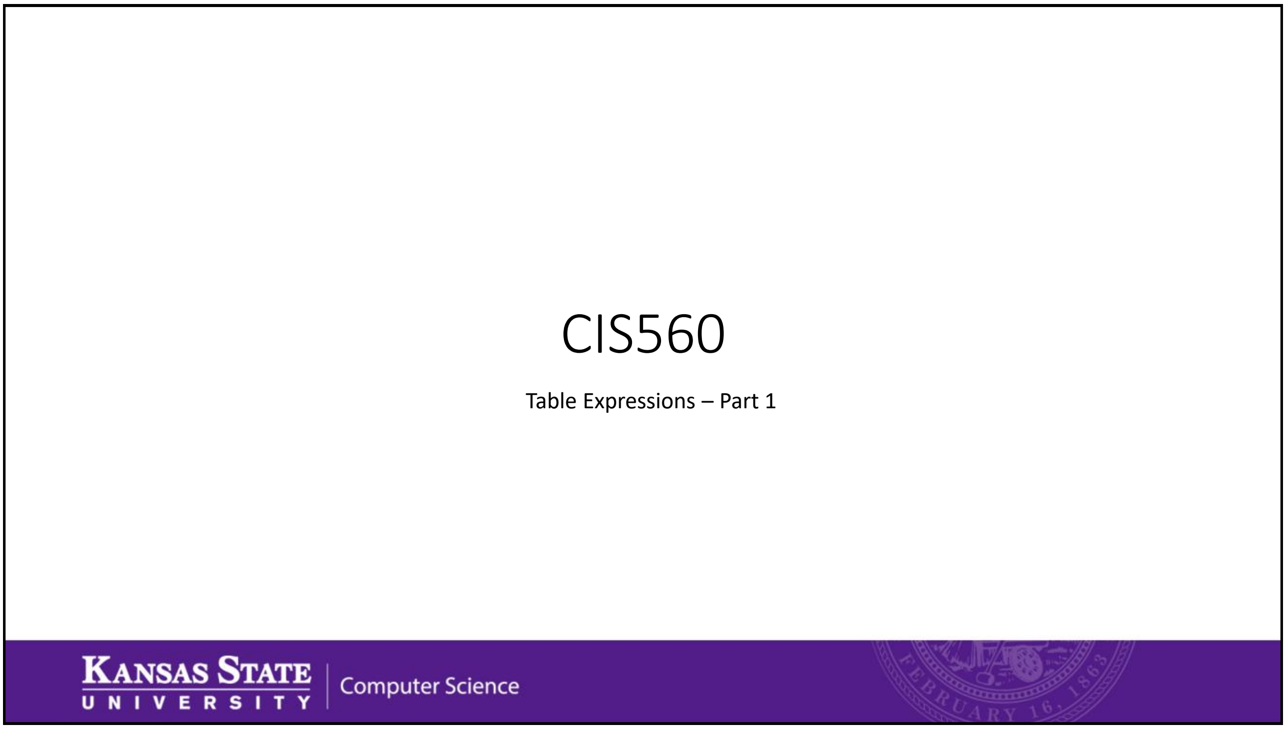
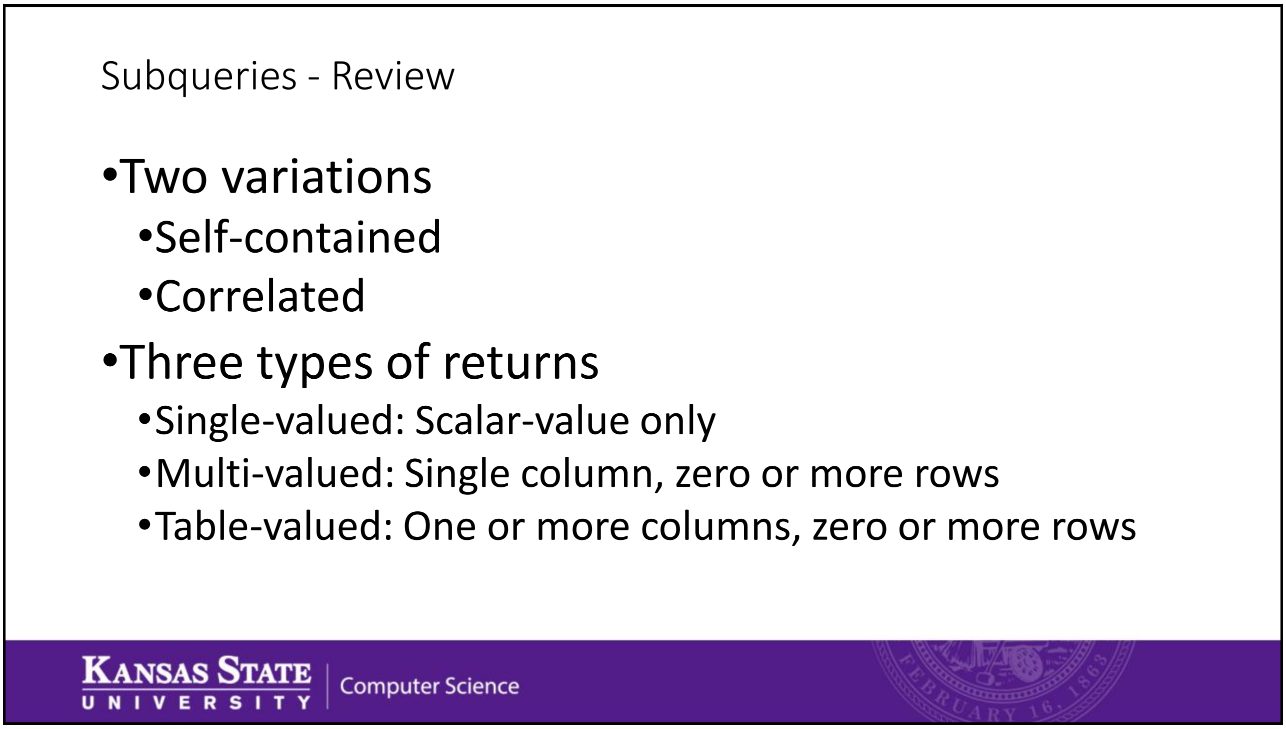


