



Background

The Northwind database is a **sample database** used by Microsoft in various educational resources and documentation for demonstrating and teaching database concepts and SQL (Structured Query Language).

The Northwind database represents a **fictional company's data** and is designed to showcase various aspects of database management, including tables for **products, customers, orders, employees, suppliers**, and more. Some common tables and entities you can find in the Northwind database include:

- **Customers:** Information about the company's customers.
- **Employees:** Details about the company's employees.
- **Orders:** Records of customer orders.
- **OrderDetails:** Information about the individual items included in each order.
- **Products:** Information about the products the company sells.
- **Suppliers:** Data about the suppliers of the company's products.

This database is often used as a **practical example to demonstrate SQL queries and database design principles**. It's not intended for real-world business use but serves as a useful teaching and learning resource for those studying database management and SQL. If you're looking to practice SQL queries or learn about database concepts, you can find the Northwind database **readily available** for use in various database management systems and development environments.

Data model

The Northwind database provides a classic example of a relational database model, as seen in *Figure 1*. Here are some key characteristics and observations about the data model of the Northwind database:

- **Tables:** The database is organised into multiple tables, each representing a specific entity or concept, such as customers, orders, products, employees, suppliers, and more. This follows the principles of a relational data model, where data is stored in structured tables.
- **Primary keys:** Each table typically has a primary key column (e.g., CustomerID, EmployeeID, OrderID) that uniquely identifies each record within that table. Primary keys are used to establish relationships between tables.
- **Foreign keys:** Relationships between tables are established using foreign key columns (e.g., CustomerID in the Orders table), which reference the primary key columns in related tables. These foreign keys create associations between records in different tables, allowing for data retrieval and analysis across tables.
- **Data types:** Different data types are used to store various types of information, including integers (INT), characters (CHAR, VARCHAR), dates and times (DATETIME), and more. This allows for efficient storage and retrieval of diverse data.

The data model, including the column names, data types, feature descriptions, and their constraints, such as whether or not the feature requires a value for every row (marked as NOT NULL) or the type of key, is included in *Table 1*.

