Automatic Index Creation

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Introduction to the Problem Statement

- Indexes are crucial for efficient query execution in relational databases.
- However, developers sometimes forget to create indexes for frequently queried columns.
- This can lead to repeated full relation scans, significantly degrading performance.
- **Goal:** Modify the application layer of PostgreSQL to detect such patterns and automatically create indexes when beneficial.
- Approach:
  - Track full relation scans with equality predicates.
  - Estimate the potential benefit of an index.
  - Automatically trigger index creation if estimated benefit outweighs the cost.
  - Rejecting low selectivity columns, such as gender, which has low number of distinct values.

Directory Structure

Here is the directory structure of the submission:

- `./code`: Contains the header and C++ files for the implementation, along with the Makefile.
- `./theory`: Contains some relevant paper and slides.
- `./documentation`: Contains the report as `readme.pdf`.
- `./README.md`: Contains the instructions to run the code.


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