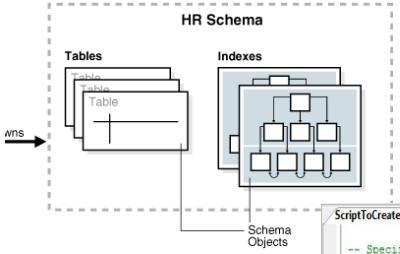
DDL STATEMENTS

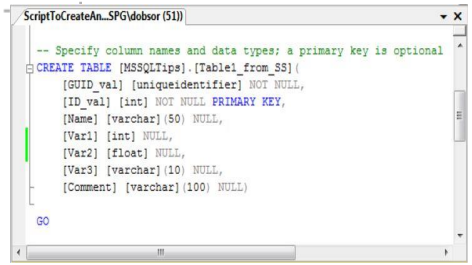
Instructor:

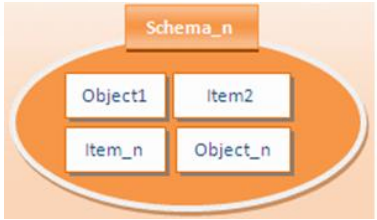
Learning Goals

By the end of this lecture students should be able to:

- Categorize the main database objects
- Create a simple table
- Understand how constraints are created at the time of table creation
- Describe how schema objects work
- Understand and use to be commands create, alter, drop, truncate table







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- Database Object
- Schema Object
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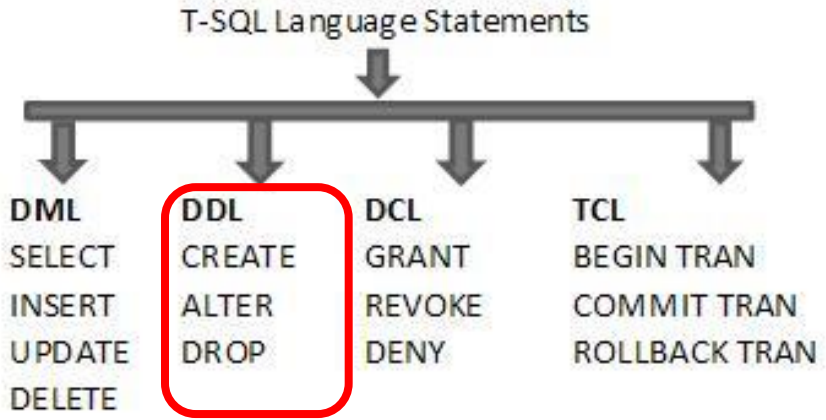
Section1

INTRODUCTION TO DDL STATEMENTS

Introduction to DDL Statements

- **DDL** stands for **D**ata **D**efinition **L**anguage
- Define data structures in SQL Server as creating, altering, and dropping tables and establishing constraints…



SQL Server Database Objects

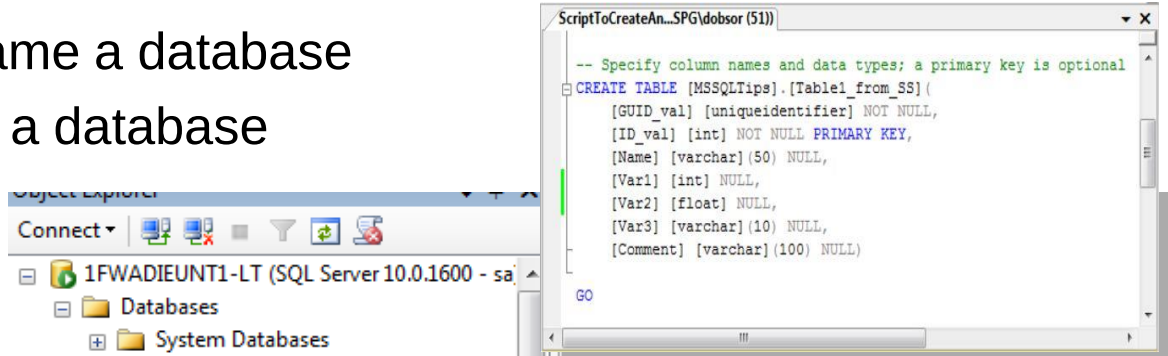
- **A SQL Server database has lot of objects like:**
  - Database
  - Schema
  - Tables
  - Views
  - Stored Procedures
  - Functions
  - Rules
  - Defaults
  - Triggers

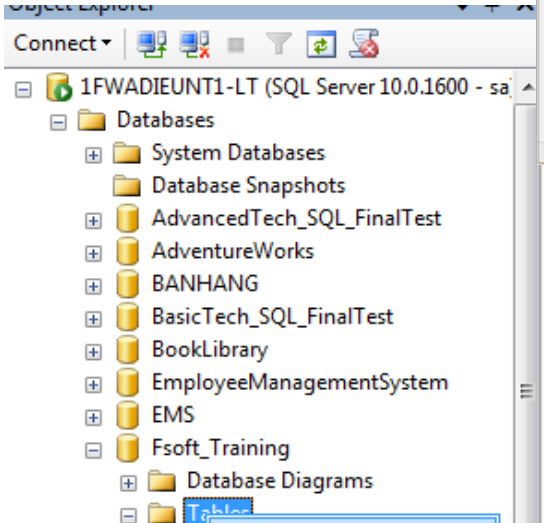
Section2

DATABASE & SCHEMA OBJECTS

Database

- **SQL Server supports both scripts editor and graphic tool in order to:**
  - Create a database
  - Rename a database
  - Drop a database



