

# Entity Framework Core Features

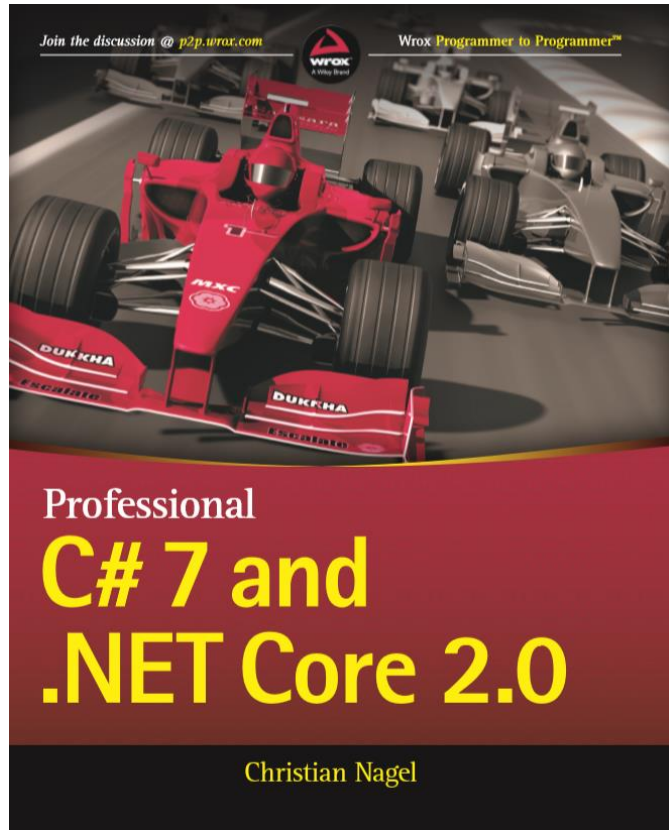


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# Topics

- Entity Framework .vs. EF Core
- Features, features, features
- Many code samples



# Christian Nagel

- Training
- Coaching
- Consulting
- Development
  
- Microsoft MVP
- [www.cninnovation.com](http://www.cninnovation.com)
- [csharp.christiannagel.com](http://csharp.christiannagel.com)

# Intro



# Compare

## Entity Framework

- Long History
- Legacy Code
- Windows only
- Big Footprint
- Conventions and "Magic"
- Relational Databases only

## Entity Framework Core

- New Code (.NET Core 1.0)
- Modern Patterns
- Multi-Platform
- Smaller Footprint
- Conventions, no "Magic"
- Architecture independent of relational databases



# Code First – only!



Database first, Model first not supported



You still can create a model from a database



dotnet ef scaffold

# Logging

- .NET Core Logging
  - ILogger, ILoggerFactory
- Add Query Tags (2.2)
- Samples: BooksSample, LazyLoading

## DbContext Pools (2.0)

- Connection Strings are pooled
- Creating context can take time
- DbContexts can be pooled
- AddDbContextPool()
  - It's just a matter of container configuration
  - No change in using the context
- Sample: ContextPoolSample





# Model Definition

# Model Definition

- Convention
- Annotations (Attributes)
- Fluent API
  - Separate configuration type with `IEntityTypeConfiguration<T>`
- Sample App: BooksSample

# Shadow Properties (1.0)

- Are not represented in the model
- Available in database tables
- Can be accessed using the context
  
- Example Columns
  - IsDeleted
  - LastUpdated
  - TenantId
- Sample App: BooksSample

## Model-Level Query Filter

- Define a filter that is included with every query
- Example: IsDeleted, TenantId
- Sample App: BooksSample

## Mapping to Fields (1.1)

- Read-only Properties in the model
  - Private fields
  - Not accessible via Properties
  - Constructors with parameters (2.1)
- 
- Sample App: BooksSample

# Migrations

- Manage the database from code
- Add migrations for every change
- Includes seeding of data
- Migrate:
  - `context.Database.Migrate()`
  - dotnet ef database update
  - dotnet ef migrations script
- Sample App: MigrationsConsoleApp, MigrationsLib



# Relations



## Table per Hierarchy (TPH) - Inheritance

- One table per hierarchy
- Conventions
  - Base classes and derived classes
  - All types `DbSet<T>` mapped
- Fluent API
  - Only abstract base class `DbSet<T>` mapped
  - `HasDiscriminator`
  - `HasValue`
- Sample: `TPHWithConventions / TPHWithFluentAPI`

# Table Splitting (2.0)

- Multiple types access the same table
- Menu & MenuDetail types in one table
- Fluent API
  - HasOne().WithOne().HasForeignKey()
- Sample: TableSplitting

