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# EF Core 6

## Fulfilling the Bucket List

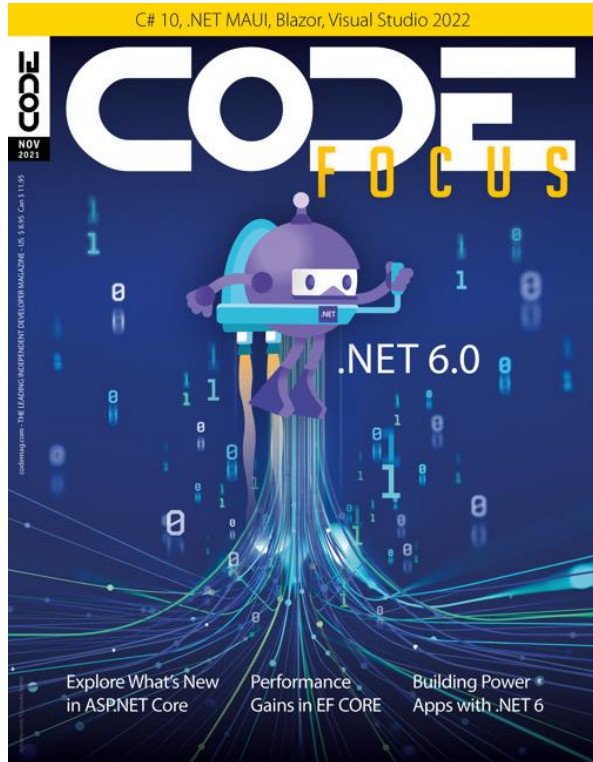
A webinar *and* CODE Magazine article presented by Julie Lerman



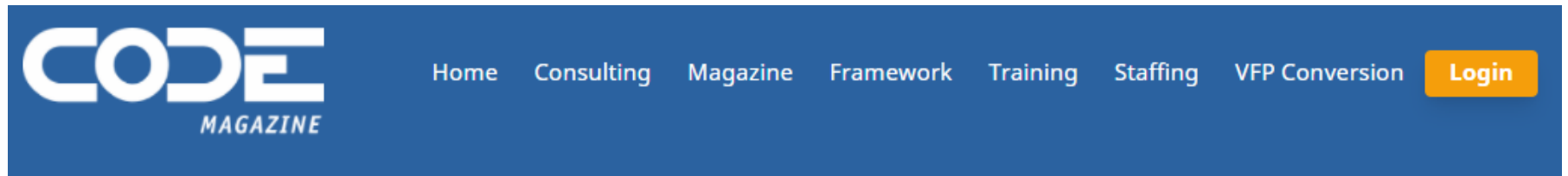
Microsoft RD, MVP  
The Data Farm

**Wednesday January 12, 2022 @ 1:00pm Eastern (UTC-5) / 10:00am Pacific**

# Julie's CODE Focus Article



<https://www.codemag.com/Article/2111072/EF-Core-6-Fulfilling-the-Bucket-List>



## EF Core 6: Fulfilling the Bucket List



By **Julie Lerman**

Published in: **CODE Focus Magazine: 2021 - Vol. 18 - Issue 1 - .NET 6.0**

Last updated: November 9, 2021

Ahh another year, another update to EF Core. Lucky us! Remember when Microsoft first released Entity Framework in 2008 and many worried that it would be yet another short-lived data access platform from Microsoft? (Note that ADO.NET is still widely used, maintained, and supported!) Well, it's been 13 years, including EF's transition to EF Core and it just keeps getting better and better.

