Module 4:
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
```

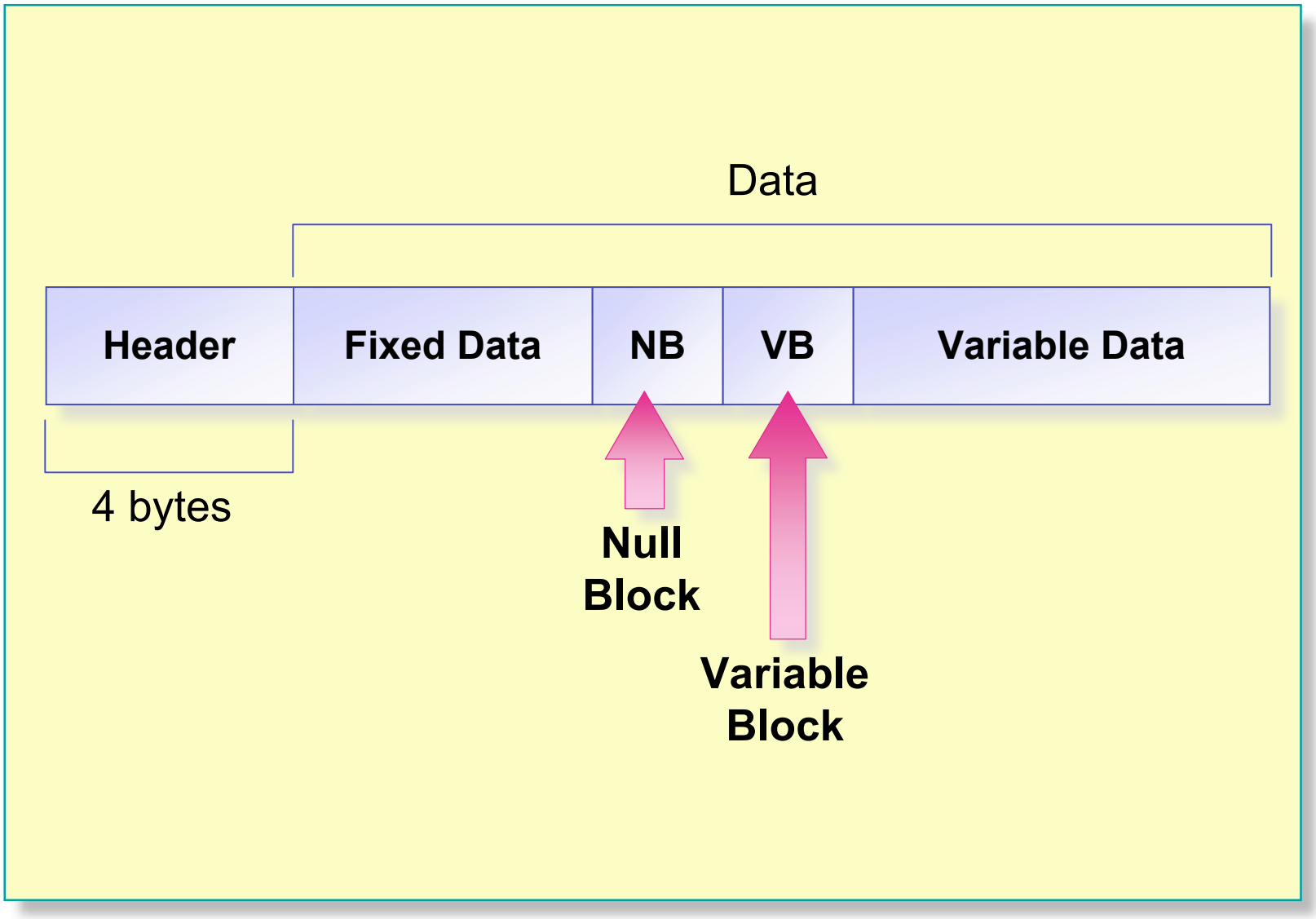
Guidelines for Specifying Data Types

- 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

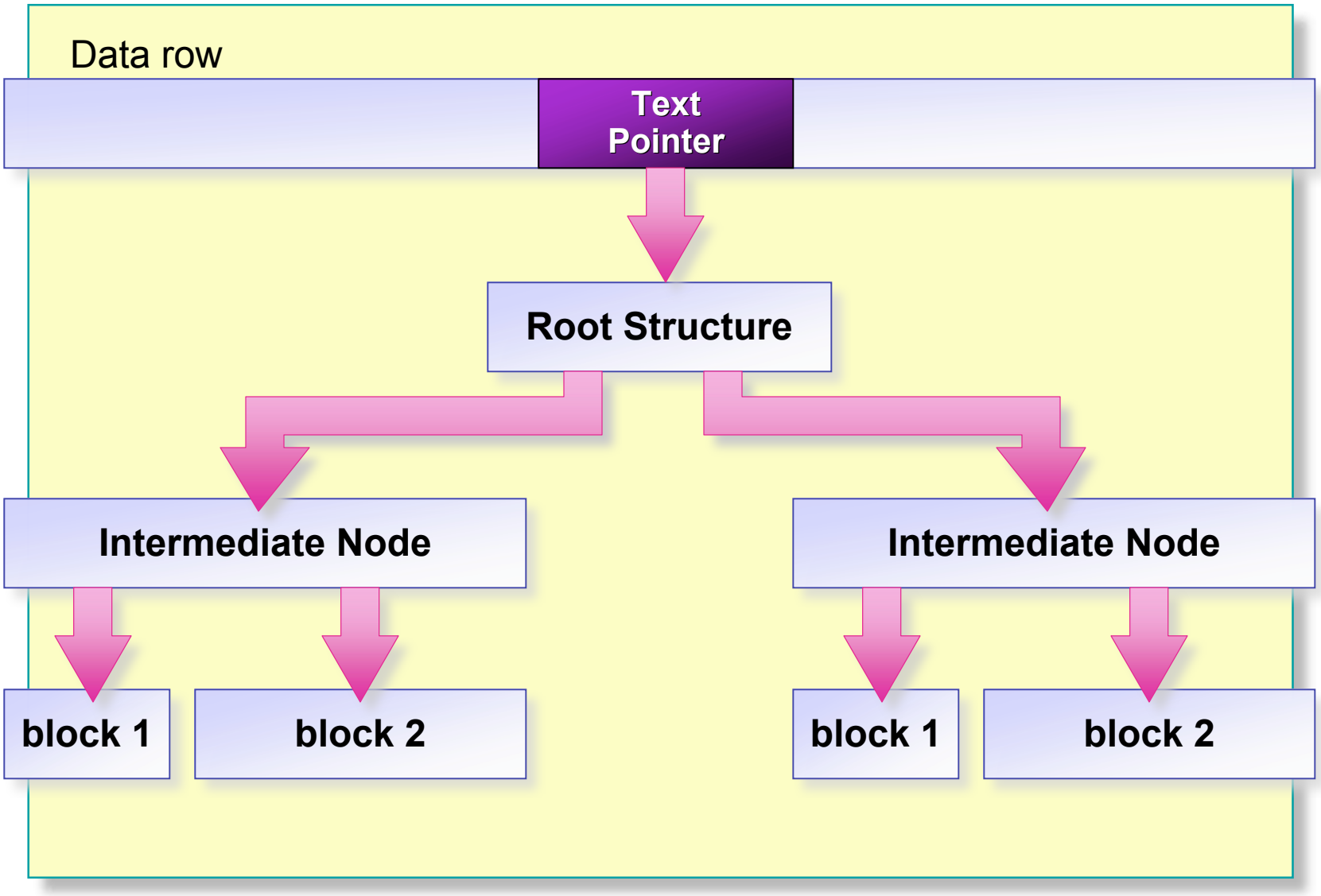
Creating Tables

- 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



