

# CIS560

Single-Table Queries - Part 3

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## Topics

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

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## 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



## Collations

- Predicates using character columns behave according to the collation(s).
- The collation consists of the following components:
  - Character set
  - Case sensitivity
  - Accent sensitivity
  - Width sensitivity
- Collations determine equality and sort order.
- Can be defined at three levels:
  - Database
  - Column
  - Query/Operation



## 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?