Figure 1: The ERD for the Northwind database

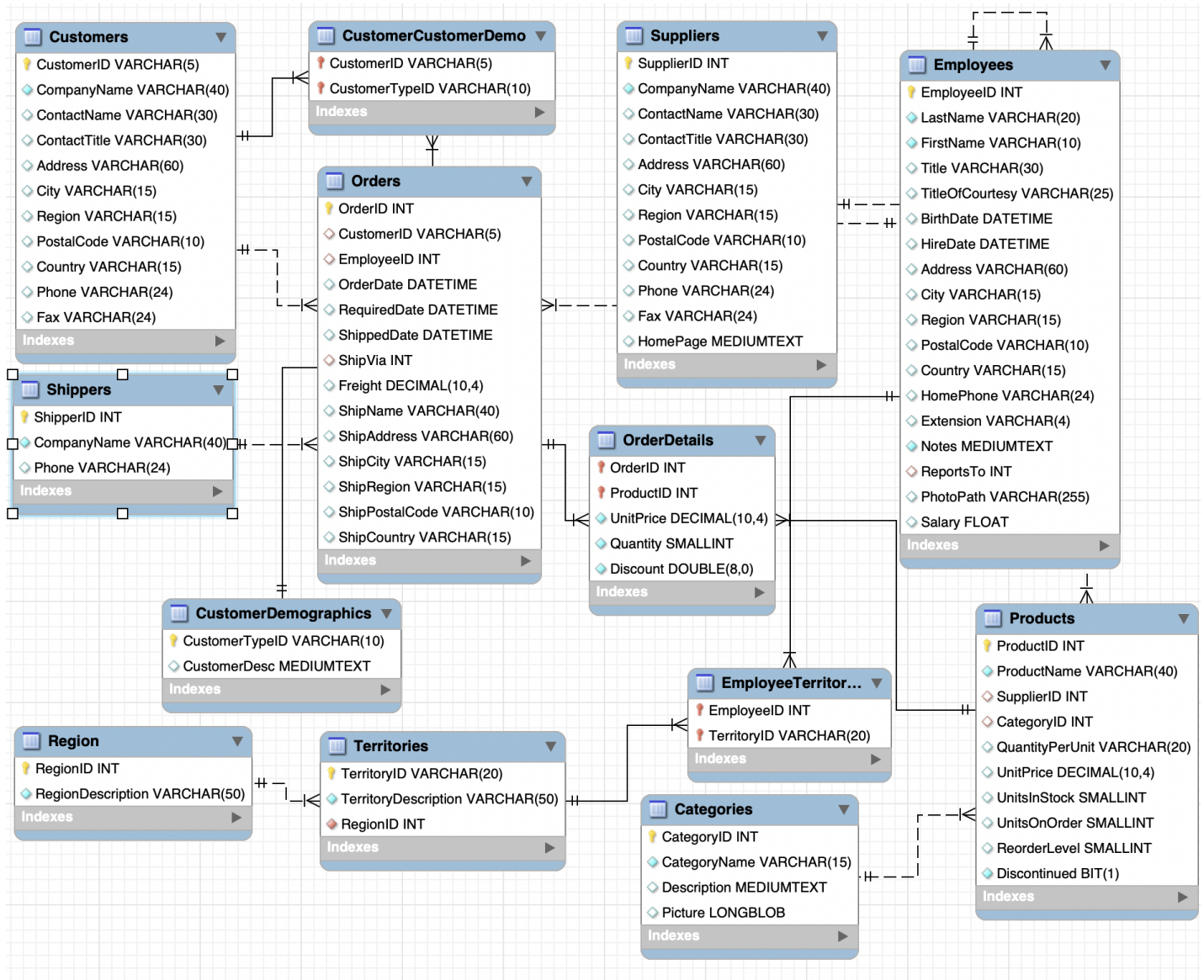


Table 1: The data model for the Northwind database.

Customers table			
This table stores information related to individual customers, including their identification and contact details.			
Column name	Data type	Feature description	Constraints
CustomerID	VARCHAR(5)	Unique identifier for each customer, often used to relate to other tables.	Primary key
CompanyName	VARCHAR(40)	The official name of the company to which the customer belongs.	NOT NULL
ContactName	VARCHAR(30)	The full name of the individual who is the main point of contact at the customer's company.	
ContactTitle	VARCHAR(30)	The professional job title of the contact person within the customer's company.	
Address	VARCHAR(60)	The full street address where the customer or their company is located.	
City	VARCHAR(15)	The city in which the customer or their company is located.	
Region	VARCHAR(15)	The region in which the customer or their company is located.	
PostalCode	VARCHAR(10)	The postal or ZIP code associated with the customer's address.	
Country	VARCHAR(15)	The country where the customer's company is situated.	
Phone	VARCHAR(24)	The primary phone number used to reach the customer.	
Fax	VARCHAR(24)	The facsimile (fax) number for the customer.	

Orders table

This table holds records of all orders made by customers, along with references to the customers and employees involved.

Column name	Data type	Feature description	Constraints
OrderID	INT	A unique identifier assigned to each order transaction.	Primary key
CustomerID	VARCHAR(5)	Identifier that links the order to a specific customer in the Customers table.	Foreign key (Customers)
EmployeeID	INT	An identifier that indicates which employee is responsible for managing the order.	Foreign key (Employees)
OrderDate	DATETIME	The date on which the order was formally placed.	
RequiredDate	DATETIME	The date on which the order in the delivery is required to be delivered.	
ShippedDate	DATETIME	The date on which the ordered goods were shipped to the customer.	
ShipVia	INT	Identifier for the shipping method, linking to the Shippers table.	Foreign key (Shippers)
Freight	DECIMAL(10, 4)	The cost associated with shipping the ordered goods.	
ShipName	VARCHAR(40)	The name of the recipient or organisation to which the order is being shipped.	
ShipAddress	VARCHAR(60)	The street address or delivery location for the shipment.	
ShipCity	VARCHAR(15)	The city where the shipment is being delivered.	
ShipRegion	VARCHAR(15)	The region or state within the delivery destination (if applicable).	
ShipPostalCode	VARCHAR(10)	The postal code or ZIP code of the delivery address.	
ShipCountry	VARCHAR(15)	The country where the shipment is being delivered.	

Employees table

This table contains details about company employees, including personal information and job-related data.

Column name	Data type	Feature description	Constraints
EmployeeID	INT	Unique identifier assigned to each employee within the company.	Primary key
LastName	VARCHAR(20)	The last name or surname of the employee.	NOT NULL
FirstName	VARCHAR(10)	The first name or given name of the employee.	NOT NULL
Title	VARCHAR(30)	The job title or position held by the employee within the company.	
TitleOfCourtesy	VARCHAR(25)	The courtesy title or honorific for addressing an employee (e.g., Mr., Mrs., Dr.).	
BirthDate	DATE	The date of birth of the employee, often used for HR purposes.	
HireDate	DATE	The date on which the employee joined the company.	
Address	VARCHAR(60)	The street address of the employee's residence or workplace.	
City	VARCHAR(15)	The city where the employee lives or works.	
Region	VARCHAR(15)	The geographical region or state where the employee resides (if applicable).	
PostalCode	VARCHAR(10)	The postal code or ZIP code of the employee's address.	
Country	VARCHAR(15)	The country where the employee is located.	
HomePhone	VARCHAR(24)	The employee's personal or home telephone number.	
Extension	VARCHAR(4)	The internal phone extension number	

		for the employee within the organisation.	
Notes	MEDIUMTEXT	Additional notes or comments related to the employee, often used for miscellaneous information.	NOT NULL
ReportsTo	INT	The identifier of another employee to whom this employee reports.	Foreign key (Employees)
PhotoPath	VARCHAR(255)	The file path or location where the employee's photo is stored.	
Salary	FLOAT	The monetary compensation or salary associated with the employee's position.	

Products table

This table stores information related to the various products that the company sells.

