Queries optimisation

Databases 2022

Index creation

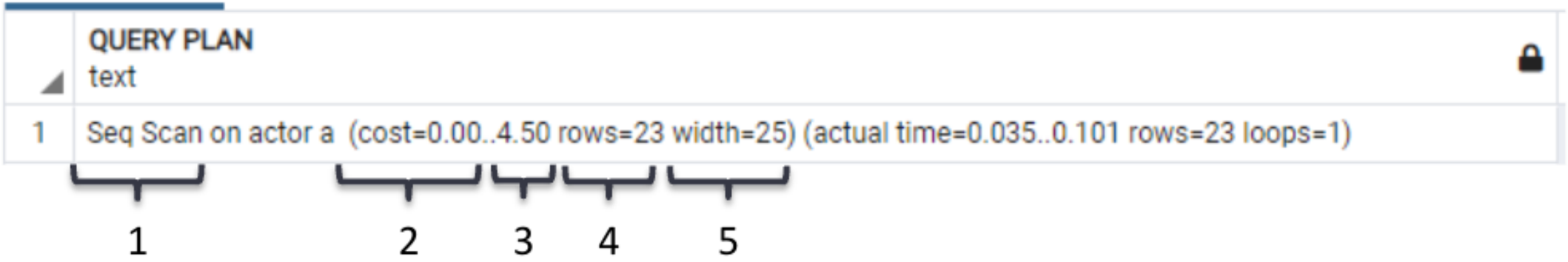
- Syntax

  CREATE INDEX index_name **ON** table_name [**USING** method]
  (column_name [**ASC** | **DESC**] [**NULLS** {**FIRST** | **LAST** }]);

- Example

  CREATE INDEX idx_address_phone **ON** address(phone);

Explain result



1. Types of scan nodes: sequential scans, index scans, and bitmap index scans (depends on the table access methods)
2. Estimated start-up cost (time expended before the output scan can start, e.g., time to do the sorting in a sort node)
3. **Estimated total cost (if all rows are retrieved, though they might not be; e.g., a query with a LIMIT clause will stop short of paying the total cost of the Limit plan node's input node)**
4. Estimated number of rows output by this plan node (again, only if executed to completion)
5. Estimated average width (in bytes) of rows output by this plan node

Exercise 1

- With the database generate with the procedure provided on the pre-lab presentation
  - Explore the generated data and try to query it on pgAdmin (or your preferred tool).
  - Using ***explain*** capture the total cost that take to fetch the data
  - Create three different queries and show the cost for each query.
  - Create single-column b-tree and hash indexes on the previously created table using any fields you like (but different fields for each!).
  - Using ***explain*** shows the elapsed time and the cost and compared with the results obtained before the index creation.
  - Is there any difference? Which queries are faster? (If you can’t see the difference try to increase the generated data to 1M)

- submission is three queries with after/before indexes creation.

Exercise 2

- Import the DVD rental database(available on Moodle) in your own databases.
- Using the database, provide a query for each of the following requirements
  - The company is preparing its campaign for next Halloween, so the list of movies that have not been rented yet by the clients is needed, whose rating is R or PG-13 and its category is Horror or Sci-fi
  - The company has decided to reward the best stores in each of the cities, so it is necessary to have a list of the stores that have made a greater number of sales in term of money during the last month recorded.

- Hint: https://www.postgresqltutorial.com/postgresql-getting-started/load-postgresql-sample-database/

Exercise 2

- Using the EXPLAIN PLAN, identify the most expensive step of your queries execution plans and propose a solution for it.

See you next lab