You may have heard me refer to EF Core 3 as the "breaking changes edition." In reality, those breaking changes set EF Core up for the future, as I relayed in "[Entity](#)



# Kicking Things Off

## Jim Duffy

- Director of Business Development  
CODE Magazine & Consulting
- Former Developer – Drawn to the Dark Side: Now Responsible for  
Marketing & Business Development
- [jduffy@codemag.com](mailto:jduffy@codemag.com) / [My Bio](#)
- International Author and Speaker
- Former Microsoft RD (Regional Director) 9 years
- Former 11 time Microsoft Most Valuable Professional (MVP)
- Twitter: @jmduffy



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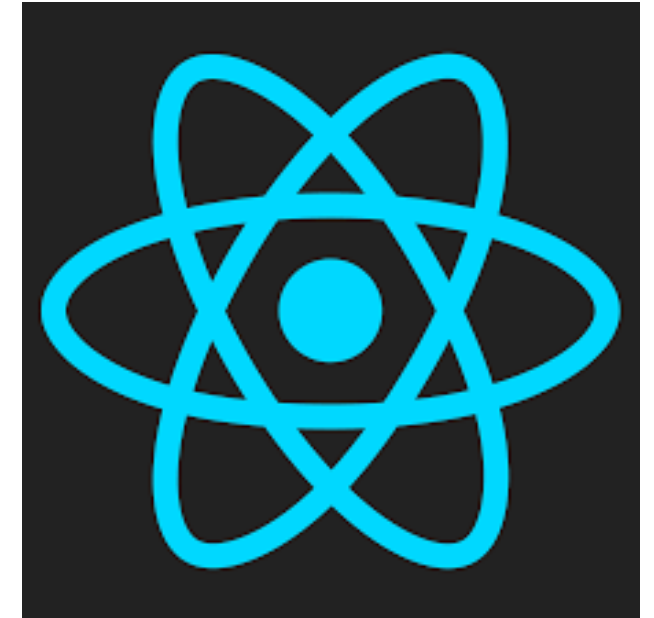
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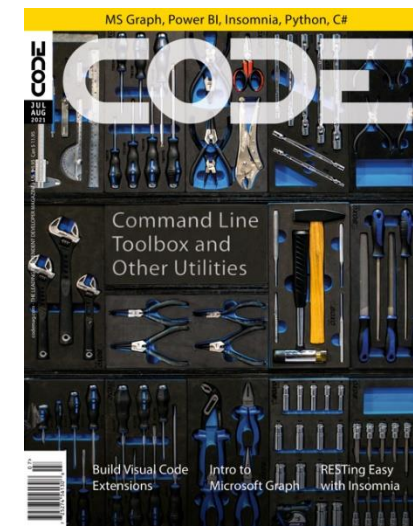
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<https://bit.ly/3sSJ9nS>

- Survey must be completed by **11:59pm ET** on **Friday 01/14/2022** to be eligible!
- Completed survey is required to be eligible.

## CODE Presents: EF Core 6: Fulfilling the Bucket List with Julie Lerman

The survey will take just a couple of minutes to complete.

Thank you for attending! Please complete this brief 12 question survey to be eligible to win a \$100 Amazon Gift Card. Your survey must be completed by 11:59pm EDT (UTC-5) on 1/14/2022 to be eligible to win! One entry per person please. Drawing will occur and the individual winner notified by 1/21/2022.

Thank you for attending! Please complete this brief survey. Yes, we still want to hear from you if you were unable to attend but watched the recording instead. :-)

\* Required

1. Full Name \*

2. Company Name \*

...



THIS SLIDE WILL BE REPEATED AT THE END AND SURVEY LINK REPEATED IN THE CHAT WINDOW!

## Photino

- Build native, cross-platform desktop apps that are lighter than light.
- Lightweight **open-source** framework for building native, cross-platform desktop applications with Web UI technology.
- Photino is maintained by the CODE Magazine team with the help of the open-source community.
- [tryphotino.io](https://tryphotino.io)
- [Github.com/tryphotino](https://github.com/tryphotino)

# Prior Webinar Recordings

- Slides & Videos Available At:
- State of .NET Webinar Series  
<https://www.codemag.com/StateOfDotNet>
- CODE Presents Webinar Series  
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## CODE Presents: Minimal APIs with Shawn Wildermuth

12/8/2021



## CODE Presents - Modern Desktop Installations with Geoff Callaghan

6/16/2021



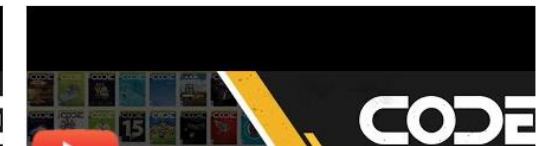
## CODE Presents: Costs and Benefits of .NET Application Migration to the

