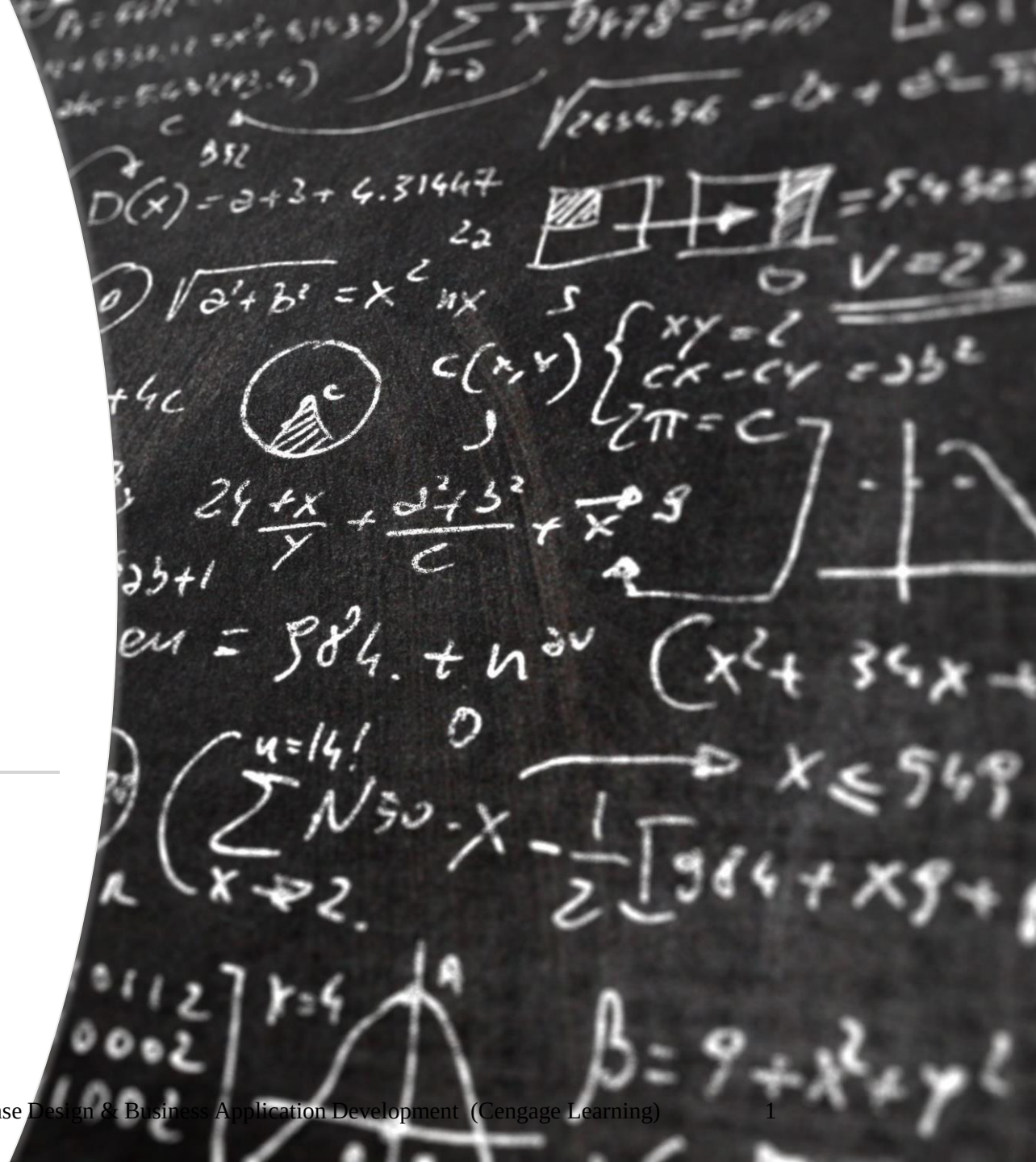
Module 5: Creating Data Types and Tables



