

# Quiz 05, Window Functions

## T-SQL Fundamentals

This is a timed test. You have thirty minutes to complete the test. When you finish the test, upload your output file to Canvas. Do not publish your answer to your git repository.

The purpose of the report is to analyze the monthly sales for all products. We need the information described below. The column names and descriptions are shown. The query should return 1162 rows.

Use the `TSQVL4` database with SQL Server. The data will be found in the tables `Sales.Orders` and `Sales.OrderDetails`. Create a query according to the following instructions, You may want to use a CTE joining the appropriate tables to start your query. Use window functions to perform the calculations.

*Grading:* There are ten columns. Each column represents 10% of the grade. 100 points total.

1. `productid` : the product ID, aggregated by product ID
2. `monthyear` : the month and year aggregation, includes all products sold during the month
3. `thisMonth` : the total quantity of all of this product sold this month
4. `lastMonth` : the total quantity of all of the product sold last month
5. `diff` : the difference between the sales of this month and last month
6. `pctIncDec` : the percent increase/decrease between this month and last month
7. `running` : the running total of monthly sales for this product
8. `pctChange` : the percent of this months sales to last months sales
9. `totalPerProduct` : grand total of all of this product sold for all months
10. `pctLinePerProduct` : percent of the total sold this month against the grand total for the product

| productid | monthyear | thisMonth | lastMonth | diff | pctIncDec | running | pctChange | totalPerProduct | pctLinePerProduct |
|-----------|-----------|-----------|-----------|------|-----------|---------|-----------|-----------------|-------------------|
| 1         | 8/1/2014  | 63        | NULL      | NULL | NULL      | 63      | NULL      | 828             | 7.61              |
| 1         | 9/1/2014  | 20        | 63        | -43  | -68.25    | 83      | 31.75     | 828             | 2.42              |
| 1         | 11/1/2014 | 27        | 20        | 7    | 35.00     | 110     | 135.00    | 828             | 3.26              |
| 1         | 12/1/2014 | 15        | 27        | -12  | -44.44    | 125     | 55.56     | 828             | 1.81              |
| 1         | 1/1/2015  | 34        | 15        | 19   | 126.67    | 159     | 226.67    | 828             | 4.11              |
| 1         | 3/1/2015  | 15        | 34        | -19  | -55.88    | 174     | 44.12     | 828             | 1.81              |
| 1         | 4/1/2015  | 40        | 15        | 25   | 166.67    | 214     | 266.67    | 828             | 4.83              |
| 1         | 5/1/2015  | 8         | 40        | -32  | -80.00    | 222     | 20.00     | 828             | 0.97              |
| 1         | 6/1/2015  | 10        | 8         | 2    | 25.00     | 232     | 125.00    | 828             | 1.21              |
| 1         | 7/1/2015  | 29        | 10        | 19   | 190.00    | 261     | 290.00    | 828             | 3.50              |
| 1         | 8/1/2015  | 40        | 29        | 11   | 37.93     | 301     | 137.93    | 828             | 4.83              |
| 1         | 10/1/2015 | 70        | 40        | 30   | 75.00     | 371     | 175.00    | 828             | 8.45              |
| 1         | 11/1/2015 | 58        | 70        | -12  | -17.14    | 429     | 82.86     | 828             | 7.00              |
| 1         | 1/1/2016  | 84        | 58        | 26   | 44.83     | 513     | 144.83    | 828             | 10.14             |
| 1         | 2/1/2016  | 90        | 84        | 6    | 7.14      | 603     | 107.14    | 828             | 10.87             |
| 1         | 3/1/2016  | 81        | 90        | -9   | -10.00    | 684     | 90.00     | 828             | 9.78              |
| 1         | 4/1/2016  | 104       | 81        | 23   | 28.40     | 788     | 128.40    | 828             | 12.56             |
| 1         | 5/1/2016  | 40        | 104       | -64  | -61.54    | 828     | 38.46     | 828             | 4.83              |
| 2         | 7/1/2014  | 105       | NULL      | NULL | NULL      | 105     | NULL      | 1057            | 9.93              |
| 2         | 9/1/2014  | 40        | 105       | -65  | -61.90    | 145     | 38.10     | 1057            | 3.78              |
| 2         | 10/1/2014 | 56        | 40        | 16   | 40.00     | 201     | 140.00    | 1057            | 5.30              |
| 2         | 12/1/2014 | 25        | 56        | -31  | -55.36    | 226     | 44.64     | 1057            | 2.37              |
| 2         | 1/1/2015  | 60        | 25        | 35   | 140.00    | 286     | 240.00    | 1057            | 5.68              |
| 2         | 2/1/2015  | 55        | 60        | -5   | -8.33     | 341     | 91.67     | 1057            | 5.20              |
| 2         | 3/1/2015  | 60        | 55        | 5    | 9.09      | 401     | 109.09    | 1057            | 5.68              |
| 2         | 4/1/2015  | 12        | 60        | -48  | -80.00    | 413     | 20.00     | 1057            | 1.14              |
| 2         | 7/1/2015  | 10        | 12        | -2   | -16.67    | 423     | 83.33     | 1057            | 0.95              |