**TSQL Homework 07**

**Question 1**

What is a window function?

**Answer**

Window functions allow access to data in the records right before and after the current record. A window function defines a frame or window of rows with a given length around the current row, and performs a calculation across the set of data in the window. A name block of code that transform input into output.

**Question 2**

What does PARTITION do?

**Answer**

Partitioning is the database process where very large tables are divided into smaller parts. By splitting a large table into smaller, individual table, queries that access only a fraction of the data can run faster because there is less data to scan.

**Question 3**

What does ORDER BY do?

**Answer**

The order by keyword is used to sort the result-set in ascending or descending order. The order by keyword sorts the records in ascending order by default.

**Question 4**

What does ROWS BETWEEN do?

**Answer**

Rows between 2 preceding and current row means that the window of rows that the function operates on is three rows in size, starting with 2 rows preceding until and including the current row. Rows or range requires that the order by clause be specified.

**Question 5**

What is a ranking window function? Why would you use it? Give an example.

**Answer**

The rank() function is a window function that assigns a rank to each row within a partition of a result set. The rows within a partition that have the same values will receive the same rank. The rank of the first row within a partition is one.

**Question 6**

What is an offset window function? Why would you use it? Give an example.

**Answer**

Window offset functions let you return a value from a row that’s in a certain offset from the current row (lag and lead) or from the first or last row in the window frame (first\_value and last\_value).

**Question 7**

What do LEAD and LAG do?

**Answer**

The lag function has the ability to fetch data from a previous row, while lead fetches data from a subsequent row. Both functions are very similar to each other and you can just replace one by the other by changing the sort order.

**Question 8**

What do FIRST\_VALUE and LAST\_VALUE do?

**Answer**

These new functions allow you to get the same value for the first row and the last row for all records in a result set.

**Question 9**

What is an aggregate window function? Why would you use it? Give an example.

**Answer**

Aggregate window functions operate on a set of rows and return a single value for each row from the underlying query. The over() clause differentiates window functions from other analytical reporting functions. Examples: AVG, COUNT, MIN, MAX, SUM…

**Question 10**

What is a pivot table and what does it do?

**Answer**

Pivot rotates a table-valued expression by turning the unique values from one column in the expression into multiple columns in the output. And pivot runs aggregations where they’re required on any remaining column values that are wanted in the final output.

**Question 11**

In mathematical theory, what is a power set? How does this definition of power set relate to grouping sets?

**Answer**

The power set of any set S is the set of all subsets of S, including the empty set and S itself, variously denoted as P(S), or identifying the powerset of S with the set of all functions from S to a given set of two elements.

**Question 12**

What is a bit array? How can you implement a bit array to represent a set of flags? How does GROUPING\_ID() function implement bit array?

**Answer**

A bit array is an array data structure that compactly store bits. It can be used to implement a simple set data structure. A bit array is effective at exploiting bit-level parallelism in hardware to perform operations quickly.

**Question 13**

Read the documentation on the UNIX/Linux chmod command. How would you interpret this command: chmod 755 myscript.sql?

**Answer**

It assigns permission to the file myscript.sql 7 = read = owner, write, execute; 5 = read and execute = group; 5 = read and execute = world.