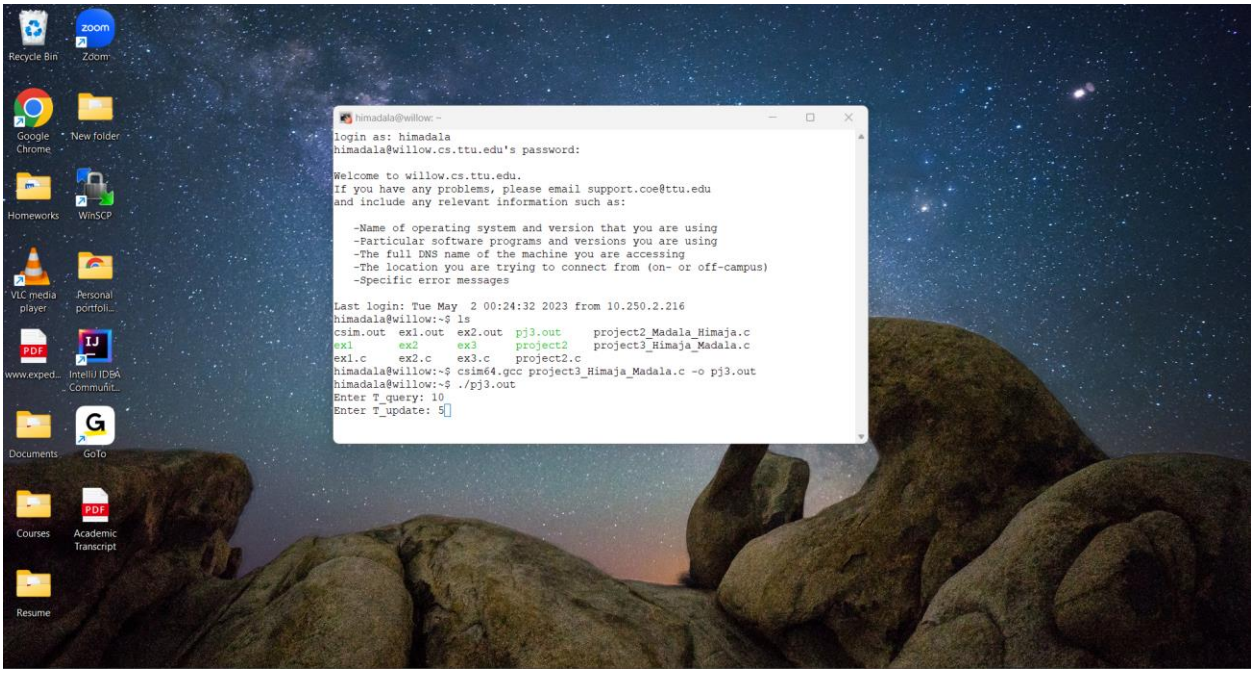


After verifying, enter the following command to compile the code: "csim64.gcc project3_Himaja_Madala.c -o pj3”

The above command also saves the output in ‘pj3’

Now, in order to check the output, enter the following command: "./pj3.out"

It will then ask us to enter the T-query value and T_update.