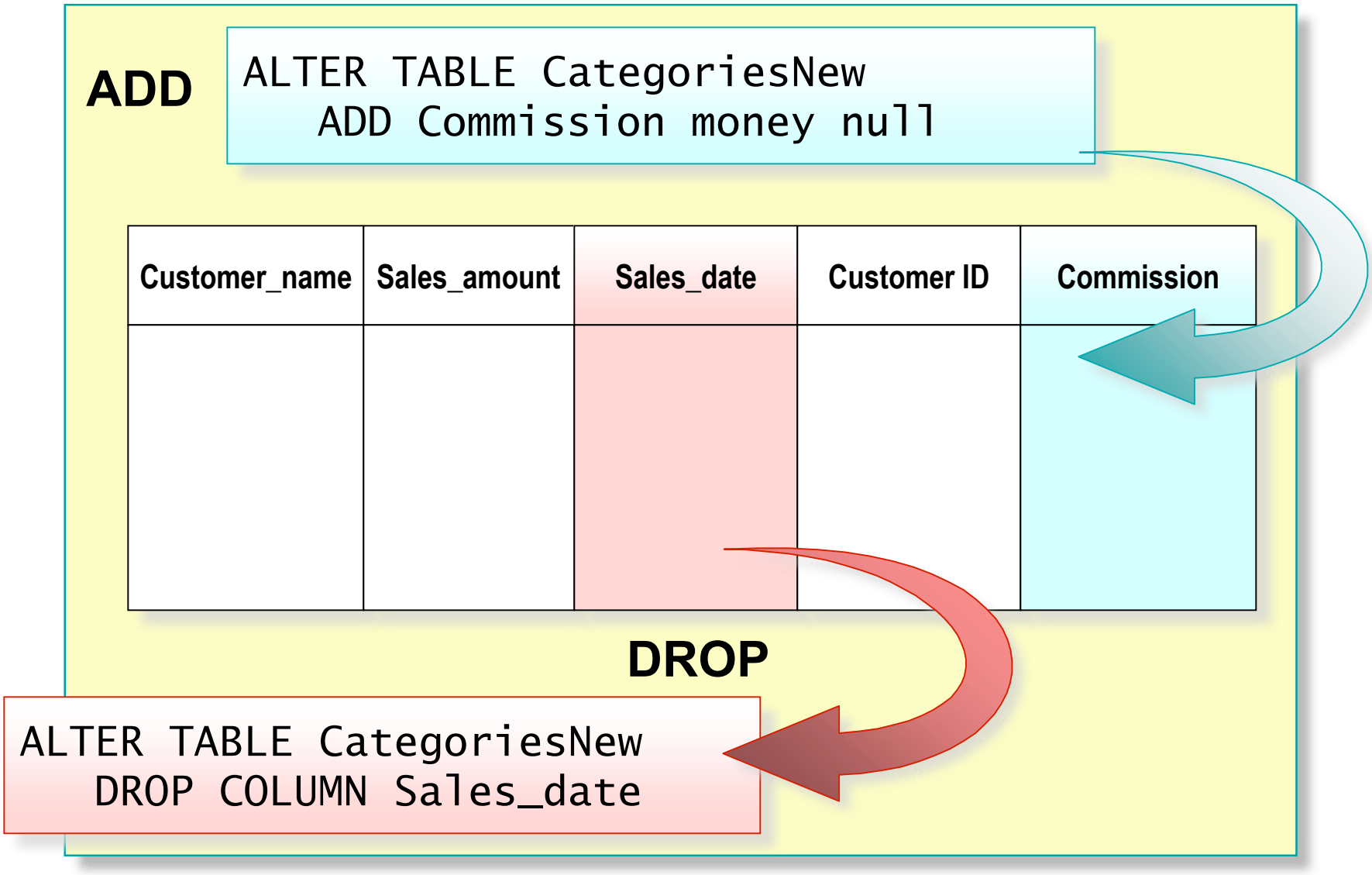
Creating and Dropping a Table

- 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

- **Requirements for Using the Identity Property**
  - Only one identity column is allowed per table
  - Use with **integer**, **numeric**, and **decimal** data types
- **Retrieving Information About the Identity Property**
  - Use IDENT_SEED and IDENT_INCR for definition information
  - Use **@@identity** to determine most recent value
- **Managing 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

Review

- Creating Data Types
- Creating Tables
- Generating Column Values
- Generating Scripts