Overview

CREATING DATA TYPES

CREATING TABLES

GENERATING COLUMN VALUES

GENERATING SCRIPTS

Creating Data Types

- System-supplied Data Types
- Creating and Dropping User-defined Data Types
- Guidelines for Specifying Data Types

System-supplied Data Types

- Numeric
  - Integer
  - Exact numeric
  - Approximate numeric
  - Monetary
- Date and Time
- Character and Unicode Character
- Binary
- Other

Creating and Dropping User-defined Data Types

Creating

```
EXEC sp_addtype  city, 'nvarchar(15)', NULL
EXEC sp_addtype  region, 'nvarchar(15)', NULL
EXEC sp_addtype  country, 'nvarchar(15)', NULL
```

Dropping

```
 EXEC  sp_droptype city
```

Guidelines for Specifying Data Types

If Column Length Varies, Use a Variable Data Type

Use tinyint Appropriately

For Numeric Data Types, Commonly Use decimal

If Storage Is Greater Than 8000 Bytes, Use text or image

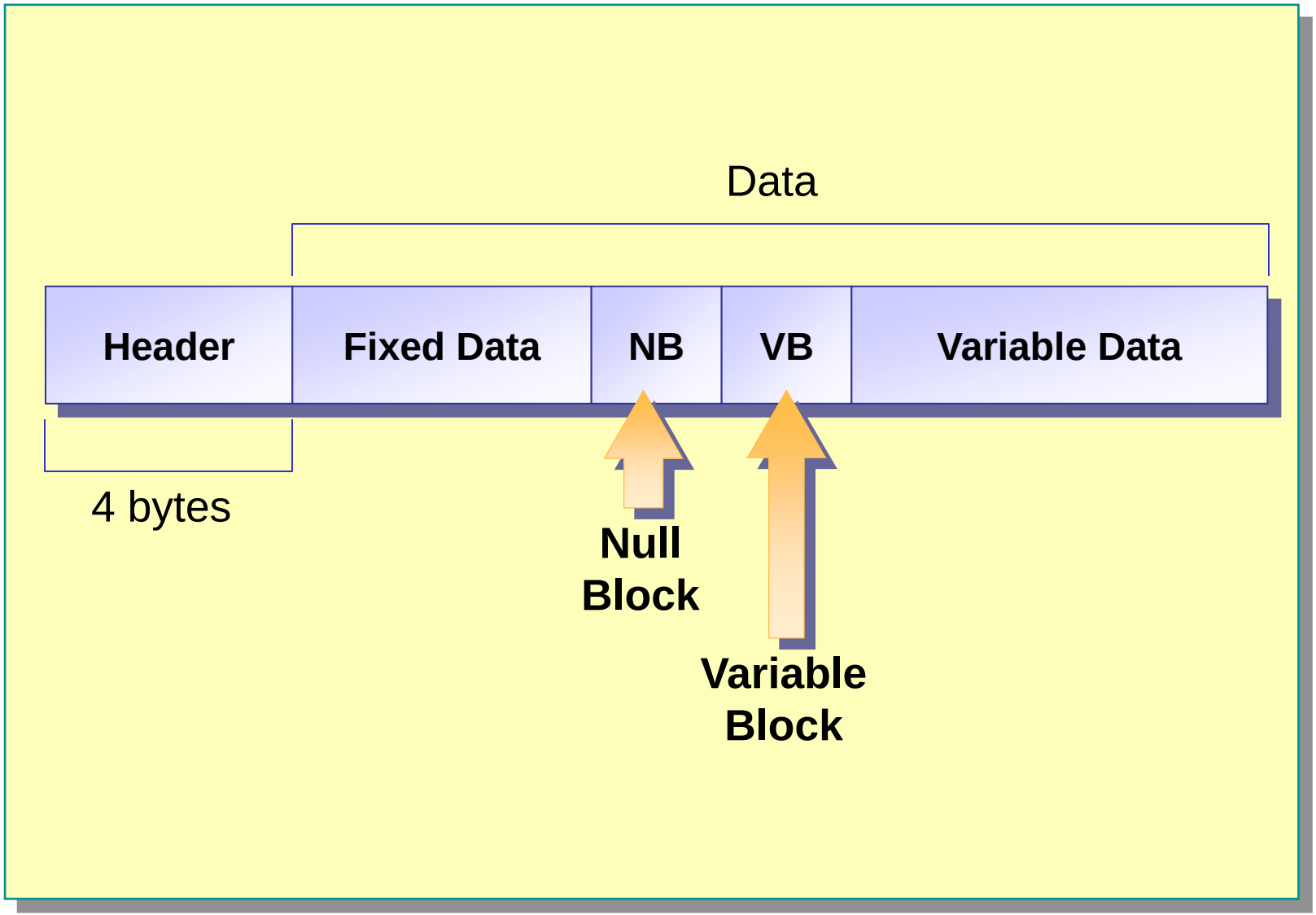
Use money for Currency

Do Not Use float or real as Primary Keys

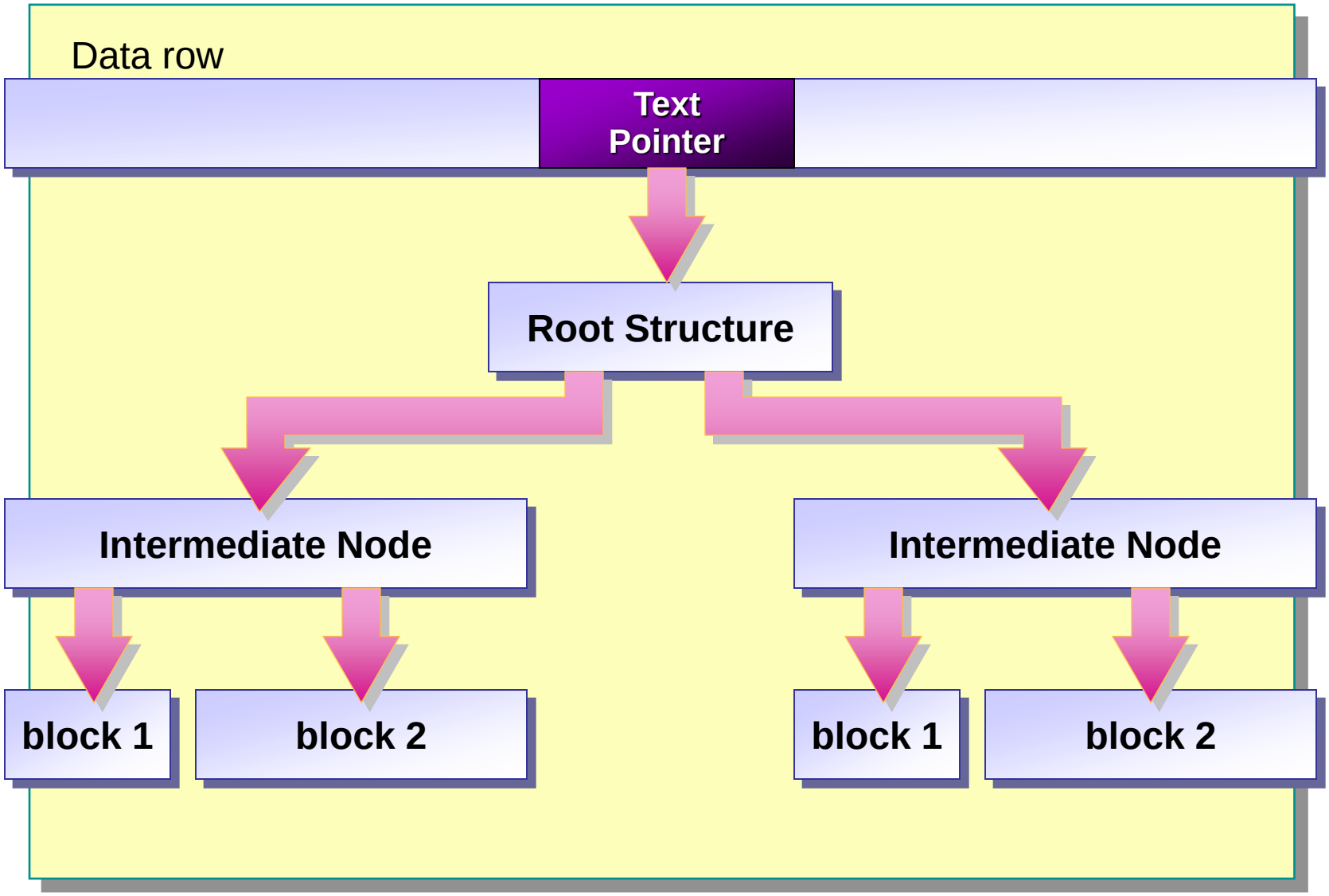
Creating Tables

- How SQL Server Organizes Data in Rows
- How SQL Server Organizes text, ntext, and image Data
- Creating and Dropping a Table
- Adding and Dropping a Column

