

# Dell IT Academy

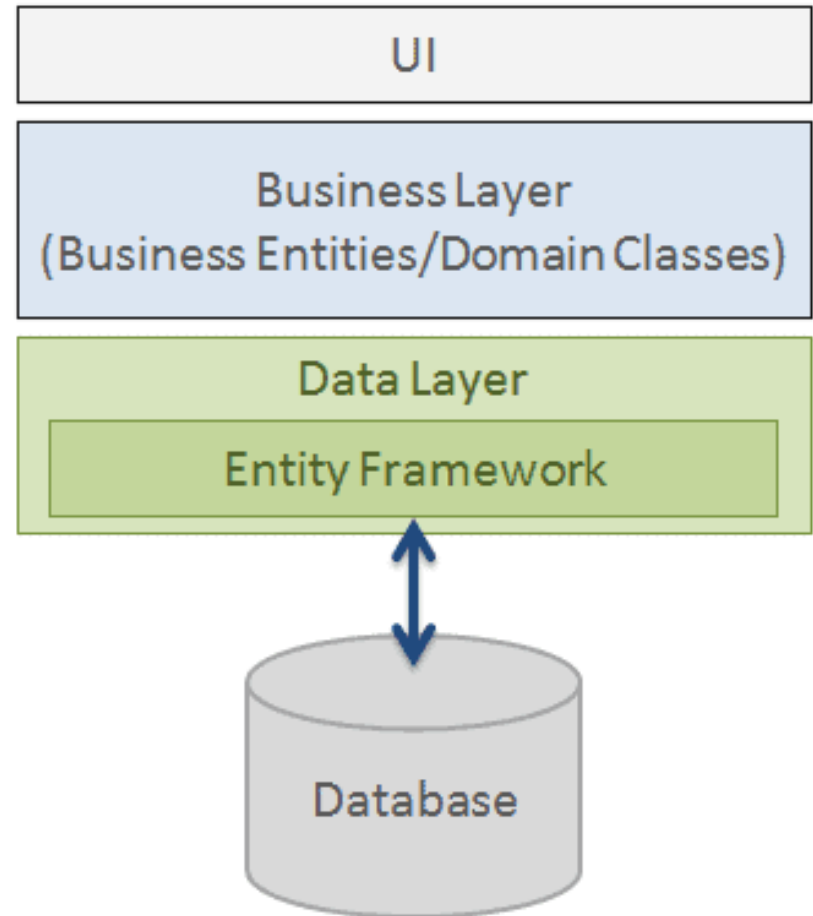


# ENTITY FRAMEWORK CORE

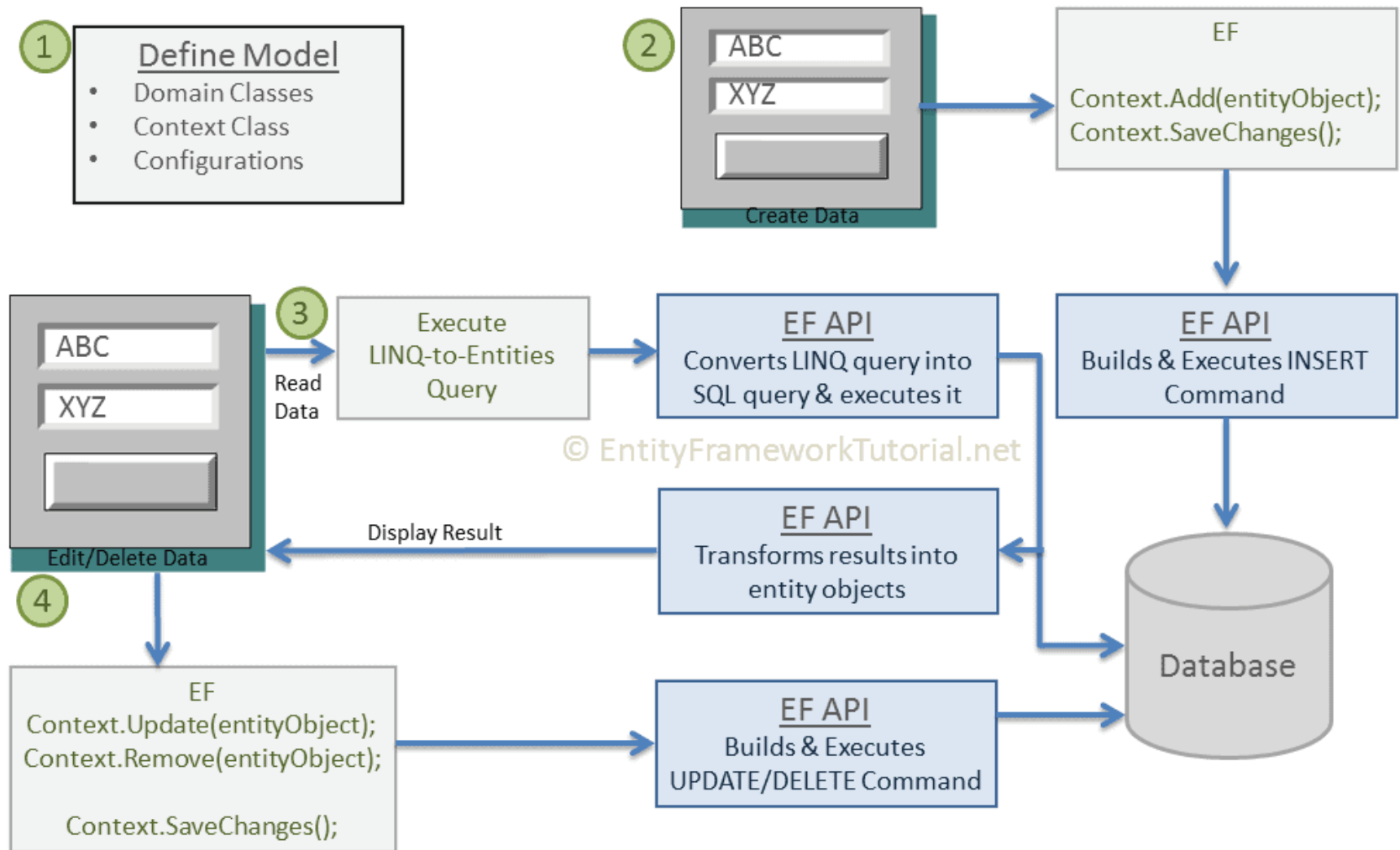
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# Entity Framework Core

- É um framework da família .NET de persistência baseado no padrão *Data Mapper* multiplataforma
  - Windows, Linux e Mac
- Suporta múltiplas fontes de dados
  - <https://learn.microsoft.com/en-us/ef/core/providers/>
  - Distribuído via pacotes NuGet
- Suporta o uso de LINQ – Language Integrated Query do .NET



