# Module 10:
# "Unit of Work"

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# Agenda

- Introductory Example: Adding Comments to Products
- Challenges
- Pattern: Unit of Work
- Overview of Unit of Work
- Discussion

# Introductory Example: Products and Comments

```
public class Product
{
    public int Id { get; set; }
    public string Name { get; set; }
    public string Manufacturer { get; set; }
    public Category? Category { get; set; }
    public virtual ICollection<Comment> Comments { get; set; }
}
```

```
public class Comment
{
    public int Id { get; set; }
    public Product Product { get; set; }
    public string Description { get; set; }
}
```

# Challenges

- Do we really need to retrieve the comments for each product individually?
- How do we even update the repositories?
  - Do we need a `Save()` or `Commit()` on each of the repositories?
- How do we handle updates as a single "unit"?
  - Consistent
  - Handling concurrency problems
  - "Transactional"

# First Things First…

- Eager-loading of related entities can be handled using Repository itself – without Unit of Work ☺

```
class ProductRepository : Repository<Product>, IProductRepository
{
    ...
    public IEnumerable<Product> GetAllWithComments() =>
        ProductsContext.Products
            .Include(product => product.Comments)
            .Where(product => product.Comments.Any())
            .ToList()
            ;
}
```

# Pattern: Unit of Work

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

- Outline
  - Encapsulate data access to multiple repositories as a single indivisible unit
  - Essentially, Entity Framework contexts are almost already such units

- Origin:
  - Martin Fowler (2003)

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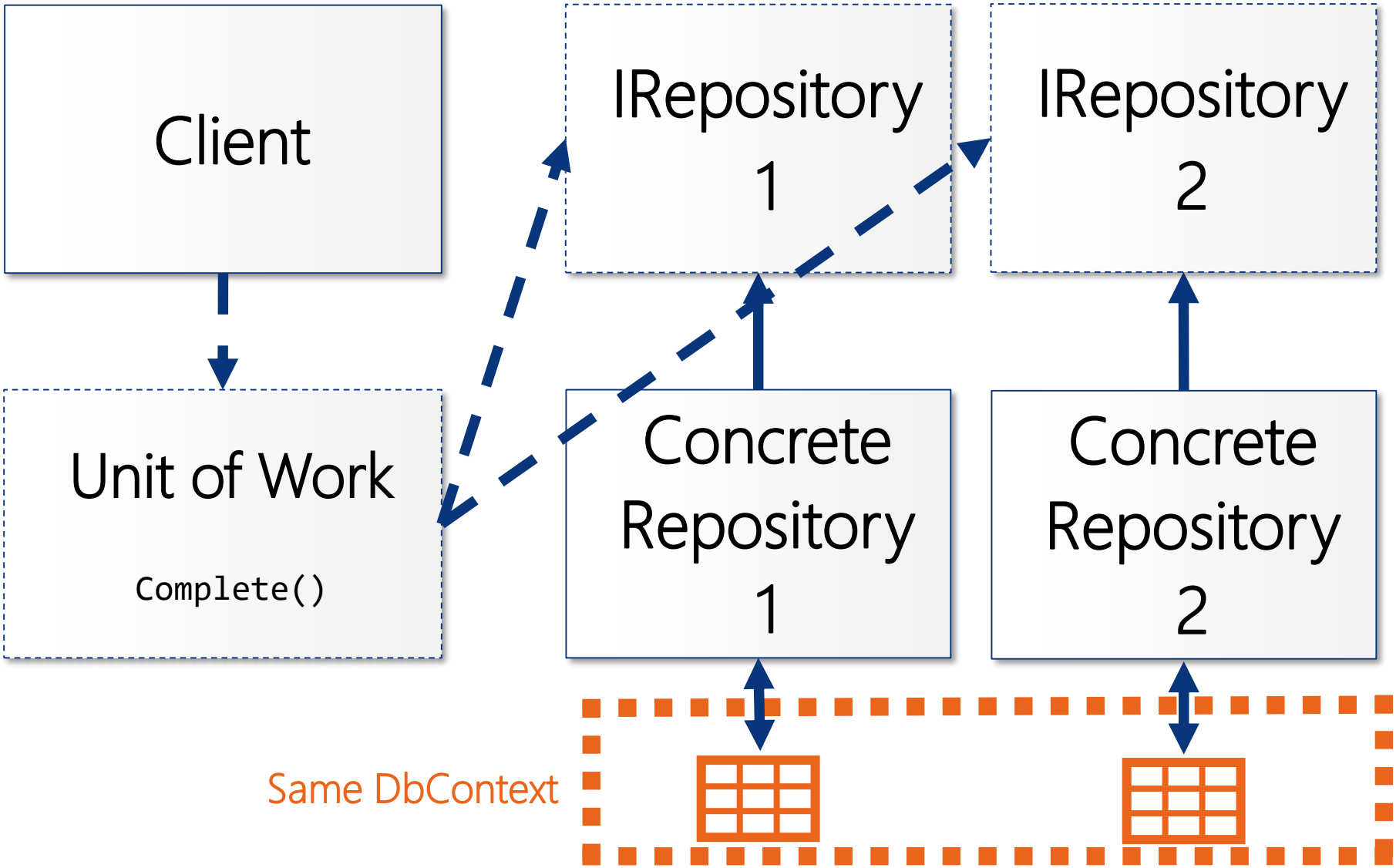
# Overview of Unit of Work Pattern



# Overview of Unit of Work Pattern

- Client
  - Queries and updates data through the Unit of Work Interface
  - Only know the Unit of Work Interface and general Repository interfaces
- Unit of Work
  - Interface or base class exposing in a persistence-aware update
  - Coordinates transactional saves, concurrency, and consistency
  - Very simple implementation
- Repository 1 and 2
  - General Repository interfaces
  - Concrete implementations provides persistence-dependent data access code for a specific concrete data source

# Discussion

- Unit of Work with just a single Repository
  - Sometimes merged
  - Source of confusion in literature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