How SQL Server Organizes Data in Rows



How SQL Server Organizes text, ntext, and image Data



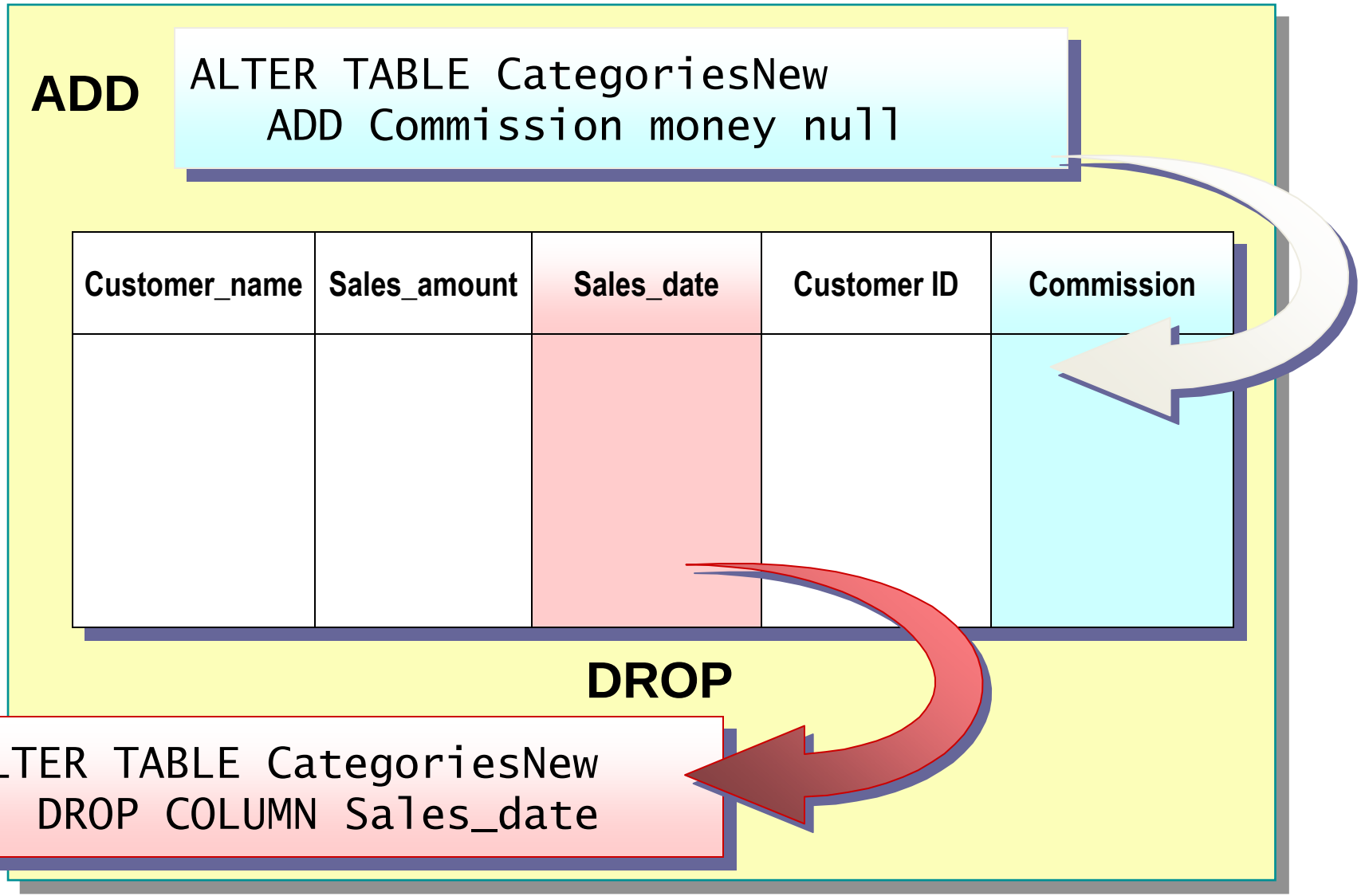
Creating and Dropping a Table

- **Creating a Table**

Column name	*Data type*	*NULL or NOT NULL*
CREATE TABLE dbo.Categories (CategoryID	int IDENTITY (1,1)	NOT NULL,
CategoryName	nvarchar(15)	NOT NULL,
Description	ntext	NULL,
Picture	image	NULL)

- **Column Collation**
- **Specifying NULL or NOT NULL**
- **Computed Columns**
- **Dropping a Table**