CIS560

Table Expressions – Part 1



Subqueries - Review

- Two variations
  - Self-contained
  - Correlated
- Three types of returns
  - Single-valued: Scalar-value only
  - Multi-valued: Single column, zero or more rows
  - Table-valued: One or more columns, zero or more rows

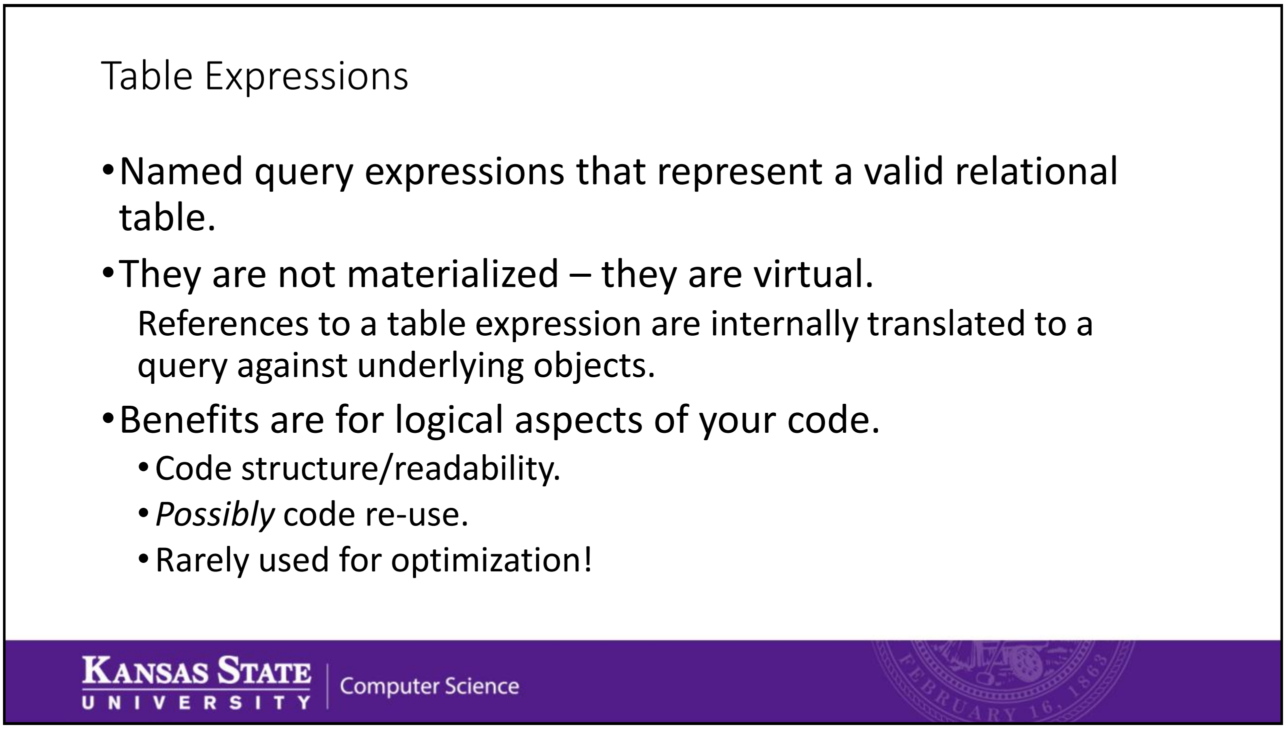


Table Expressions

- Named query expressions that represent a valid relational table.
- They are not materialized – they are virtual.

  References to a table expression are internally translated to a query against underlying objects.
- Benefits are for logical aspects of your code.
  - Code structure/readability.
  - *Possibly* code re-use.
  - Rarely used for optimization!

