Query execution plan (aka. query plan)

Retrieving plan

used symbols: (\*) - executes the SQL statement, so you can see exactly how long it takes

e.g.: select \* from table1;

textually:

P EXPLAIN [ANALYZE] <SQL query>; - "ANALYZE" - (\*)

M EXPLAIN [ANALYZE] [FORMAT = TREE] <SQL query>; - "ANALYZE" - (\*)

L EXPLAIN QUERY PLAN <SQL query>;

O EXPLAIN PLAN FOR <SQL query>;

O SELECT \* FROM TABLE(DBMS\_XPLAN.DISPLAY);

S SET {SHOWPLAN\_ALL | STATISTICS PROFILE} ON; - "STATISTICS PROFILE" - (\*)

S <SQL query>;

graphically:

PMOS can be done in the main DBMS client program (pgAdmin, MySQL Workbench, Oracle SQL Developer, SQL Server Management Studio) (PS: (\*) as an option)

Possible operations in the explain plan

they are described at [use-the-index-luke.com/sql/explain-plan](https://use-the-index-luke.com/sql/explain-plan)

Optimizers

* CBO (cost based optimizer) - requires statistics (e.g. a histogram of the distribution of a table column values)

PMOS: uses CBO only, statistics used by CBO are automatically collected and updated

L: uses CBO, but statistics used by CBO aren't automatically collected nor updated. So, run:

* "ANALYZE [database1|table1|index1]" to collect all statistics [for a given object], and/or
* "PRAGMA analysis\_limit=400; PRAGMA optimize;" prior to closing each database connection, to incrementally update statistics if it is needed.

See [sqlite.org/lang\_analyze.html](https://sqlite.org/lang_analyze.html%20) for details.

* RBO (rule based optimizer) – not used in PMOS

If the data has changed a lot and you want to update the statistics for CBO sooner, then you can do it manually:

P ANALYZE [table1 [(col1 [,...])] [,…]] - def. the whole database; locks table1 with a read lock

M ANALYZE TABLE table1 [,…] - locks table1 with a read lock

O DBMS\_STATS.{GATHER|DELETE}\_{DATABASE|SCHEMA|TABLE|INDEX}\_STATS(…) - see the documentation

S UPDATE STATISTICS … - see the documentation

L ANALYZE [database1|table1|index1] - def. all attached databases