### **Lab 1: Understanding ORM with a Retail Inventory System**

### **What is ORM?**

ORM stands for **Object-Relational Mapping**. It's a concept where we can interact with a relational database (like SQL Server) using **C# classes and objects** instead of writing raw SQL queries.

Basically, each class in C# acts like a table, and the properties are like columns. EF Core does this mapping automatically behind the scenes. It helps connect our code to the database easily.

**Benefits of ORM**

* **Faster development**: We don’t have to write SQL manually for every action.
* **Easy to maintain**: If we change our models, the DB can be updated too.
* **Clean code**: We work with objects (like Product, Category) instead of SQL rows.
* **Supports LINQ**: We can query the DB using LINQ, which is more readable.

### **EF Core vs EF Framework**

* **EF Core** is the newer version, it's **lightweight, faster**, and works on **Windows, Linux, and macOS**.
* It supports **async operations**, better performance, and modern features.
* **EF Framework (EF6)** is older, **Windows-only**, and still used in some legacy apps, but it’s not as flexible or cross-platform.

### **New Features in EF Core 8.0**

* Can map **JSON columns** in SQL Server to C# objects.
* Better **performance** with compiled models (less runtime overhead).
* Supports **bulk operations** and **interceptors** (to hook into DB actions).
* More flexible and optimized for cloud/web apps.