

Tutorial 10 — Parallelism and Distributed Databases

Richard Wong

`rk2wong@edu.uwaterloo.ca`

Department of Electrical and Computer Engineering
University of Waterloo

April 1, 2018

What kinds of queries are the following partitioning schemes well-suited for?

- 1 round-robin
- 2 range partitioning
- 3 hash partitioning

How would a distributed DB using the following partitioning schemes handle **addition** of nodes?

- 1 round-robin
- 2 range partitioning
- 3 hash partitioning

What is the difference between **skew** and **load imbalance**?

What factors would account for **load imbalance** in the following partitioning schemes?

- 1 range partitioning
- 2 hash partitioning

How can we alleviate the problem of load imbalance in range partitioning?

Suppose we have the following relation:

`employee(name, address, salary, plantNumber)`

The relation is **fragmented horizontally**,
and each fragment has a **local replica**,
and a **replica in New York**.

Provide a reasonable processing strategy for each of the following queries
made from the plant in Montreal:

- 1 Find all employees at the Toronto plant.
- 2 Find the average salary of all employees.
- 3 Find the highest-paid employee in Toronto, Vancouver, and Edmonton.