Assignment 1

CSCI 729 NoSQL and NewSQL Databases

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Performance

1 thread:
Number of operations: 220765
Products with stock level less than zero: 0

2 threads:
Number of operations: 286054
Products with stock level less than zero: 0

3 threads:
Number of operations: 301690
Products with stock level less than zero: 0

4 threads:
Number of operations: 342513
Products with stock level less than zero: 0

5 threads:
Number of operations: 300401
Products with stock level less than zero: 0

6 threads:
Number of operations: 288162
Products with stock level less than zero: 0

7 threads:
Number of operations: 270212
Products with stock level less than zero: 0

8 threads:
Number of operations: 269704
Products with stock level less than zero: 0

9 threads:
Number of operations: 256847
Products with stock level less than zero: 0

10 threads:
Number of operations: 273703
Products with stock level less than zero: 0

Figure1 X-axis: Number of threads; Y-axis: Total number of Operations

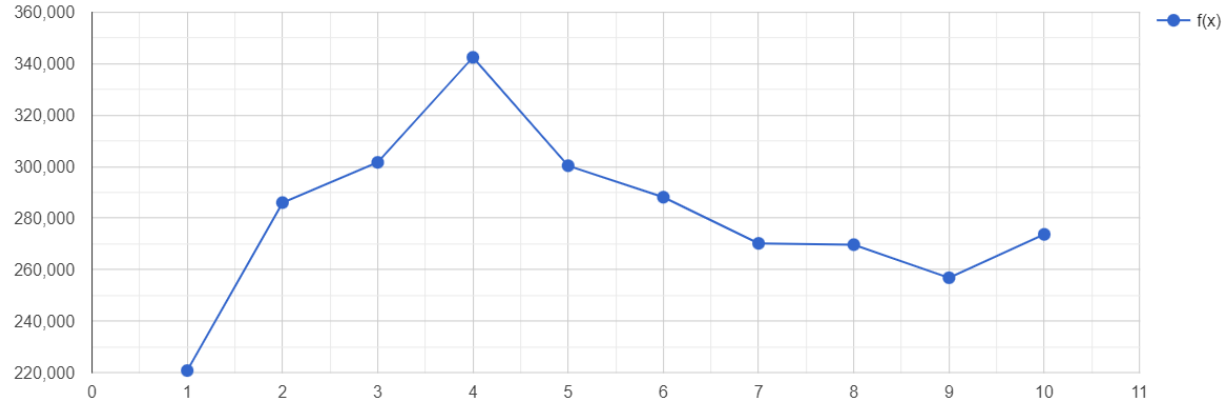
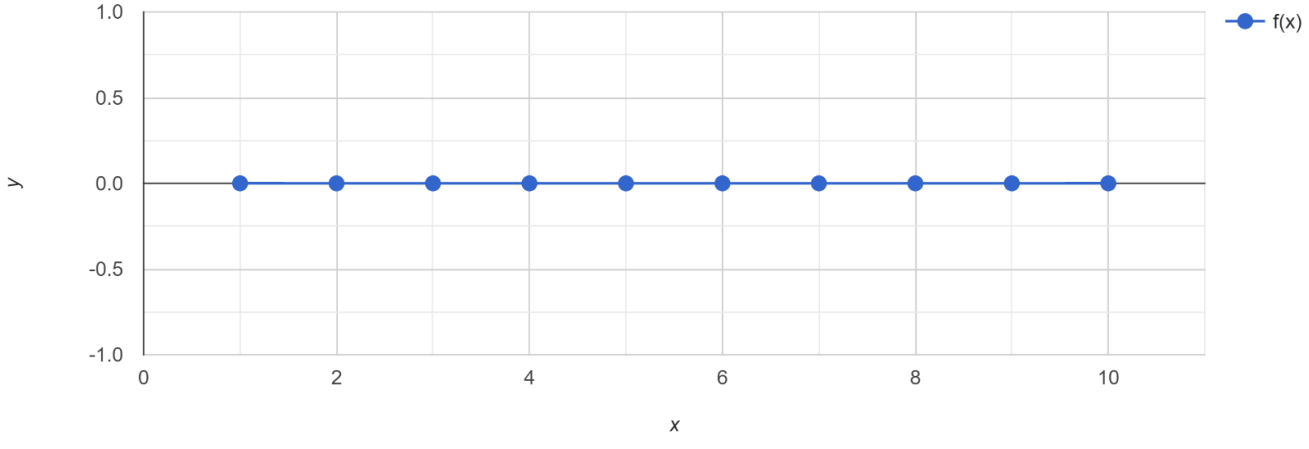


Figure 2 X-axis: Number of threads; Y-axis: Percentage of products with negative stock level



Drawing Conclusions with the help of comparisons from Assignment 1's Implementation

- It was quite evident that NoSQL performance was far better than SQL implementation.
- It can be observed that anything beyond 4 threads, the performance was not as good as multithreads of the range 1 to 4, reasons could be, first, there is a limit to parallelization, beyond a point its efficiency drops. Second, not enough memory.
- Although NoSQL is faster but it is unreliable as it does not check if the data is corrupt, or invalid. In RDBMS there are foreign key constraints and one cannot load data without creating a prior structure. But, in NoSQL even without any structure, one can load data and then decide on the structure.
- Unlike in Assignment 1 where, same task was performed using Relational Database, here there's no synchronization because of which the performance is better even when multithreads are used.
- Similarly, since there is no serialization, which was a potential performance issue in Assignment 1, NoSQL implementation works faster.
- Percentage of products with negative stock level is not guaranteed to be 0, there can be a possibility where it can go negative.