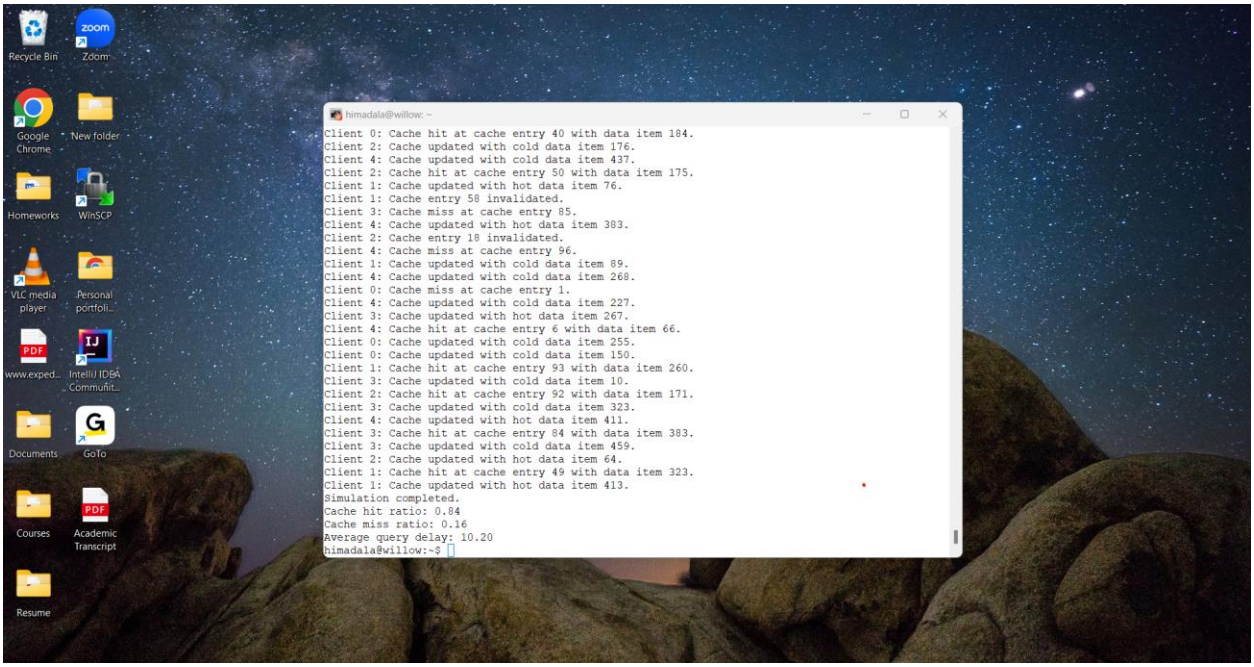


According to the project, we considered the following values for T-update while T_query being 10:

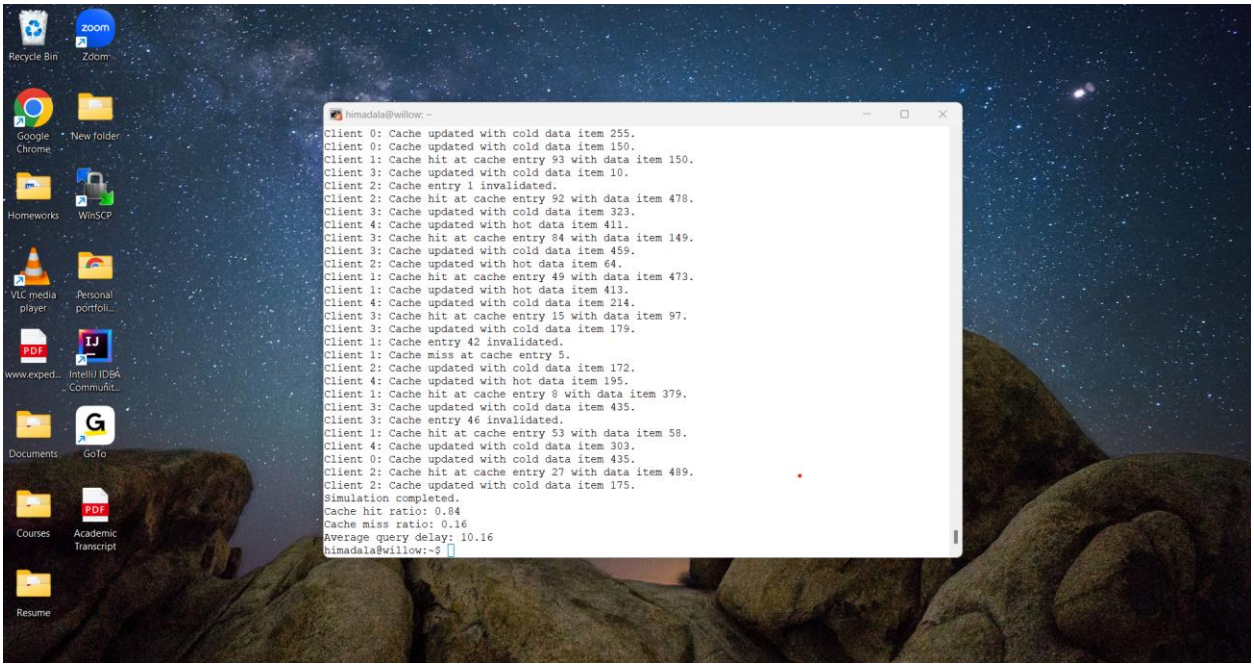
5, 10, 20, 100, 200

So, we should execute the command "./pj3.out" and enter the above probabilities to get cache hit ratio, cache miss ratio and average query delay.

The following are the outputs for T_query as 10 and T_update as 5.



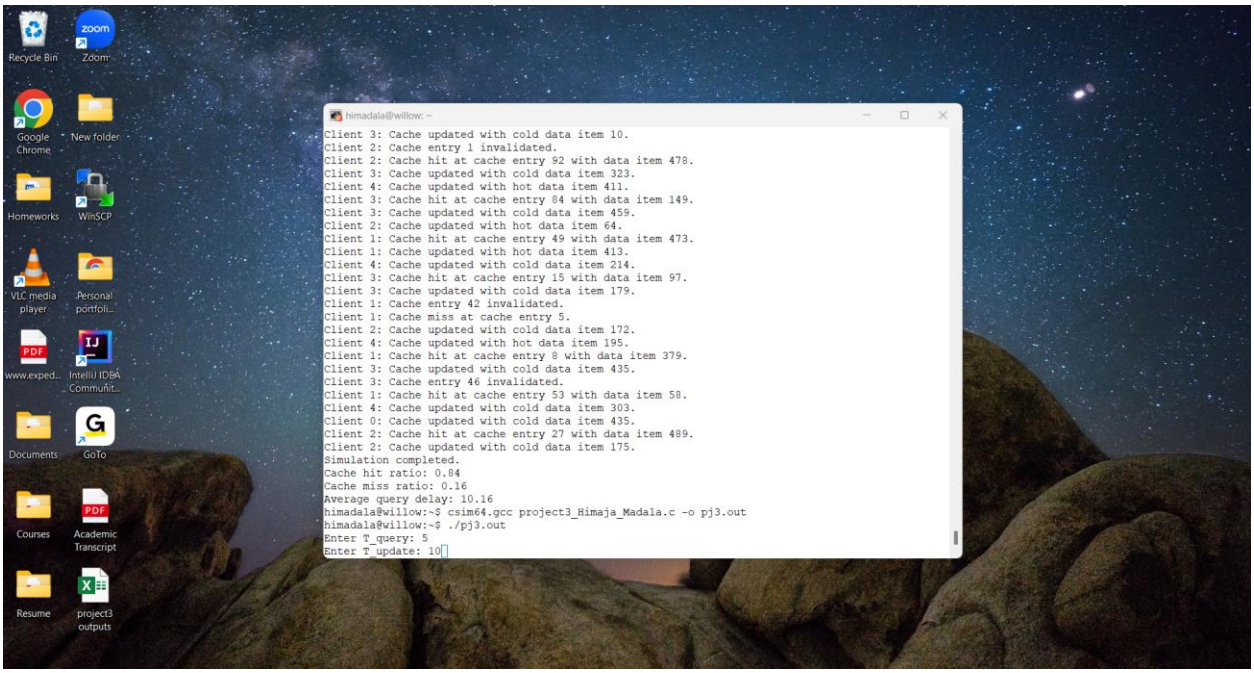
The following are the outputs for T_query as 10 and T_update as 10.