# Entity Framework Core

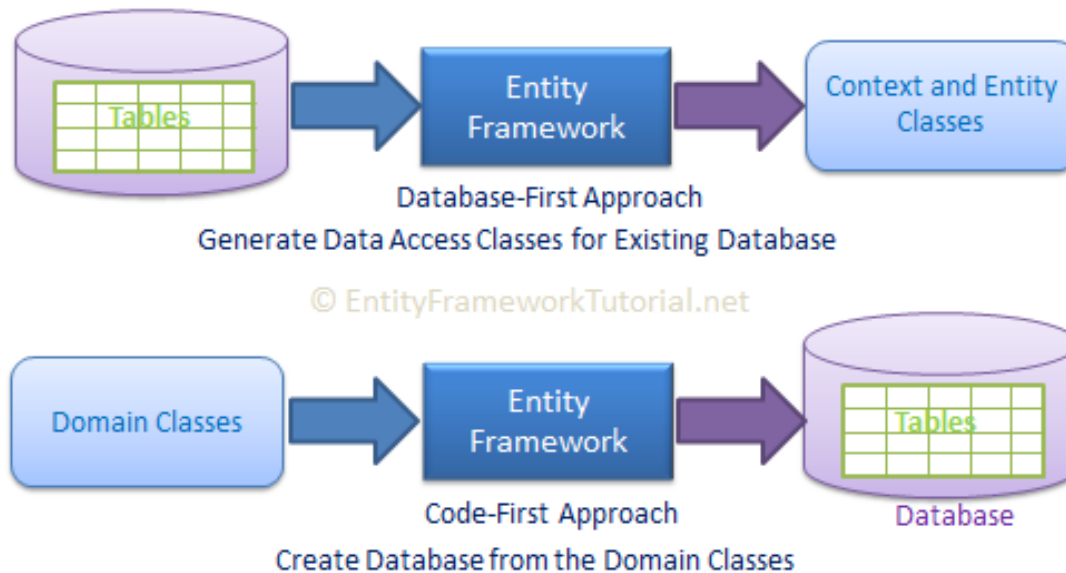


# POCO - “*Plain Old C# Objects*”

- Objetos de domínio já existentes
- São objetos que não conhecem o mecanismo de persistência

# Models

- Classes de modelo (POCO's) são mapeadas para tabelas, colunas e relacionamentos do banco de dados
- Formas de trabalho:
  - Code-first
  - Database-first



# Models

- EFCore permite:
  - Utilizar convenções de mapeamento a fim de diminuir a quantidade de código necessário para mapear os objetos
  - Utilizar anotações sobre os objetos para configurar as regras de mapeamento
  - Utilizar uma API do tipo “fluyente” para configurar as regras de mapeamento
    - Permite uma separação total entre um objeto de negócio e as regras de mapeamento
- Documentação:
  - <https://learn.microsoft.com/en-us/ef/core/modeling/>

# Models

Tipo de datos C#	Tipo de datos SQL Server
int	int
string	nvarchar(Max)
decimal	decimal(18,2)
float	real
byte[]	varbinary(Max)
datetime	datetime
bool	bit
byte	tinyint
short	smallint
long	bigint
double	float
char	No mapping
sbyte	No mapping (throws exception)
object	No mapping



