

Examples of Transformations and SQL Query Rewrites

Cartesian Product Elimination

Detects Cartesian Joins and propose corrections based on analysis of statement, for example suggesting dept.deptno = emp.deptno if emp and dept had no join criteria.

Expression Transformation

Identifies actions on predicates that might suppress index usage such as "where empid + 1 = 1 ", should be "where empid=0"

Invalid Outer Join

Identifies invalid outer joins and suggests more efficient alternatives.

Before	After
SELECT * FROM employee e, customer c WHERE e.employee_id = c.salesperson_id (+) AND c.state = 'CA'	SELECT * FROM employee e, customer c WHERE e.employee_id = c.salesperson_id (+) AND c.state(+) = 'CA'

Transitivity

Before	After
SELECT * FROM item i, product p, price pr WHERE i.product_id = p.product_id AND p.product_id = pr.product_id	SELECT * FROM item i, product p, price pr WHERE i.product_id = p.product_id AND p.product_id = pr.product_id AND i.product_id = pr.product_id

Move Expression to WHERE Clause

Before	After
SELECT col_a, SUM(col_b) FROM table_a GROUP BY col_a HAVING col_a > 100	SELECT col_a, SUM(col_b) FROM table_a WHERE col_a > 100 GROUP BY col_a

NULL Column

Before	After
SELECT * FROM employee WHERE manager_id != NULL	SELECT * FROM employee WHERE manager_id IS NULL

Push Subquery

Before	After
SELECT * FROM employee WHERE employee_id = (SELECT MAX(salary) FROM employee)	SELECT employee.* FROM employee, (SELECT DISTINCT MAX(salary) col1 FROM employee) t1 WHERE employee_id = t1.col1

Mismatched column types

Identify joins type mismatch such as number = character which might suppress use of Index.