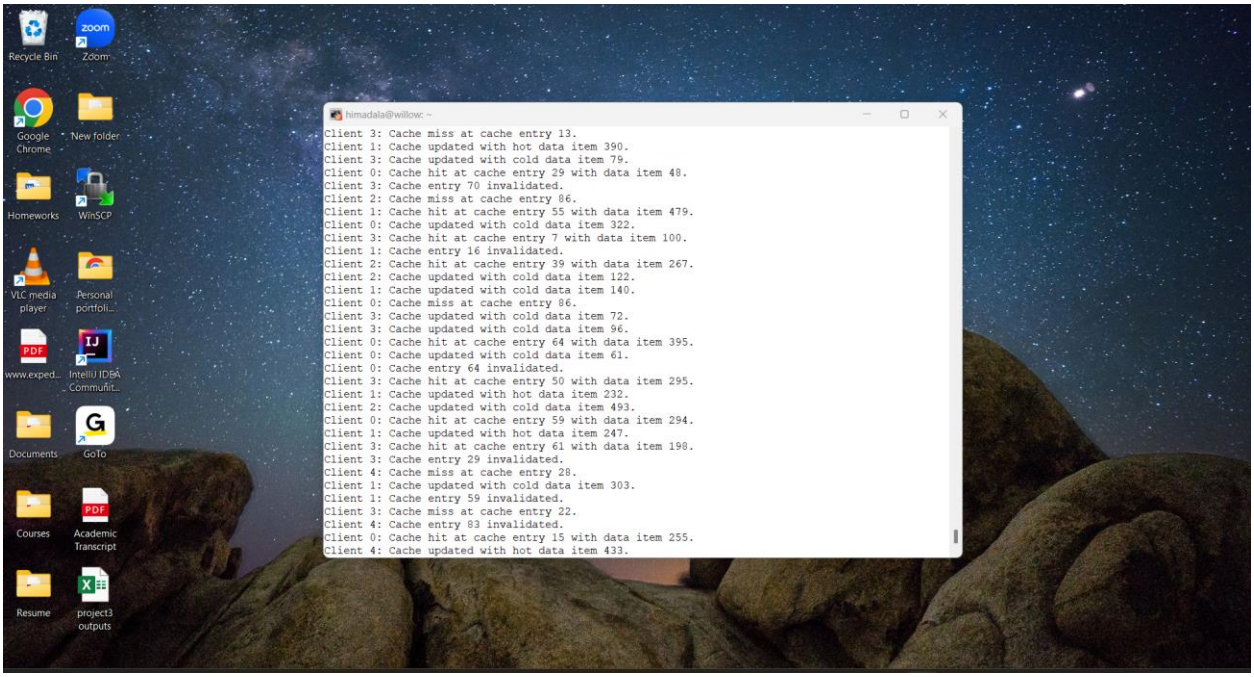
In the same way we should run the code for T_update as 10 and changing the values of T_query.

