

## Module 3 Assignment

The module 3 assignment provides experience writing SELECT statements using the SQL analytic functions. You should adapt the examples given in the notes. Each problem is based on a similar problem in the notes.

Your SELECT statements will reference the tables of the Inventory Data Warehouse, described in another document. The INSERT statements are provided in another document. The Inventory Data Warehouse design and rows are identical from module 5 in course 2. If you added rows through the data integration assignment in module 5 of course 2, you should remove those rows or just recreate and repopulate the tables.

### ***Query 1: Ranking within the entire result***

Use the RANK function to rank customers in descending order by the sum of extended cost for shipments (transaction type 5). You should use the entire result as a single partition. The result should include the customer name, sum of the extended cost, and rank.

### ***Query 2: Ranking within a partition***

Use the RANK function to rank customers in descending order by the sum of extended cost for shipments (transaction type 5). You should partition the rank values by customer state. The result should include the customer state, customer name, sum of the extended cost, and rank. You should order the result by customer state.

### ***Query 3: Ranking and dense ranking within the entire result***

Use both RANK and DENSE\_RANK functions to rank customers in descending order by the count of inventory transactions for shipments (transaction type 5). You should use the entire result as a single partition. The result should include the customer name, count of transactions, rank, and dense rank.

### ***Query 4: Cumulative extended costs for the entire result***

Calculate the cumulative sum of extended cost ordered by customer zip code, calendar year, and calendar month for shipments (transaction type 5). The result should include the customer zip code, calendar year, calendar month, sum of the extended cost, and cumulative sum of the extended cost. Note that the cumulative extended cost is the sum of the extended cost in the current row plus the cumulative sum of extended costs in all previous rows.

***Query 5: Cumulative extended costs for a partition***

Calculate the cumulative sum of extended cost ordered by customer zip code, calendar year, and calendar month for shipments (transaction type 5). Restart the cumulative extended cost after each combination of zip code and calendar year. The result should include the customer zip code, calendar year, calendar month, sum of the extended cost, and cumulative sum of the extended cost. Note that the cumulative extended cost is the sum of the extended cost in the current row plus the cumulative sum of extended costs in all previous rows of the store zip code and years. The value of cumulative extended cost resets in each partition (new value for zip code and year).

***Query 6: Ratio to report applied to the entire result***

Calculate the ratio to report of the sum of extended cost for adjustments (transaction type 1). You should sort on descending order by sum of extended cost. The result should contain the second item id, sum of extended cost, and ratio to report.

Note: Since PostgreSQL does not support the `RATIO_TO_REPORT` function, learners using PostgreSQL have the choice of submitting an Oracle SQL statement or a PostgreSQL statement to produce identical results. You should see the slides in lesson 5 of module 3 about a query pattern without the `RATIO_TO_REPORT` analytic function.

***Query 7: Ratio to report applied to a partition***

Calculate the ratio to report of the sum of extended cost for adjustments (transaction type 1) with partitioning on calendar year. You should sort on ascending order by calendar year and descending order by sum of extended cost. The result should contain the calendar year, second item id, sum of extended cost, and ratio to report.

Note: Since PostgreSQL does not support the `RATIO_TO_REPORT` function, learners using PostgreSQL have the choice of submitting an Oracle SQL statement or a substitute PostgreSQL statement to produce identical results. You should see the slides in lesson 5 of module 3 about a query pattern without the `RATIO_TO_REPORT` analytic function.

***Query 8: Cumulative distribution functions for carrying cost of all branch plants***

Calculate the `rank`, `percent_rank`, and `cume_dist` functions of the carrying cost in the `branch_plant_dim` table. The result should contain the `BPName`, `CompanyKey`, `CarryingCost`, `rank`, `percent_rank`, and `cume_dist`.

***Query 9: Determine worst performing plants***

Determine the branch plants with the highest carrying costs (top 15%). The result should contain `BPName`, `CompanyKey`, `CarryingCost`, and `cume_dist`. The criteria for `Cume_Dist` of carrying cost should be ascending order. For limiting rows to the top 15% of carrying costs, you should use a condition with the `>=` operator.

***Query 10: Cumulative distribution of extended cost for Colorado inventory***

Calculate the cumulative distribution of extended cost for Colorado inventory (condition on customer state). The result should contain the extended cost and cume\_dist, ordered by extended cost. You should eliminate duplicate rows in the result.

***Grading***

After finishing this assignment, you should evaluate your performance using the assignment quiz and self-evaluation rubric. Before evaluation using the quiz and self-evaluation rubric, you should create a document with a SELECT statement and snapshot of partial results for each problem. You should not perform evaluation until each statement executes without syntax errors. The quiz contains questions about elements of each problem such as the usage of correct tables, join conditions, result columns, and other problem specific elements. Since some quiz questions involve execution results, you should execute your statements using the original inventory data warehouse tables. After completing the assignment quiz, you should apply the self-evaluation rubric for a detailed review of each problem. You should use the reflective quiz to document your self-evaluation.