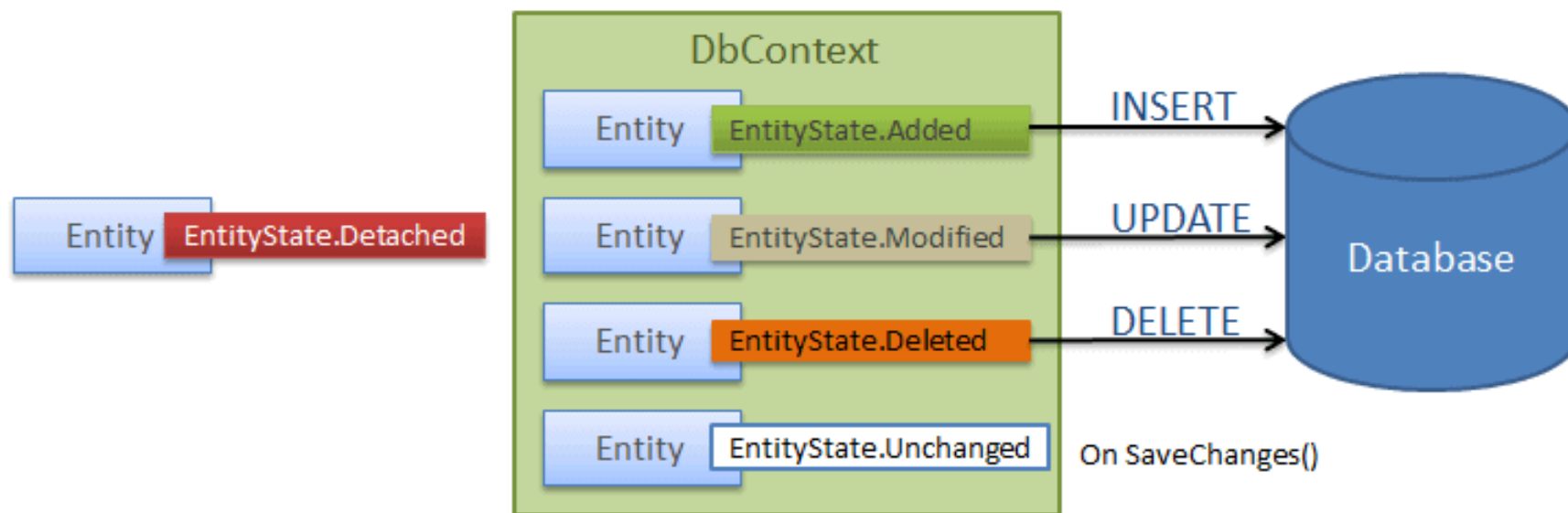
# Contexto

- EFCore segue os padrões Data Mapper, Repository e Unit of Work
- Objeto **DbContext** é baseado nesses padrões e possui uma API para
  - Gerenciar objetos em memória (inclusive com cache)
  - Manter a ligação entre o banco de dados e as entidades mapeadas no modelo relacional
  - Gerenciar a conexão com a base de dados
  - Gerenciar o contexto transacional

# Contexto

- Objeto **DbSet**
  - Representa uma coleção de entidades em um contexto de persistência
  - É obtida a partir do *DbContext*
  - Provê métodos para operações CRUD sobre um determinado tipo de entidade

# Contexto



# Database-First

- Banco de dados está previamente criado e deve ser acessado via EFCore
- Pode-se utilizar ferramentas de engenharia-reversa via *scaffolding* para automatizar a criação da classes e *DbContext*
- Documentação:
  - <https://learn.microsoft.com/en-us/ef/core/managing-schemas/scaffolding>

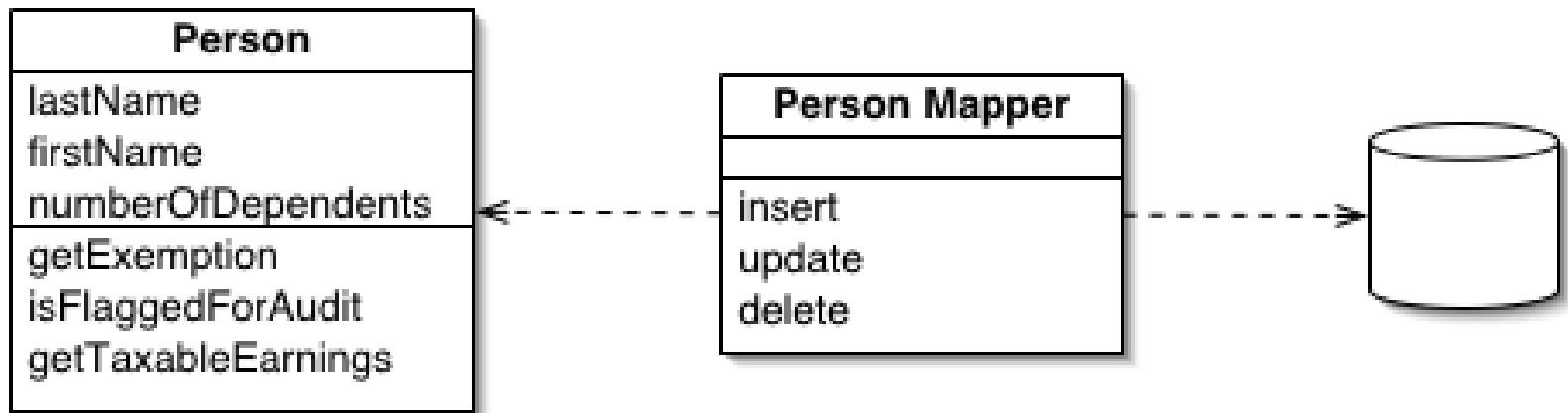
# Code-First

- Banco de dados é gerado a partir do código e anotações das classes em projetos
- Um framework de migração (Migrations) atualiza o banco a partir de alterações no modelo
- Documentação:
  - <https://learn.microsoft.com/en-us/ef/core/managing-schemas/migrations>