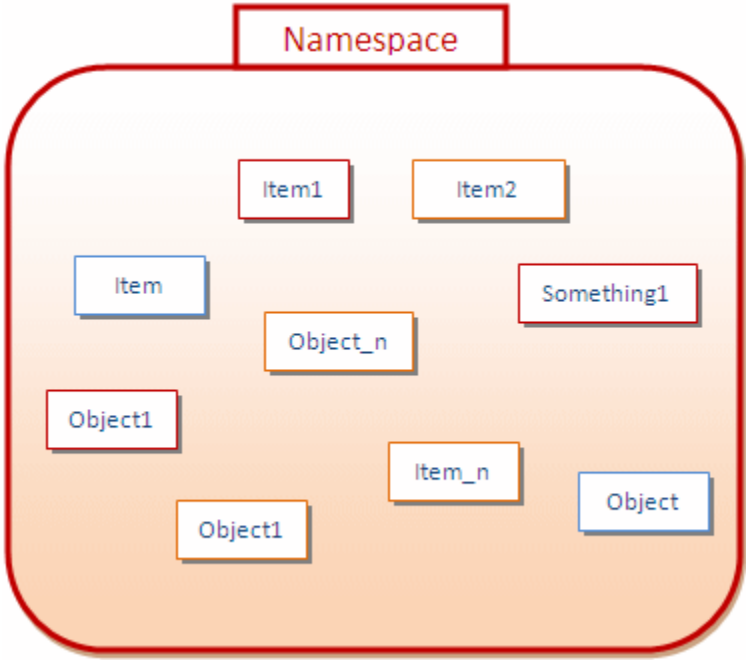


Database Demo

- **Scripts editor:**
  - Create a database
  - Rename a database
  - Drop a database
- **Graphic tool**
  - Create a database
  - Rename a database
  - Drop a database
- **Create database by using a template**

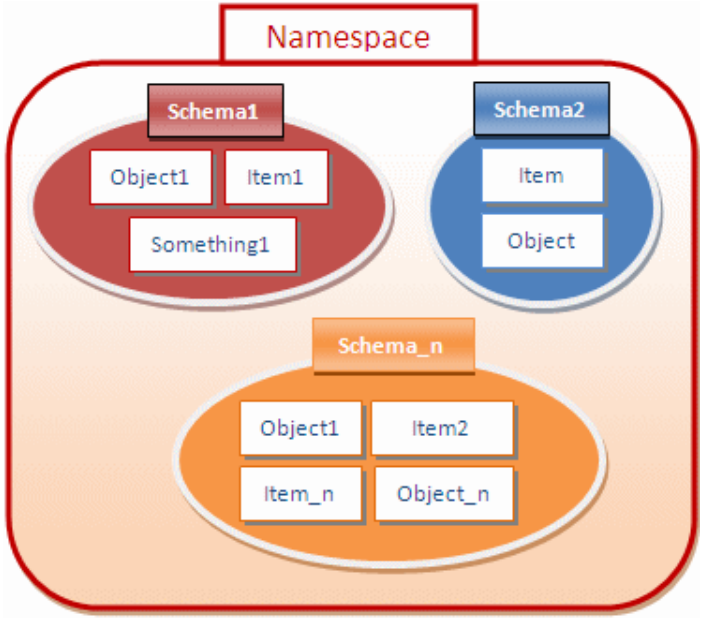
Schema Object (1/3)

- A **namespace** can have objects inside



Schema Object (2/3)

- To further control and manage the objects inside of a namespace, you can put them in *sub-groups* called **schemas**.



Schema Object (3/3)

- **Schema default:**
  - **dbo** is default schema in every database
  - Ex: SalesOrderDetail, HumanResources.Department
  - [**linked-server**].[**DBName**].[**SchemaName**].[**Objectname**]
- **Schema as:**
  - naming boundaries
  - security boundaries

Section3

TABLE AND CONSTRAINTS

Table

- Table is a repository for data, with items of data grouped in one or more columns
  - Data types
  - Constraints
  - Index