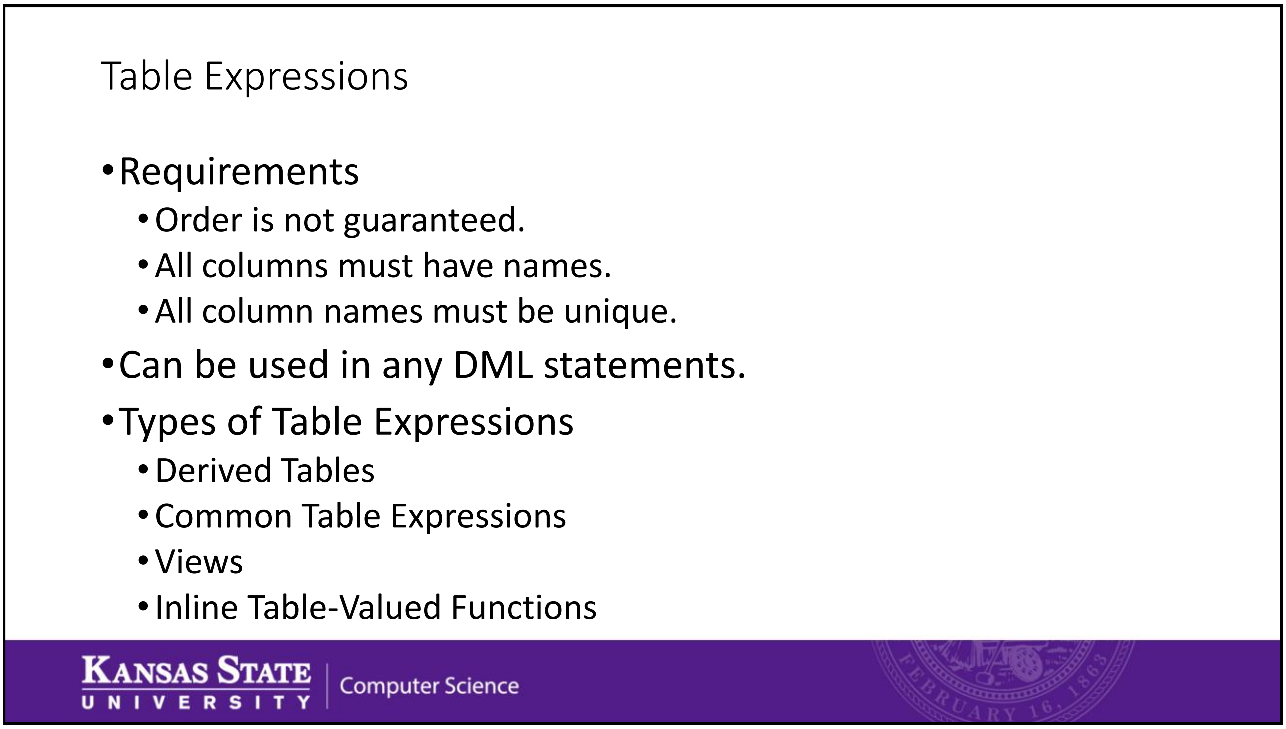


Table Expressions

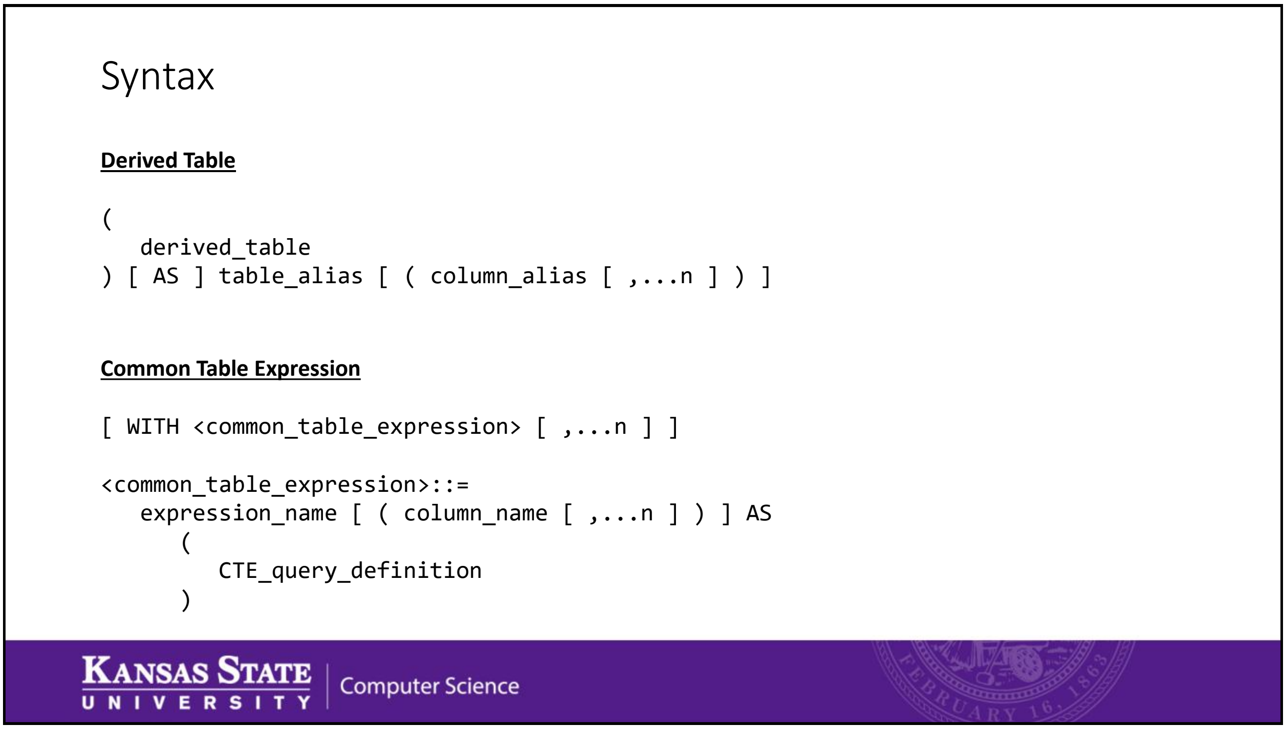
- Requirements
  - Order is not guaranteed.
  - All columns must have names.
  - All column names must be unique.
- Can be used in any DML statements.
- Types of Table Expressions
  - Derived Tables
  - Common Table Expressions
  - Views
  - Inline Table-Valued Functions

Derived Tables

- Also known as table-valued subqueries
  They are self-contained subqueries.
- Defined in the FROM clause of the outer query
  - The scope of existence is the outer query.
  - As soon as the outer query is finished, the derived table is gone.
- Two forms of column aliasing: Inline vs. External
- Nesting is supported
- Cannot reference (join against) a derived table more than once

Common Table Expressions

- Often referred to as CTEs
- As with derived tables, the scope is the outer query.
- Also supported:
  - Both forms of column aliasing: inline and external
  - Multiple CTEs
  - Multiple references to a single CTE
  - Recursive CTEs



Syntax

Derived Table

```
(
   derived_table
) [ AS ] table_alias [ ( column_alias [ ,...n ] ) ]
```

Common Table Expression

```
[ WITH <common_table_expression> [ ,...n ] ]

<common_table_expression>::=
   expression_name [ ( column_name [ ,...n ] ) ] AS
      (
         CTE_query_definition
      )
```

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