Column name	Data type	Feature description	Constraints
ProductID	INT	Unique identifier for each product item.	Primary key
ProductName	VARCHAR(40)	The descriptive name of the product.	NOT NULL
SupplierID	INT	Identifier that connects the product to its supplier.	Foreign key (Suppliers)
CategoryID	INT	Identifier that categorises the product into a specific type or group.	Foreign key (Categories)
QuantityPerUnit	VARCHAR(20)	A description of how a product is packaged or sold, indicating the number of units per package (e.g., "12 bottles per case").	
UnitPrice	DECIMAL(10, 4)	The selling price per unit of the product.	
UnitsInStock	SMALLINT	The number of units currently available in stock.	
UnitsOnOrder	SMALLINT	The quantity of this product that has been ordered but not yet received in inventory.	

ReorderLevel	SMALLINT	The minimum inventory level at which it is recommended to reorder this product to ensure stock availability.	
Discontinued	BIT(1)	A binary indicator (0 or 1) that shows whether the product is still available for sale (1 for available, 0 for discontinued).	NOT NULL

Suppliers table

This table holds information about suppliers, who provide the products that the company sells.

Column name	Data type	Feature description	Constraints
SupplierID	INT	Unique identifier for each supplier.	Primary key
CompanyName	VARCHAR(40)	The formal name of the supplier's company.	NOT NULL
ContactName	VARCHAR(30)	The name of the primary point of contact at the supplier's company.	
ContactTitle	VARCHAR(30)	The job title of the contact person at the supplier's company.	
Address	VARCHAR(60)	The full street address of the supplier's business location.	
City	VARCHAR(15)	The city where the supplier is located.	
Region	VARCHAR(15)	The geographical region or state where the supplier is situated (if applicable).	
PostalCode	VARCHAR(10)	The postal code or ZIP code of the supplier's location.	
Country	VARCHAR(15)	The country in which the supplier is based.	
Phone	VARCHAR(24)	The contact telephone number for the supplier.	
Fax	VARCHAR(24)	The facsimile (fax) number for the supplier.	
HomePage	MEDIUMTEXT	The supplier's website or homepage URL, if available.	

Categories table

This table contains different categories under which the products are grouped.

Column name	Data type	Feature description	Constraints
CategoryID	INT	Unique identifier for each product category.	Primary key
CategoryName	VARCHAR(15)	The name that represents the type or group of the product.	NOT NULL
Description	MEDIUMTEXT	A textual description that provides additional information about the category.	
Picture	LONGBLOB	The images or binary data related to the category, such as category-specific pictures or icons.	

OrderDetails table

This table serves as a junction between Orders and Products, holding the specifics about products within each order.

Column name	Data type	Feature description	Constraints
OrderID	INT	Identifier for the order to which the product belongs.	Composite primary key, foreign key (Orders)
ProductID	INT	Identifier for the specific product within the order.	Composite primary key, foreign key (Products)
UnitPrice	DECIMAL(10,4)	The per-unit cost of the product at the time the order was placed.	NOT NULL
Quantity	SMALLINT	The number of units of the product that were ordered.	NOT NULL
Discount	DOUBLE(8,0)	The percentage of discount applied to an individual product within an order, indicating the reduction in price for that specific item.	NOT NULL

Shippers table

This table contains information about shipping companies or entities responsible for delivering orders, including their names, phone numbers, and other relevant details.

Column name	Data type	Feature description	Constraints
ShipperID	INT	Unique identifier assigned to each shipping company or shipper within the database.	Primary key
CompanyName	VARCHAR(40)	The name of the shipping company or shipper responsible for delivering orders.	NOT NULL
Phone	VARCHAR(24)	The contact telephone number for the shipping company or shipper.	

CustomerDemographics table

This table includes additional demographic information or characteristics about customers, allowing for segmentation and analysis of customer profiles within a database.

Column name	Data type	Feature description	Constraints
CustomerTypeID	VARCHAR(10)	Unique identifier or code representing a specific customer demographic type or category.	Primary key
CustomerDesc	MEDIUMTEXT	A textual description or additional details describing the characteristics or attributes associated with a particular customer demographic type.	

Region table

This table contains information about geographical regions or areas, such as states or provinces, which can be used to categorise and organise data based on geographic location within the database.

Column name	Data type	Feature description	Constraints
RegionID	INT	Unique identifier or code assigned to each geographical region or area within the database.	Primary key

RegionDescription	VARCHAR(50)	A textual description or name that provides information about the specific geographical region or area.	NOT NULL
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Territories table

This table is used to define and manage specific sales territories within a region or area, allowing for effective sales management and organisation.

Column name	Data type	Feature description	Constraints
TerritoryID	VARCHAR(20)	Unique identifier or code assigned to each sales territory, enabling precise tracking and management of sales regions.	Primary key
TerritoryDescription	VARCHAR(50)	A textual description or name providing information about the characteristics or geographical coverage of a particular sales territory.	NOT NULL
RegionID	INT	A reference to the unique identifier of the region to which a territory belongs, establishing a relationship between territories and their parent regions for organisational purposes.	Foreign key (Region)