	EmployeeID	NationalIDNumber	ManagerID	Title	BirthDate	MaritalStatus	Gender	HireDate
1	1	14417807	16	Production Technician - WC60	1972-05-15 00:00:00.000	M	M	1996-07-31 00:00:00.000
2	2	253022876	6	Marketing Assistant	1977-06-03 00:00:00.000	S	M	1997-02-26 00:00:00.000
3	3	509647174	12	Engineering Manager	1964-12-13 00:00:00.000	M	M	1997-12-12 00:00:00.000
4	4	112457891	3	Senior Tool Designer	1965-01-23 00:00:00.000	S	M	1998-01-05 00:00:00.000
5	5	480168528	263	Tool Designer	1949-08-29 00:00:00.000	M	M	1998-01-11 00:00:00.000
6	6	24756624	109	Marketing Manager	1965-04-19 00:00:00.000	S	M	1998-01-20 00:00:00.000
7	7	309738752	21	Production Supervisor - WC60	1946-02-16 00:00:00.000	S	F	1998-01-26 00:00:00.000
8	8	690627818	185	Production Technician - WC10	1946-07-06 00:00:00.000	M	F	1998-02-06 00:00:00.000
9	9	695256908	3	Design Engineer	1942-10-29 00:00:00.000	M	F	1998-02-06 00:00:00.000

Table demo

- **Create table**
- **Alter table**
  - Add new column
  - Change data type of existing column
  - Delete a column
  - Add or remove constraints
- **Drop table**
  - Remove table structure and its data.

Table Constraints (1/4)

- **Table Constraints:** Are used to limit the type of data that can go into a table.
- We will focus on the following constraints:
  - NOT NULL
  - CHECK
  - UNIQUE
  - PRIMARY KEY
  - DEFAULT
  - FOREIGN KEY

Table Constraints (2/4)

- NOT NULL: Specifies that the column does not accept NULL values.

- CHECK: Enforce domain integrity by limiting the values that can be put in a column.
  - **Syntax**:

    [CONSTRAINT *constraint_name]*

    CHECK (*condition)*

Table Constraint (3/4)

- UNIQUE: Enforce the uniqueness of the values in a set of columns
  - **Synstax:**

    CONSTRAINT unique_name UNIQUE (col_names)
- PRIMARY KEY: Specify primary key of table.
  - **Syntax:**

    [CONSTRAINT *PK_Name]*

    PRIMARY KEY [col_names*]*

Table Constraint (4/4)

- FOREIGN KEY: Used to define relationships between tables in the database.
  - **Syntax:**

    [CONSTRAINT *FK_Name]*

    FOREIGN KEY [(*col_names)]*

    REFERENCES *reference_table(col_names)*

- DEFAULT: Defaults specify what values are used in a column if you do not specify a value for the column when you insert a row.

SQL Constraints Scope

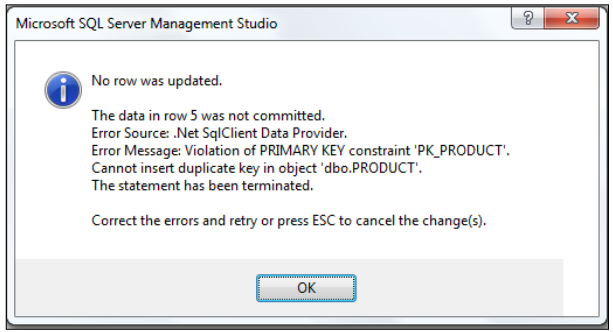
- SQL constraints can be applied at:
  - **Table level**
    - ✓ Are declared independently from the column definition
    - ✓ declare table-level constraints at the end of the CREATE TABLE statement
  - **Column level:**
    - ✓ Are declared when define columns for the table.
    - ✓ It is applied particularly to the column where it attached to

Identity (1/1)

Primary key

	PRODUCT_ID	PWIDTH	PLENGTH	PRICE
	1	40	50	2000.0000
	2	45	55	2000.0000
	3	40	60	3000.0000
	4	50	55	2500.0000
	4	45	50	2100
*	NULL	NULL	NULL	NULL

Error

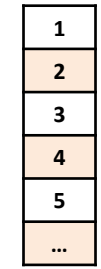


Auto increment

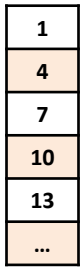
	PRODUCT_ID	PWIDTH	PLENGTH	PRICE
	1	40	50	2000.0000
	2	45	55	2000.0000
	3	40	60	3000.0000
	4	50	55	2500.0000
	5	45	50	2100.0000
*	NULL	NULL	NULL	NULL

Identity (1/2)

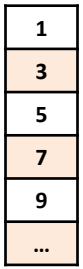
- Identity has:
  - A seed
  - An increment
- Seed is the initial value
- Increment is the value by which we need to skip to fetch the next value
- **For example:**
  - Identity(1,2) will generate sequence numbers 1,3,5,7…



Identity(1,1)



Identity(1,3)



Identity(1,2)

Truncate statement

- Removes all rows in a table.
- Table structure and its columns, constraints, indexes, …remain.
  - Resets the identity value.
  - Releases the memory used.

Summary

- ✓ Introduction to DDL Statements
  - ➓ SQL Server Database Objects
- ✓ Database Object
  - ➓ Create, Rename, Drop a database: Graphic, Scripts, Template
- ✓ Schema Object
  - ➓ What is schema in database? Schema default?
- ✓ Table and Constraints
  - ➓ Create, Alter, Drop Table. NOT NULL, CHECK, UNIQUE, PRIMARY KEY, DEFAULT, FOREIGN KEY

Thank you