# PADRÕES DE PROJETO

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# Data Mapper Pattern



*The Data Mapper is a layer of software that separates the in-memory objects from the database. Its responsibility is to transfer data between the two and also to isolate them from each other. With Data Mapper the in-memory objects needn't know even that there's a database present; they need no SQL interface code, and certainly no knowledge of the database schema.*

<http://martinfowler.com/eaCatalog/dataMapper.html>

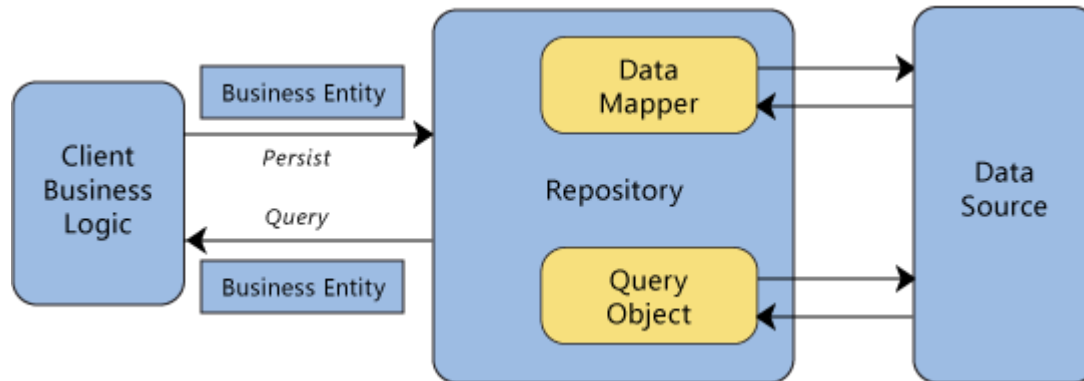
# Repository Pattern

*A system with a complex domain model often benefits from a layer, such as the one provided by Data Mapper (165), that isolates domain objects from details of the database access code. In such systems it can be worthwhile to build another layer of abstraction over the mapping layer where query construction code is concentrated. This becomes more important when there are a large number of domain classes or heavy querying. In these cases particularly, adding this layer helps minimize duplicate query logic.*

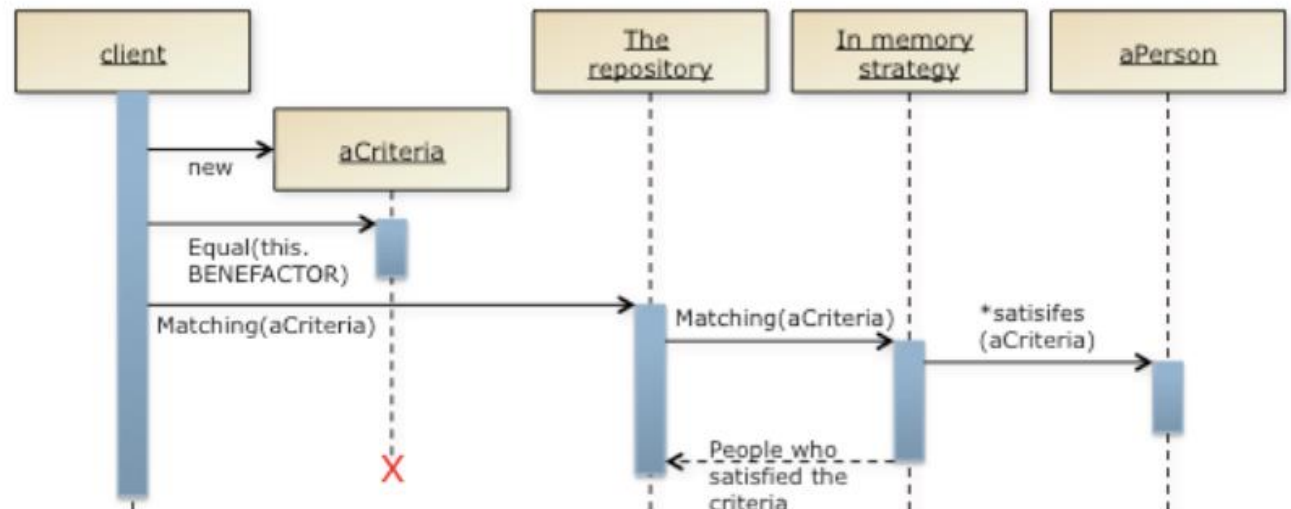
*Data Mapper is more appropriate for systems with complex domain logic where the shape of the domain model will diverge considerably from the database model. Data Mapper also decouples your domain model classes from the persistence store. That might be important for cases where you need to reuse the domain model with different database engines, schemas, or even different storage mechanisms altogether*