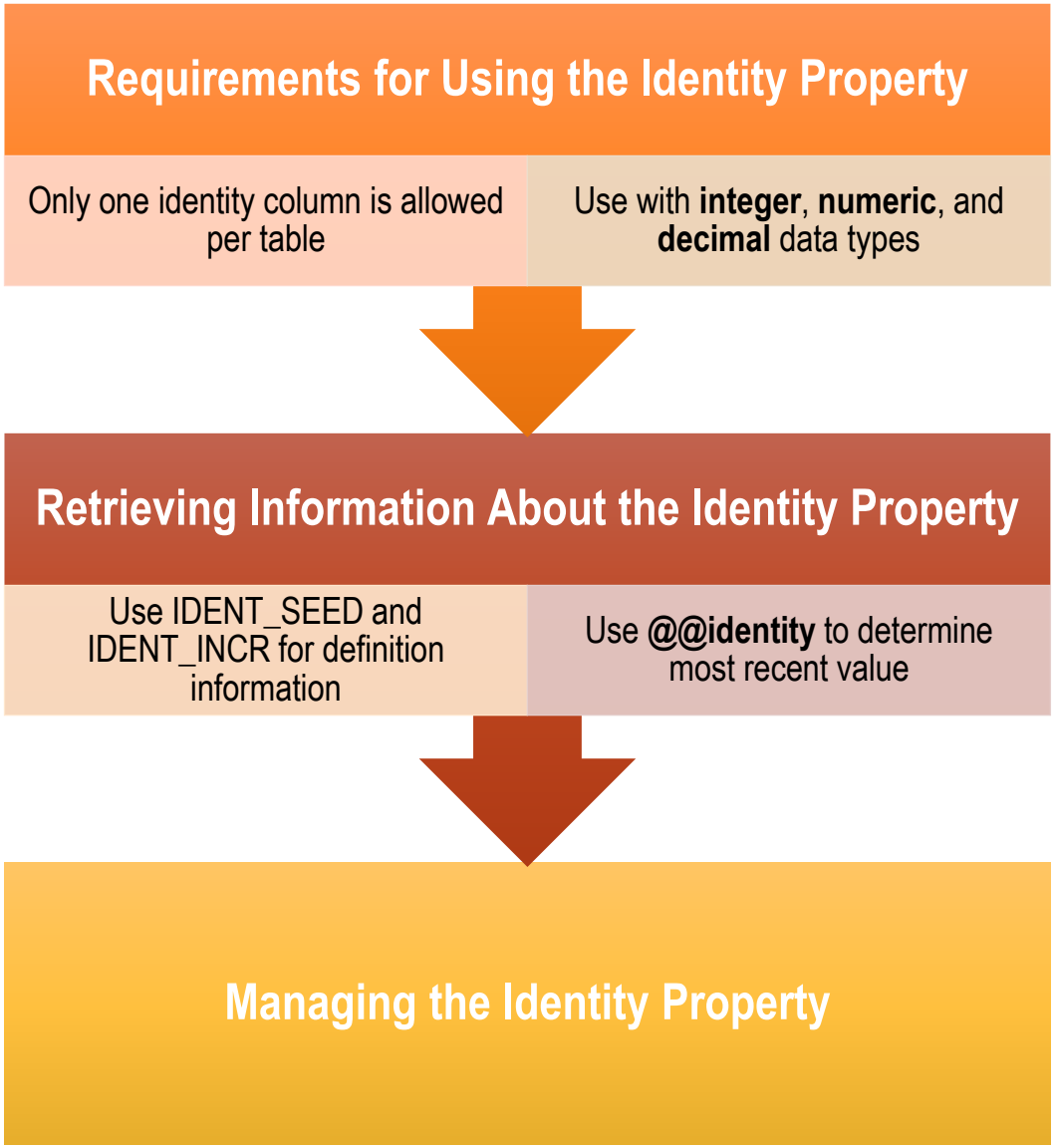
Adding and Dropping a Column



Generating Column Values

- Using the Identity Property
- Using the NEWID Function and the uniqueidentifier Data Type

Using the Identity Property



Using the NEWID Function and the uniqueidentifier Data Type

- These Features Are Used Together
- Ensure Globally Unique Values
- Use with the DEFAULT Constraint

```
CREATE TABLE Customer
(CustID uniqueidentifier NOT NULL DEFAULT NEWID(),
 CustName char(30) NOT NULL)
```

Generating Scripts

Generate Schema as a Transact-SQL Script

- Maintain backup script
- Create or update a database development script
- Create a test or development environment
- Train new employees

What to Generate

- Entire database into single script file
- Table-only schema
- Table and index schema

