Redundancy

Database Administration
Lab Guide 3

2022/2023

Introduce redundancy in the toy benchmark to reduce I/O and computation. For each change, evaluate its the impact by (i) observing the query plan and (ii) running the benchmark for 1, 2, 4, 8, ... threads and plotting the corresponding scalability curve.

Steps

1. Use indexes[1] to improve the performance of the select queries.
2. Use a materialized view[2] to improve the performance for the top 10 operation.

Questions

1. Are the indexes useful? Is clustering[3] the index useful?
2. Is the materialized view useful? Which update strategy makes it useful?
3. How does each of these optimizations impact each operation alone?

Learning Outcomes Recognize and explain the role of redundancy in relational databases, in particular, by contrasting it with implementation decisions in object-oriented programming.

[1] `https://www.postgresql.org/docs/15/indexes.html`
[2] `https://www.postgresql.org/docs/15/rules-materializedviews.html`
[3] `https://www.postgresql.org/docs/15/sql-cluster.html`