CN Assignment Report

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1 Question 2 Analysis

Table 1: Performance Comparison of Server Implementations (Concurrent Clients = 10)

Metric	**Single Threaded**	**Select Server**	**Multithreaded**
CPU Cycles	76,570,661	75,916,528	78,179,545
Instructions	155,564,948	155,873,812	164,629,046
Cache References	1,329,390	1,327,362	1,328,916
Cache Misses	644,076	615,164	679,454
Context Switches	3	3	11
Time Elapsed (s)	22.48	26.10	20.79
User Time (s)	0.0122	0.0122	0.0069
Sys Time (s)	0.0204	0.0235	0.03198

Command used for server : sudo taskset -c 0 perf stat -e cycles,instructions,cache-references,cache-misses,context-switches ./¡executable of server¿

Command user for client : sudo taskset -c 1 perf stat ./¡executbable of client¿ ¡ number of concurrent client¿

Metric	Select Server	Single-Threaded Server	Multi-Threaded Server
CPU Core Cycles	158,107,472	152,949,883	164,110,207
CPU Core Instructions	325,623,281	321,007,133	338,541,094
Cache References	2,944,340	2,990,684	2,907,796
Cache Misses	1,592,407	1,574,316	1,529,394
Context Switches	7	6	19
Time Elapsed (seconds)	23.824	24.792	37.529
User Time (seconds)	0.024	0.019	0.014
System Time (seconds)	0.046	0.058	0.058

Table 2: Comparison of Select Server, Single-Threaded Server, and Multi-Threaded Server Performance for 20 concurrent clients

We can see that the the number of context switches for multithreaded is much more than the single threaded and select server. We can also see that the performance is not dependent on the number of threads used. We can also see that the number of cpu cycles is always the maximum for the multithreaded in both the cases.

Github Link -
https://github.com/rishabh0022/Client-Server-AnalysisClient-Server Analysis