Entity Framework Core 2.1 – what's new?

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Difference between EF 6 and EF Core

- **Entity Framework 6**
  - Old codebase
  - Difficult to extend
  - Lot of legacy API included for compatibility
    - ObjectContext
    - DbContext
  - High memory footprint

Difference between EF 6 and EF Core

- **Entity Framework Core**
  - New implementation
  - Lightweight
  - Extensible
  - Cross-platform (.NET Standard)
  - Support of non-relational data stores

  - Current state
    - Some features of EF 6 missing
    - Lot of new features not present in EF 6
    - 2.0 stable, 2.1 preview 2

New Features in EF Core 2.1

- Data Seeding

- Lazy loading

- Parameters in entity constructors

- Value conversions

- GROUP BY translation

- and more…

  - https://docs.microsoft.com/en-us/ef/core/what-is-new/ef-core-2.1

Data Seeding

- Never really solved in EF 6
  - EF Migrations with `SQL(@"INSERT INTO …")`
  - `table.AddOrUpdate` in Migrations configuration
  - Someone just gave up

- No solution in EF Core until 2.1
- Data are part of model definition
  - Migrations are aware of data

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Data Seeding

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Lazy loading

- Loved & hated in EF 6

- Eager loading
    - ```
      context.Blogs
          .Include(blog =>blog.Posts)
          .ThenInclude(post => post.Comments)
      ```
- Explicit loading
    - ```
      context.Entry(blog)
          .Collection(blog => blog.Posts)
          .Load()
      ```
- Projection
    - ```
      query.Select(blog => new { … })
      ```

Lazy loading

- Must be turned on explicitly

- With proxies (easiest one)
  - Separate NuGet package
    - `Microsoft.EntityFrameworkCore.Proxies`
  - Call `UseLazyLoadingProxies()`

- Without proxies
  - Inject ILazyLoader or Action<object, string> in constructor

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Lazy loading

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Entities with constructor parameters

- Initialize entity properties with constructor
- Bound by naming convention
  - `firstName` parameter ⇔ `FirstName` property

- Supports injecting of other services
  - `DbContext` (ohh, ugly)
  - `ILazyLoader` / `Action<object, string>`
  - `IEntityType` (EF Core metadata about the entity type)

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Entity constructor parameters

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Value conversions

- Database types are mapped to .NET types
  - Conversions were hard-coded in EF 6
  - EF Core adds extensibility

- Many built-in converters
  - BoolToZeroOneConverter and more
  - BytesToStringConverter (base64)
  - EnumToStringConverter
  - TimeSpanToTicksConverter
  - …

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Value conversions

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GROUP BY translation

- GROUP BY was evaluated in-memory until EF Core 2.1

  - Huge issue

- Some limitations still remain

  - Always check generated SQL

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GROUP BY translation

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Is it ready yet?

- Well, it depends...

- Advantages
  - Offers more mapping features
  - Supports .NET Core
  - Faster for simple cases
  - Easy fall back to raw SQL

- Disadvantages
  - No support for complex queries

Future plans

- Product planning for 2.2 not ready yet
  - Follow the GitHub repo
    - https://github.com/aspnet/EntityFrameworkCore

- Cosmos DB provider
  - Planned for 2.2
  - Document DB API
  - First large non-relational provider

Q&A

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