The values of T_query according to the project are 5, 10, 25, 50, 100

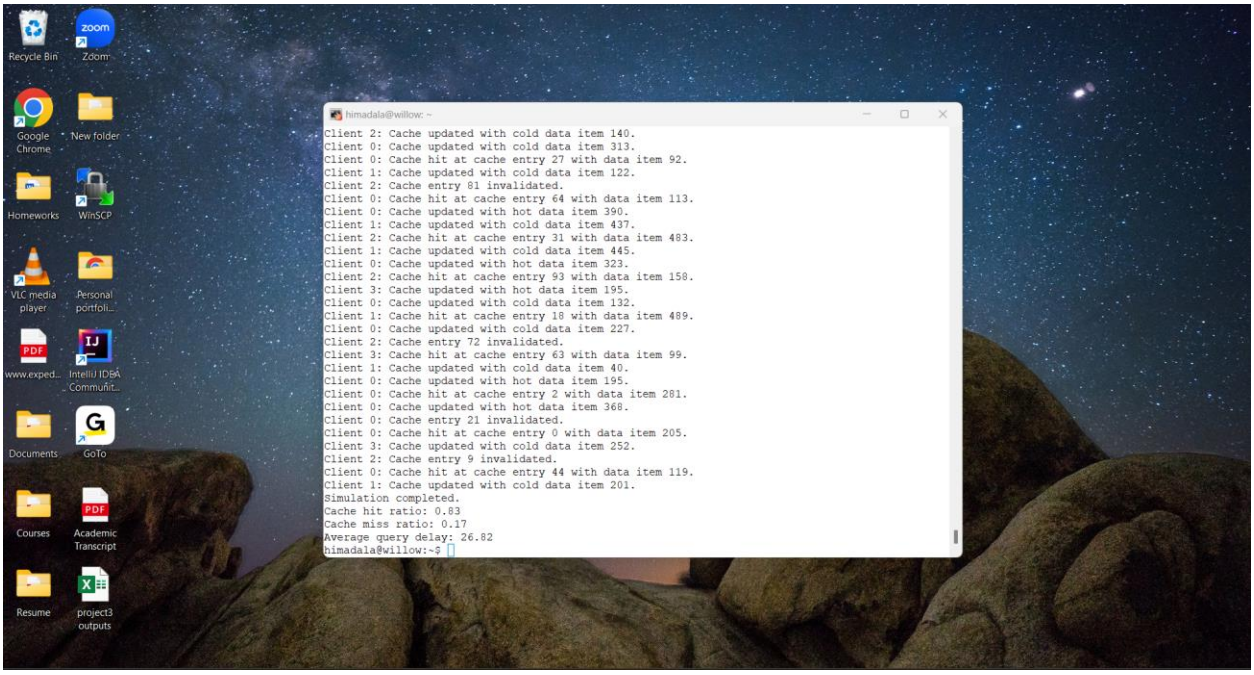
The following are the outputs for T_query as 5 and T_update as 10.



The output for the above is as follows:



The following are the outputs for T_query as 25 and T_update as 10.



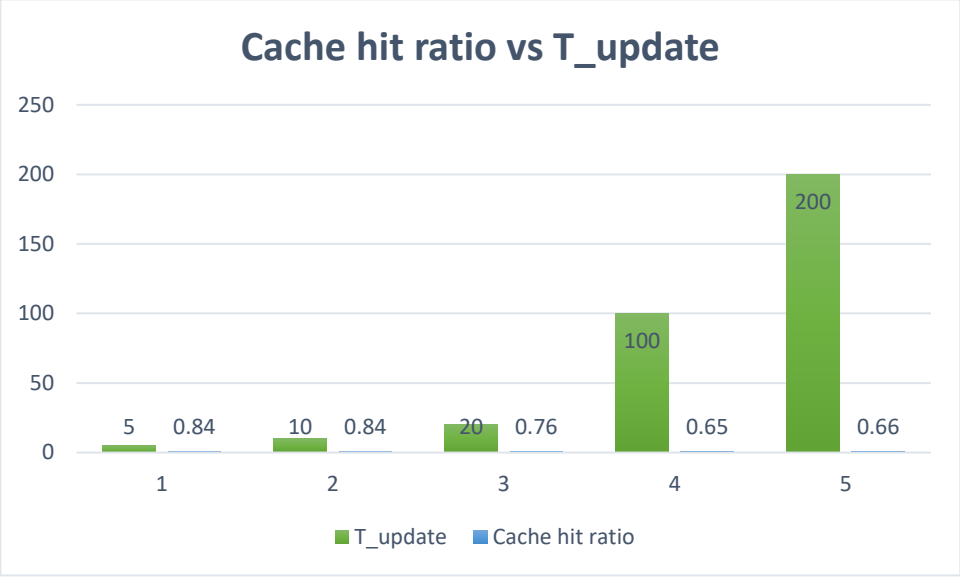
The following table shows the values for T_query as 10 and changing the values for T_update

