DB Assignment 6
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12/10/2024

Performance Comparison of Point vs Range Queries on Large Datasets

There is a major time difference between indexing and non-indexing for both point and range queries. When comparing indexing and non-indexing, point queries have a bigger time difference than range queries. All point queries with indexes took about 100 microseconds compared to point queries without indexes, which took over 45,000 microseconds and the highest taking up to 300,000 microseconds.

The timing performance of an indexed point query as data size increased varied slightly, always about 100 microseconds. In contrast, non-indexed point query timing almost doubled in microseconds as the dataset size increased each time by 50,000 accounts.

For range queries, both index and non-indexed queries increased as the account size increased. An indexed range query's highest microseconds was 29,394.4 when processing 200,000 accounts. This was still smaller than a non-indexed range query when processing 50,000 accounts at 59,200.1 microseconds.

Overall, using indexing decreases timing execution for both point and range queries. Point queries using indexes have the biggest impact on time when compared to point queries with non-indexing. This is especially important because timing execution can grow rapidly for a non-indexed point query, surpassing the timing on non-indexed range queries.

Results of Timing Experiments

Query Type	Description	Dataset Size	Index Type	Microseconds
Point Query 1	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance = 38911.04	50,000	Without Indexes	47,541.6
			With Index (index branch_name and balance)	99.7
Point Query 2	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance = 38911.04	100,000	Without Indexes	109,757.4
			With Index (index branch_name and	103.2

			balance)	
Point Query 3	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance = 38911.04	150,000	Without Indexes	147,625.6
			With Index (index branch_name and balance)	95.0
Point Query 4	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance = 38911.04	200,000	Without Indexes	293,833.1
			With Index (index branch_name and balance)	110.7
Range Query 1	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance between 30000 and 50000	50,000	Without Indexes	59,200.1
			With Index (index branch_name and balance)	4,745.2
Range Query 2	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance between 30000 and 50000	100,000	Without Indexes	116,754.8
			With Index (index branch_name and balance)	13,779.7
Range Query 3	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance between 30000 and 50000	150,00	Without Indexes	155,804.9
			With Index (index branch_name and balance)	20,594.4
Range Query 4	SELECT * FROM accounts WHERE branch_name = "Brighton" AND balance between 30000 and 50000	200,000	Without Indexes	196,426.7
			With Index (index branch_name and balance)	29,394.4

Extra Credit