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Intro to Databases

Assignment 03

**Assignment 3 - SQL Selection options**

**Introduction**

This paper will discuss the nuances of selections. First will be aggregate functions, and its uses. Then the functions needed along with the aggregate functions, such as group by. Finally the difference between ‘where’ and ‘having’, and when to use them.

**Topic 1 - Aggregate functions**

An aggregate function is used to perform “a calculation on a set of values, and return a single value” (External Link 1, docs.microsoft.com). This is only used to calculate numerical values and can't be used to combine text values. The functions within the aggregate function umbrella consist of: AVG, COUNT, MIN, MAX, SUM, VAR (External Link, docs.microsoft.com 1), among others, these are just some of the most common uses of the function. These functions would be used in order to take rows of values and return a number based on the function input into it. For example, SUM would add values together, and AVG would get an average of values. A real world example would be taking the total number of items sold in a store, in order to return a value that would display an accurate total.

In order to accomplish this however, the GROUP BY function needs to be utilized. Because an aggregate function takes multiple values and displays only 1, there would not be an equal number of rows displayed without combining the text values as well. In order to do this the GROUP BY function is used. Going back to the inventory example, say that the total number of apples sold needs to be shown. Using the phrase:

group by ProductName

Something along these lines would produce a table that has total inventory sold, displayed next to the product being sold. Using additional functions like ORDER BY would allow for further customization of the table.

**Topic 2 - Where and Having**

The functions WHERE and HAVING are very similar in nature. Where is described as “a clause used to filter records from a result, the filter occurs before any groupings are made”(External Link 2, Essentialsql.com). And having is a “clause used to filter values from a group”(External Link 2, Essentialsql.com). Meaning that WHERE is used first to filter the broad range of selections to a digestible amount. And HAVING is used to filter down from that smaller selection of fields to an even more specified selection based on the GROUP BY function. Utilizing the same example about apples from before:

Group by ProductName

Having ProductName = Apple

**Conclusion**

In conclusion the nuances of aggregate functions, along with the uses of WHERE and HAVING, allow for more nuanced selections within a database.

**Bibliography**

1. Docs.microsoft.com - <https://docs.microsoft.com/en-us/sql/t-sql/functions/aggregate-functions-transact-sql?view=sql-server-ver15#:~:text=An%20aggregate%20function%20performs%20a,clause%20of%20the%20SELECT%20statement.>
2. Essentialsql.com - <https://www.essentialsql.com/what-is-the-difference-between-where-and-having-clauses/>