



Module 2 Day 2

Aggregate Functions / Subqueries

What makes an application?

- Program Data

- ✓ Variables & .NET Data Types
- ✓ Arrays
- ✓ More Collections (list, dictionary, stack, queue)
- ✓ Classes and objects (OOP)

- Program Logic

- ✓ Statements and expressions
- ✓ Conditional logic (if)
- ✓ Repeating logic (for, foreach, do, while)
- ✓ Methods (functions / procedures)
- ✓ Classes and objects (OOP)
- ❑ Frameworks (MVC)

- Input / Output

- User

- ✓ Console read / write
 - ❑ HTML / CSS
 - ❑ Front-end frameworks (HTML / CSS / JavaScript)

- Storage

- ✓ File I/O
 - ❖ Relational database
 - ❑ APIs

Order By

- Sorts rows by the named column(s)
- `SELECT` col1, col2
`FROM` table
`WHERE` ...
`ORDER BY` col1 [`ASC` | `DESC`], col3 [`ASC` | `DESC`]...
- Order-by column does not need to be in the select list
- Multiple Order-by columns “break ties”
- `ORDER BY` n [`ASC` | `DESC`]
 - Uses the nth column in the select list
 - 1-based 😊

Top N

- Limits the result set to the first N rows
- `SELECT TOP n col1, col2`
- “Top 10 most populous cities”

Functions

- Use wherever you'd use a column name
- String functions
 - Concatenation with +
 - CONCAT, LEFT/RIGHT, LEN, LOWER, UPPER, LTRIM, RTRIM, TRIM, STR, SUBSTR
- https://www.w3schools.com/sql/sql_ref_sqlserver.asp
 - Also Numeric and Date functions
- **ISNULL**(expression, valueIfNull)



Let's
Code

Aggregate Functions

- Performs some calculation on multiple rows and summarizes result
- `AVG`, `COUNT`, `MAX`, `MIN`, `SUM`
- `SELECT AVG(col1), MAX(col2)`
- `SELECT COUNT(*) FROM employee`
- This will always return one row!
- Column name will be undefined in the result set
 - You can name the column with `AS`

Let's
Code

Grouping Results

- Always used with aggregate functions
- Returns 1 row per “group”
- `SELECT` col1, col2, `FUNC1`(col3)
`FROM` tablename
`WHERE` search-condition -- optional
`GROUP BY` col1, col2
`ORDER BY` ... -- optional
- Columns in the `SELECT` that are NOT aggregated must be listed in the `GROUP BY`

Subquery

- One way of relating data between tables (or between a table and itself)
- `SELECT col1, col2...`
`FROM table1`
`WHERE col3 IN | NOT IN`
`(SELECT col9 FROM table2 WHERE ...)`
- Compares one column in the “outer” query to one column in the “inner” query