# Owned Entities (2.0)

- Owned entities are part of the owner
- Owned attribute (2.1)
- Fluent API
  - OwnsOne – define relation
- Sample: OwnedEntities

# References

- Eager Loading
  - Include relations with a query
  - Include() / ThenInclude()
- Explicit Loading
  - Load relations on request
  - EntityEntry.Reference().Load
  - EntityEntry.Collection().Load
- Lazy Loading (2.2)
  - Load on property access

# Lazy Loading (2.2)

- This feature needs to be explicitly enabled
- NuGet Package  
*Microsoft.EntityFrameworkCore.Proxies*
- Use `UseLazyLoadingProxies()` with options
- Virtual Properties are required in the model
- Sample: LazyLoading



# NoSQL

# Azure Cosmos DB



NoSQL Document Database



Supported by EF Core 3.0



Use one or multiple containers for entities



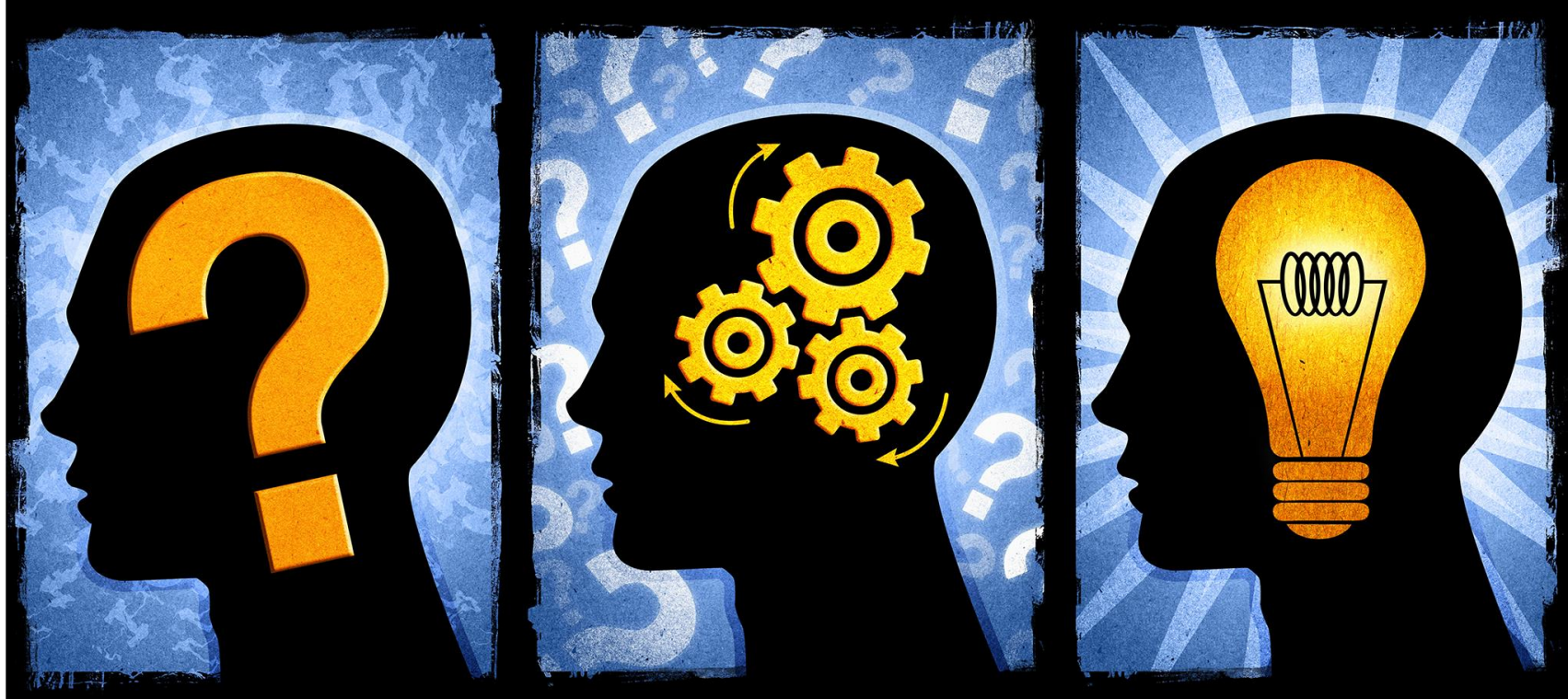
Create hierarchies of data in one JSON document: OwnsOne / OwnsMany



# For Action

- EF Core is multi-platform with modern patterns
- Relational and No-SQL providers
- Source code: <https://github.com/christiannagel/ThriveConf2019>
- Blog: <https://csharp.christiannagel.com>

# Questions?







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