CIS560

Single-Table Queries - Part 3

Topics

- Predicates IN, BETWEEN, and LIKE
- Operator Precedence
- CASE Expression
- Variables
- Converting Data Types
- Character Data Types
- Date/Time Data Types

Review

- ANSI Processing Order (Logical)

		6		8
5	SELECT [DISTINCT | TOP]…			
1	FROM …			
2	WHERE …			
3	GROUP BY …			
4	HAVING …			
7	ORDER BY …			
	OFFSET… FETCH …			

- OFFSET-FETCH is part of the ORDER BY clause

Predicates

- IN
  - Checks whether a value is equal to at least one element in the provided set
- BETWEEN
  - Checks whether a value is in the specified range
  - The boundary values are evaluated **inclusively**
- LIKE
  - Evaluates whether a character string meets a specified pattern
- All can be negated with NOT

Operator Precedence

1. ()
2. *, /, %
3. +, -
4. =, >, <, >=, <=, <>
5. NOT
6. AND
7. BETWEEN, IN, LIKE, OR
8. = (Assignment)

CASE Expression

- Simple Form
  - Compares scalar values and returns value with first match.
- Searched Form
  - Evaluates predicates looking for first match.
  - First match is identified by TRUE expression.
- Other useful functions:
  - ISNULL
  - COALESCE
  - IIF
  - CHOOSE
- COALESCE is the only standard function

Variables

- Use DECLARE Statement
- Initializer is optional.
- Default value is NULL without initializer.
- Syntax – Must always be prefixed with '@'.

```
DECLARE @SomeVariable INT = 0;
```

- Multiple variables can be declared in a single statement.

```
DECLARE
 @IntVariable INT = 0,
 @VarcharVariable NVARCHAR(10) = N'';
```

Converting Data Types

- CAST
  - Standard SQL
  - Similar to other languages
- Syntax

```
SELECT CAST(@IntValue AS VARCHAR(10))
```

- CONVERT
  - Gives optional formatting options.
- Syntax

```
SELECT CONVERT(VARCHAR(10), @IntValue)
```

Character Data Types

- Fixed-Length Types: char & nchar

  - Syntax
    ```
    CHAR  [ ( n ) ]
    NCHAR [ ( n ) ]
    ```

  - Fixed-size – Pads shorter values with spaces to consume n characters.

- Variable-Length Types: varchar & nvarchar

  - Syntax
    ```
    VARCHAR  [ ( n ) ]
    NVARCHAR [ ( n ) ]
    ```

  - Variable-sized – No padding, storage is actual size needed.

- NCHAR and NVARCHAR store Unicode characters – 2 bytes per character

Character Data Types: String Functions

- ASCII & CHAR

- CHARINDEX, SUBSTRING, LEFT, RIGHT

- UPPER & LOWER

- LTRIM & RTRIM

- REPLACE, REPLICATE, STUFF

- CONCAT

Date/Time Data Types

- DATE

  – Contains date only

  – Supported range: 0001-01-01 to 9999-12-31.

- TIME [(fractional second scale)]

  – Scale can be 0 to 7

- DATETIME2 combines date and time.

- DATETIMEOFFSET adds 2-byte timezone offset to DATETIME2.

Date/Time Data Types: Functions

- SYSDATETIME(), SYSDATETIMEOFFSET(), SYSUTCDATETIME()

- DATEPART, DATENAME, DAY, MONTH, YEAR

- SWITCHOFFSET, TODATETIMEOFFSET

- CONVERT gives formatting options when converting to string.

- DATEDIFF & DATEADD

Questions?