SQL DEVELOPER

Task 4: Window Functions

Objective: Utilize SQL window functions to rank students and perform cumulative analysis.

Project Steps

1. Dataset Setup

- **Create and Populate Table**:
  Define a table `Students` with fields like:
  - `StudentID` (Primary Key)
  - `Name`
  - `MathScore`
  - `TotalScore`
- Populate with sample data for the analysis.

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2. Tasks to Perform

Task 1: Rank Students Based on Total Scores

- **Query Objective**: Use the `RANK()` function to assign ranks to students based on their `TotalScore`.
- **Query Explanation**:
  - Use `RANK() OVER (ORDER BY TotalScore DESC)` to rank students in descending order of their total scores.
  - If two students have the same score, they receive the same rank, and the next rank is skipped.

Task 2: Calculate Running Totals for Math Scores

- **Query Objective**: Use the `SUM()` function with `OVER()` to calculate running totals of `MathScore` ordered by `StudentID`.
- **Query Explanation**:
  - Use `SUM(MathScore) OVER (ORDER BY StudentID)` to compute a cumulative total.
  - This provides the total Math score up to each student in the order specified.

How to Execute

1. **Setup**:
   Create the `Students` table and populate it with sample data. Ensure fields align with the queries (e.g., `StudentID`, `MathScore`, and `TotalScore`).

2. **Execution**:
   - Write and execute the query for ranking students.
   - Write and execute the query for cumulative totals.
3. **Validation**:
   - Cross-check results for correctness.
   - For rankings, ensure the ranks align with descending total scores.
   - For cumulative totals, ensure each row displays the correct running total.
4. **Documentation**:
   - Save query screenshots.
   - Record the output tables.
   - Summarize findings and insights.

Deliverables

1. **Query Results**:
   - Rank of students by total scores.
   - Running totals of Math scores.
2. **Query Explanations**:
   - Detailed explanations for `RANK()` and `SUM() OVER` usage.
3. **Summary of Findings**:
   - Insights into student performance based on scores and cumulative analysis.

Would you like guidance on specific scenarios or additional metrics?