**Definition:**

A **Database Diagram** in MS SQL is a visual tool that shows the structure of a database. It helps you understand how tables are related to each other, showing their columns, primary keys, foreign keys, and relationships.

**Purpose of a Database Diagram:**

* It helps to **visualize** the database structure.
* It makes it easier to understand how **tables are connected** (e.g., which table refers to which other table using foreign keys).
* It’s a useful tool for **designing** and maintaining databases.

**Example:**

Let’s take the **HR schema** example again, with two tables: Employees and Departments.

1. **Tables:**
   * **Employees**: This table stores employee information like EmployeeID, FirstName, LastName, and DepartmentID.
   * **Departments**: This table stores department information with DepartmentID and DepartmentName.
2. **Relationship:**
   * The DepartmentID column in the Employees table is a **foreign key** that refers to the DepartmentID in the Departments table. This relationship links each employee to a specific department.

**Steps to Create a Diagram in MS SQL:**

1. **Open SQL Server Management Studio (SSMS)**.
2. **Select your database**.
3. Right-click on **Database Diagrams** (under your database) and select **New Database Diagram**.
4. **Add tables** that you want to visualize.
5. The **diagram** will show tables and automatically create lines (representing foreign keys) between related tables.

**Diagram Example:**

* The **Employees** table will be shown with columns EmployeeID, FirstName, LastName, and DepartmentID.
* The **Departments** table will be shown with columns DepartmentID and DepartmentName.
* A line will be drawn between DepartmentID in both tables, showing that it's a foreign key relationship.

This visual representation helps you quickly understand how the Employees table is related to the Departments table.

**Key Points in a Diagram:**

* **Primary Key**: A unique identifier for a record in a table (usually underlined).
* **Foreign Key**: A column that creates a link between two tables (shown by a line).
* **Tables**: Represented as boxes with their columns.