ComS 363 Fall 2022
Class Participation Week 10

Topic: Query Execution Plan, Full Table Scan, Indexing

Learning objective: Explore query optimization components of DBMS using MySQL as a use case.

- How is a relation stored in a file?
- How did relational DBMS developers make it easy for application developers to obtain data managed by DBMS? How did they think conceptually before writing code to do what they want?

Instruction

Use MySQL Workbench to visualize the cheapest query execution plan of each of the queries. See the documentation "How to check a query execution plan" on Canvas. The relation name or the alias is shown under the box.

(a)	Select * FROM Emp;
(b)	SELECT * FROM Emp WHERE eid = 101;
(c)	SELECT * FROM Emp WHERE upper(ename) = 'JOHN';
(d)	SELECT * FROM Emp WHERE ename = 'John';

	Create index enameIdx on Emp(ename); See what happen when you run queries (c) and (d) again. Then run the following statement. drop index enameIdx on emp;

The box with the word “Full Table Scan” indicates that the entire relation is read one page at a time; no index is used at all.

The box with the word “PRIMARY” indicates that the index on the primary key of that relation is used.

The box with the word “Full Index Scan” indicates that the entire index is read. No data file is used.

The box with the word “Index Range Scan” indicates that an index is used. A data file is only used if the select clause does not have all the attributes in the index file.

The box with the word “nested loop” indicates that a nested loop join algorithm is used to perform the join.

The box with the word “hash join” indicates that a hash join algorithm is used.

Do all the questions.

Answer the following questions using the threetables database from Week 2.

a) Provide the absolute path of the file storing the data of the Emp table.
   b) C:\ProgramData\MySQL\MySQL Server 8.0\Data\threetables\emp.ibd
c) What are indexes associated with the Emp table?
   a Primary EID
d) Which of the following queries, a full table scan is used?
   a A,B,C,D,E
e) Which of the following queries, some indexes are used?
   a B,F
f) Which of the following queries, a join algorithm is used?
   a G

(d)	SELECT count(*) FROM Emp;
(e)	SELECT did, dname FROM Dept where did < 10;
(f)	SELECT e.eid, e.ename, w.did FROM emp e inner join works w on e.eid = w.eid;