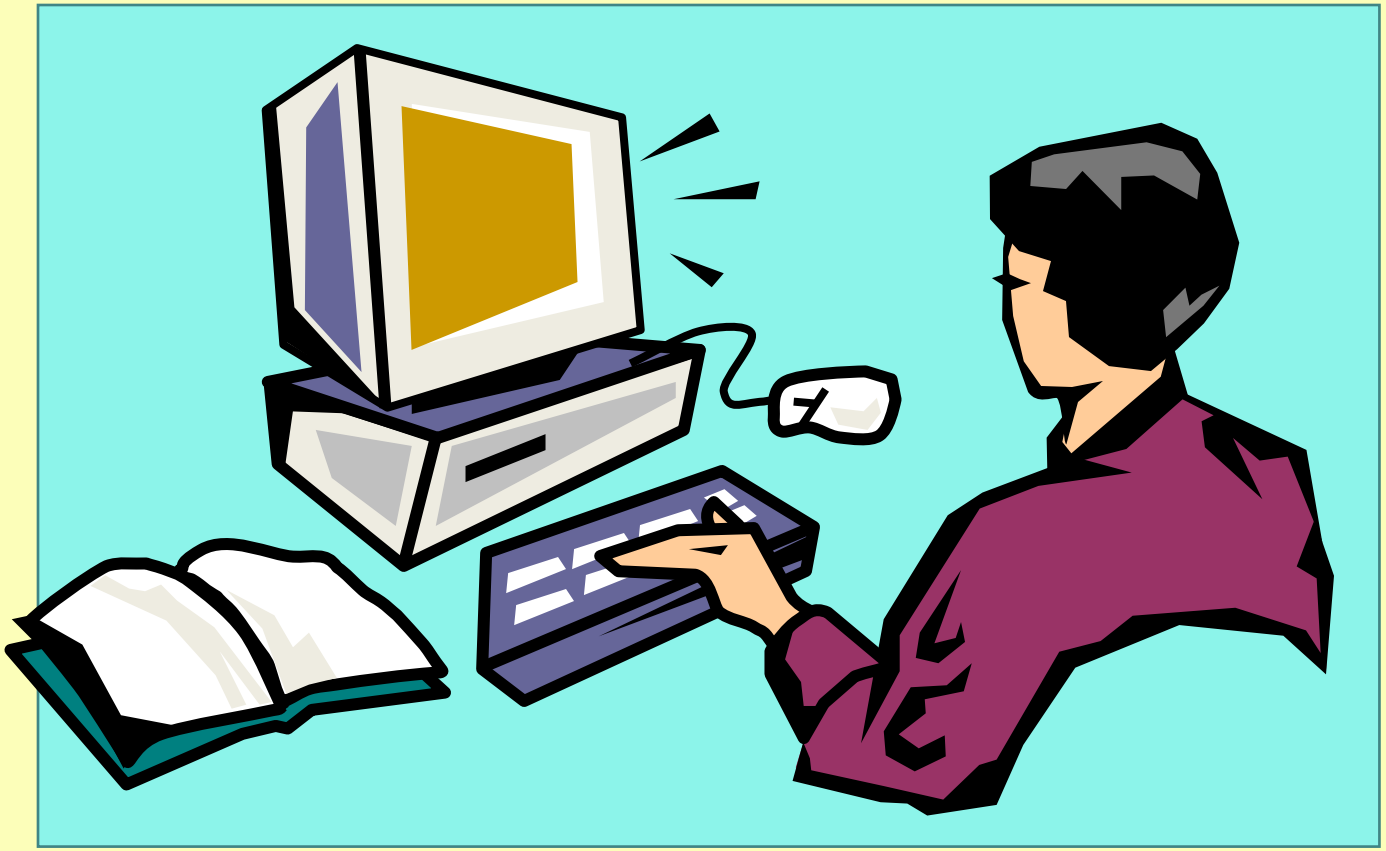
Recommended Practices

Specify Appropriate Data Types and Data Type Sizes

Always Specify Column Characteristics in CREATE TABLE

Generate Scripts to Recreate Database and Database Objects

Lab A: Creating Data Types and Tables



Review

Creating Data Types

Creating Tables

Generating Column Values

Generating Scripts

Module References

- Working with User-Defined Types in SQL Server - https://docs.microsoft.com/en-us/sql/relational-databases/clr-integration-database-objects-user-defined-types/working-with-user-defined-types-in-sql-server?view=sql-server-ver15
- Create User-Defined Type - https://docs.microsoft.com/en-us/sql/t-sql/statements/create-type-transact-sql?f1url=%3FappId%3DDev15IDEF1%26l%3DEN-US%26k%3Dk(create_type_TSQL);k(sql13.swb.tsqlresults.f1);k(sql13.swb.tsqlquery.f1);k(MiscellaneousFilesProject);k(DevLang-TSQL)%26rd%3Dtrue&view=sql-server-ver15
- • Data types (Transact-SQL) - https://docs.microsoft.com/en-us/sql/t-sql/data-types/data-types-transact-sql?view=sql-server-ver15
- Create T-SQL Tables - https://docs.microsoft.com/en-us/sql/t-sql/statements/create-table-sql-graph?f1url=%3FappId%3DDev15IDEF1%26l%3DEN-US%26k%3Dk(create_table_TSQL);k(sql13.swb.tsqlresults.f1);k(sql13.swb.tsqlquery.f1);k(MiscellaneousFilesProject);k(DevLang-TSQL)%26rd%3Dtrue&view=sql-server-ver15
- Oracle Database Data Types - https://docs.oracle.com/database/121/SQLRF/sql_elements001.htm#SQLRF0021
- Oracle Database User-Defined Datatypes - https://docs.oracle.com/cd/A91034_01/DOC/server.901/a88856/c14ordb.htm
- Creating Oracle Tables - https://docs.oracle.com/cd/B28359_01/server.111/b28310/tables003.htm#ADMIN01503
- MySQL Data Types - https://dev.mysql.com/doc/refman/8.0/en/data-types.html
- Creating a Table in MySQL - https://dev.mysql.com/doc/refman/8.0/en/creating-tables.html