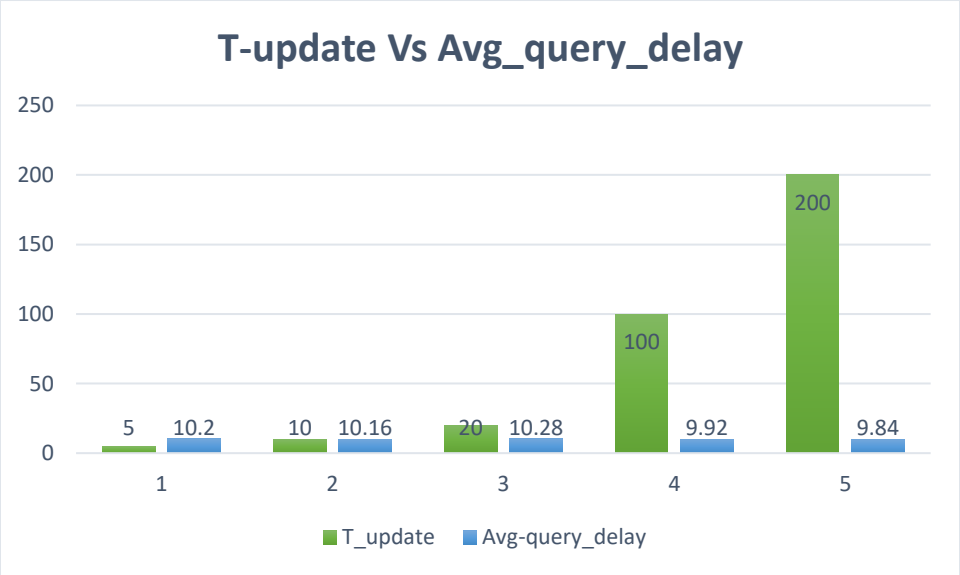
T_query	T_update	Cache hit ratio	Cache miss ratio	Avg_query_delay
10	5	0.84	0.16	10.20
10	10	0.84	0.16	10.16
10	20	0.76	0.24	10.28
10	100	0.65	0.35	9.92
10	200	0.66	0.34	9.84

The following table shows the values for T_update as 10 and changing the values for T_query

T_query	T_update	Cache hit ratio	Cache miss ratio	Avg_query_delay
5	10	0.77	0.23	5.10
10	10	0.84	0.16	10.16
25	10	0.83	0.17	26.82
50	10	0.81	0.19	52.86
100	10	0.81	0.19	104.83

The following are the graphs





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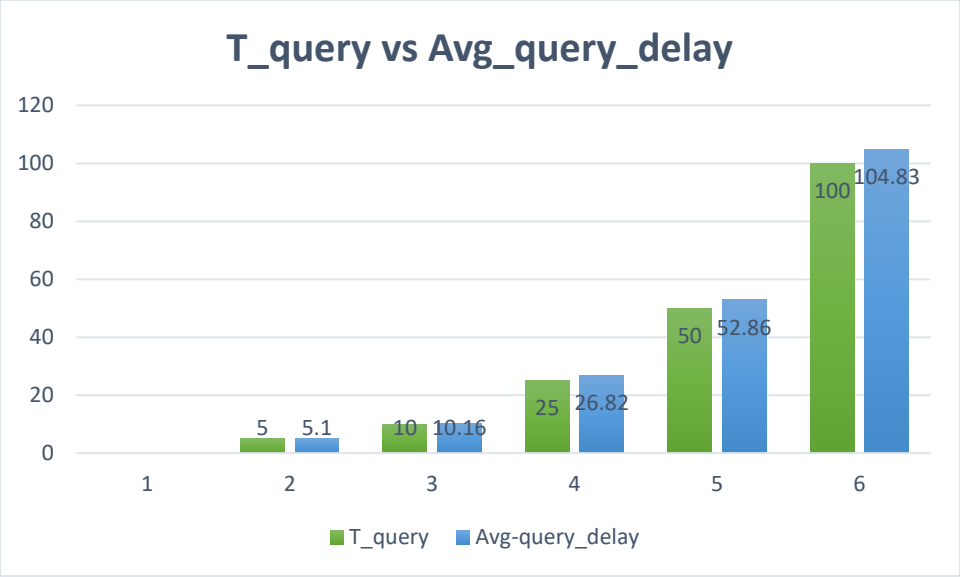
T_query vs Avg_query_delay
120
100
80
60
40
20
0
5
5.1
10
10.16
25
26.82
50
52.86
100
104.83
1
2
3
4
5
6
T_query
Avg-query_delay