# Repository Pattern



<http://msdn.microsoft.com/en-us/library/ff649690.aspx>



<http://martinfowler.com/eaCatalog/repository.html>

# Unit of Work Pattern

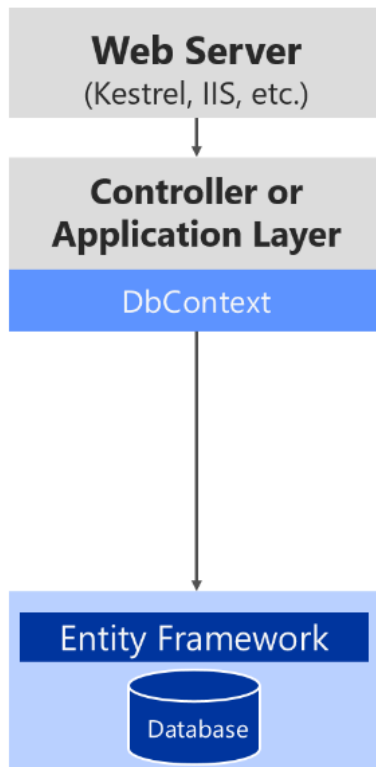
- *Maintains a list of objects affected by a business transaction and coordinates the writing out of changes and the resolution of concurrency problems.*

Unit of Work
registerNew(object) registerDirty(object) registerClean(object) registerDeleted(object) commit rollback

# Unit of Work Pattern

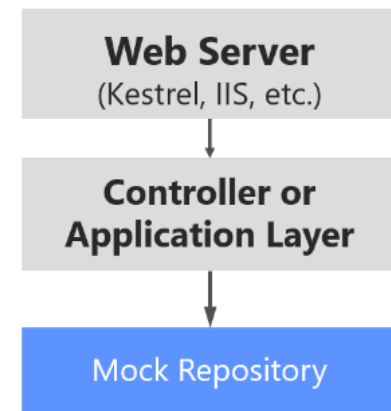
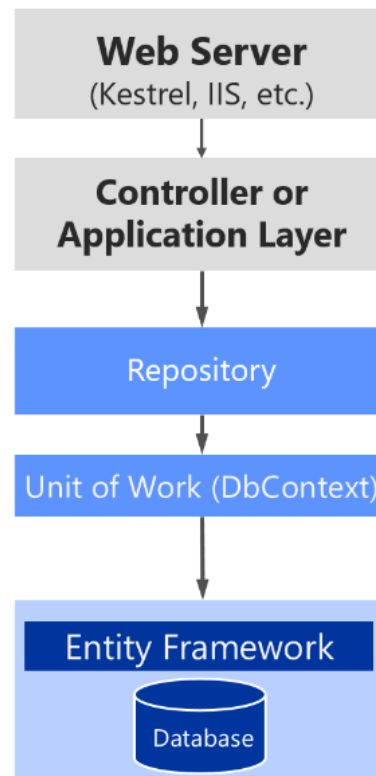
## No Repository

Direct access to database from controller



## With Repository

Abstraction layer between controller and database context.  
Unit tests can mock data to facilitate testing



<https://learn.microsoft.com/en-us/dotnet/architecture/microservices/microservice-ddd-cqrs-patterns/infrastructure-persistence-layer-implementation-entity-framework-core>