**Case 1 - Small Database**

* Overall running time: 203 ms
* "SELECT name FROM categories WHERE id = " + filter"
  + 1 ms
* "SELECT COUNT(\*) as num FROM (SELECT name FROM products INNER JOIN orders ON products.id = orders.product\_id GROUP BY name) p"
  + 12 ms
* "SELECT COUNT(\*) as num FROM (SELECT name FROM products INNER JOIN orders ON products.id = orders.product\_id WHERE products.category\_id = " + filterString + " GROUP BY name) p"
  + 5 ms
* "SELECT COUNT(\*) as num FROM (SELECT users.name as name FROM users INNER JOIN orders ON users.id = orders.user\_id GROUP BY users.name) p"
  + 13 ms
* "SELECT COUNT(\*) as num FROM (SELECT users.name as name FROM users INNER JOIN orders ON users.id = orders.user\_id INNER JOIN products ON products.category\_id = " + filterString + " GROUP BY users.name) c"
  + 58 ms
* "SELECT COUNT(\*) as num FROM (SELECT state FROM users INNER JOIN orders ON users.id = orders.user\_id GROUP BY state) p"
  + 12 ms
* "SELECT COUNT(\*) as num FROM (SELECT state FROM users INNER JOIN orders ON users.id = orders.user\_id INNER JOIN products ON products.category\_id = " + filterString + " GROUP BY state) s"
  + 60 ms
* "WITH col\_header(product\_id, totalsales) AS (SELECT product\_id, SUM(orders.price) AS totalsales FROM orders GROUP BY product\_id) SELECT products.id AS id, products.name AS name, col\_header.totalsales AS totalsales FROM products INNER JOIN col\_header ON products.id = col\_header.product\_id " + orderString + "LIMIT 10 OFFSET " + session.getAttribute("colNum")"
  + 13 ms
* "WITH col\_header(product\_id, totalsales) AS (SELECT product\_id, SUM(orders.price) AS totalsales FROM products INNER JOIN orders on orders.product\_id = products.id WHERE products.category\_id = " + filterString + " GROUP BY product\_id) SELECT products.id AS id, products.name AS name, col\_header.totalsales AS totalsales FROM products INNER JOIN col\_header ON products.id = col\_header.product\_id" + orderString + "LIMIT 10 OFFSET " + session.getAttribute("colNum")"
  + 5 ms
* "WITH row\_header(id, name, totalsales) AS (SELECT users.id AS id, users.name AS name, SUM(orders.price) AS totalsales FROM users INNER JOIN orders ON users.id = orders.user\_id GROUP BY users.id) SELECT DISTINCT LEFT(users.name, 10) AS name, users.id AS id, row\_header.totalsales AS totalsales FROM users INNER JOIN row\_header ON row\_header.name = users.name" + orderString + "LIMIT 20 OFFSET " + session.getAttribute("rowNum")"
  + 18 ms
* "WITH row\_header(id, name, totalsales) AS (SELECT users.id AS id, users.name AS name, SUM(orders.price) AS totalsales FROM users INNER JOIN orders ON users.id = orders.user\_id INNER JOIN products ON orders.product\_id = products.id WHERE products.category\_id = " + filterString + " GROUP BY users.id) SELECT DISTINCT LEFT(users.name, 10) AS name, users.id AS id, row\_header.totalsales AS totalsales FROM users INNER JOIN row\_header ON row\_header.name = users.name" + orderString + "LIMIT 20 OFFSET " + session.getAttribute("rowNum")"
  + 8 ms
* "WITH row\_header(state, totalsales) AS (SELECT users.state AS state, SUM(orders.price) AS totalsales FROM users, orders WHERE users.id = orders.user\_id GROUP BY users.state ORDER BY totalsales DESC) SELECT DISTINCT LEFT(users.state, 10) AS state, users.id AS id, row\_header.totalsales AS totalsales FROM users INNER JOIN row\_header ON row\_header.state = users.state" + orderString2 + "LIMIT 20 OFFSET " + session.getAttribute("rowNum")"
  + 20 ms
* "WITH row\_header(state, totalsales) AS (SELECT users.state AS state, SUM(orders.price) AS totalsales FROM users INNER JOIN orders ON users.id = orders.user\_id INNER JOIN products ON orders.product\_id = products.id WHERE products.category\_id = " + filterString + " GROUP BY users.state ORDER BY totalsales DESC) SELECT DISTINCT LEFT(users.state, 10) AS state, users.id AS id, row\_header.totalsales AS totalsales FROM users INNER JOIN row\_header ON row\_header.state = users.state" + orderString2 + "LIMIT 20 OFFSET " + session.getAttribute("rowNum")"
  + 11 ms
* "SELECT SUM(orders.price) AS totalprices FROM orders WHERE orders.product\_id = " + rs2.getString("id") + " AND orders.user\_id = " + rs3.getString("id") + " GROUP BY orders.product\_id, orders.user\_id"
  + 3 ms
* "SELECT SUM(orders.price) AS totalprices FROM orders INNER JOIN users ON users.id = orders.user\_id INNER JOIN products on products.id = orders.product\_id WHERE orders.product\_id = '" + rs2.getString("id") + "' AND users.state = '" + rs3.getString("state") + "' GROUP BY orders.product\_id, users.state"
  + 4 ms

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