4/21/2021



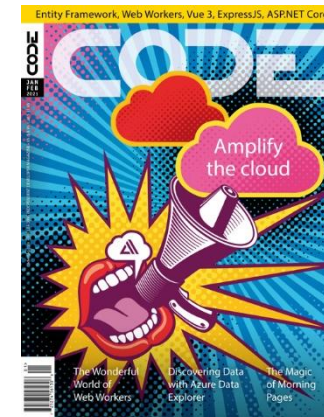
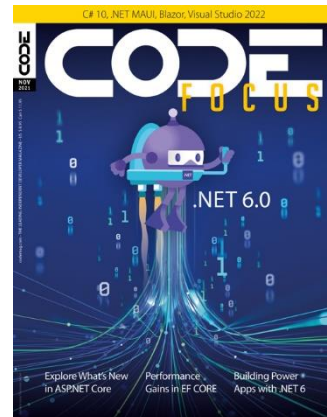
## CODE Presents: Introducing Photino!

3/10/2021



# About the Presenter

- **Julie Lerman**
- CODE Magazine Author
- Microsoft Regional Director (RD)
- Microsoft MVP
- Pluralsight Author
- Docker Captain



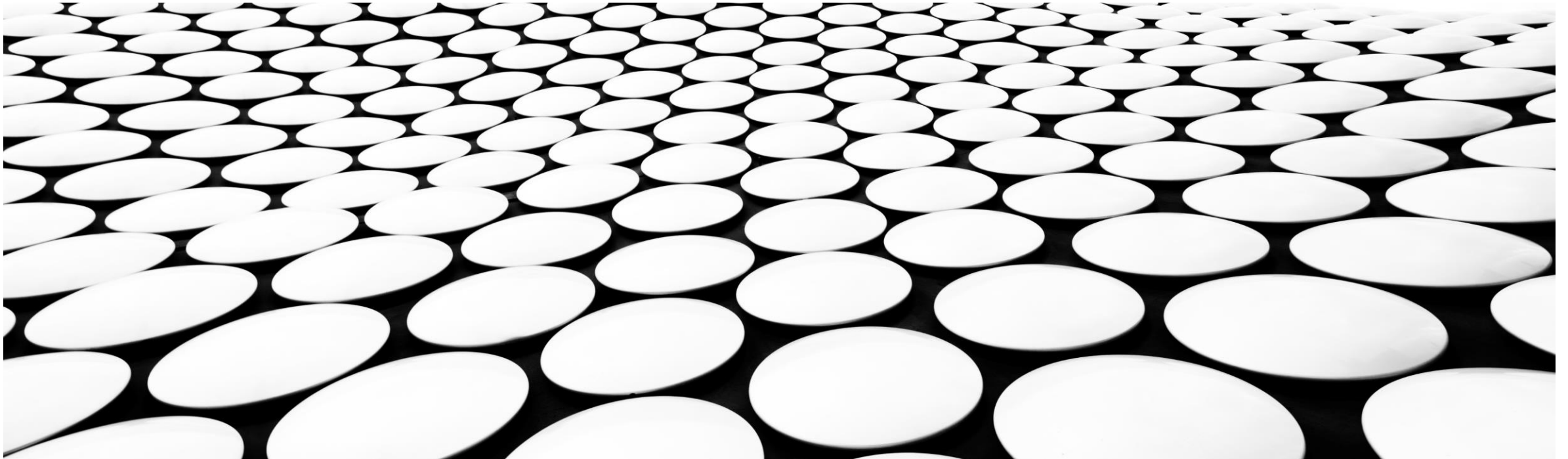
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# EF CORE 6: WORKING ON THE BUCKET LIST

JULIE LERMAN

[THEDATAFARM.COM](http://THEDATAFARM.COM)

[@JULIELERMAN](https://twitter.com/JULIELERMAN)





# **EF CORE 6 FUNDAMENTALS ON PLURALSIGHT**

COMING SOON!

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# THIS SESSION

High impact changes

Highly requested

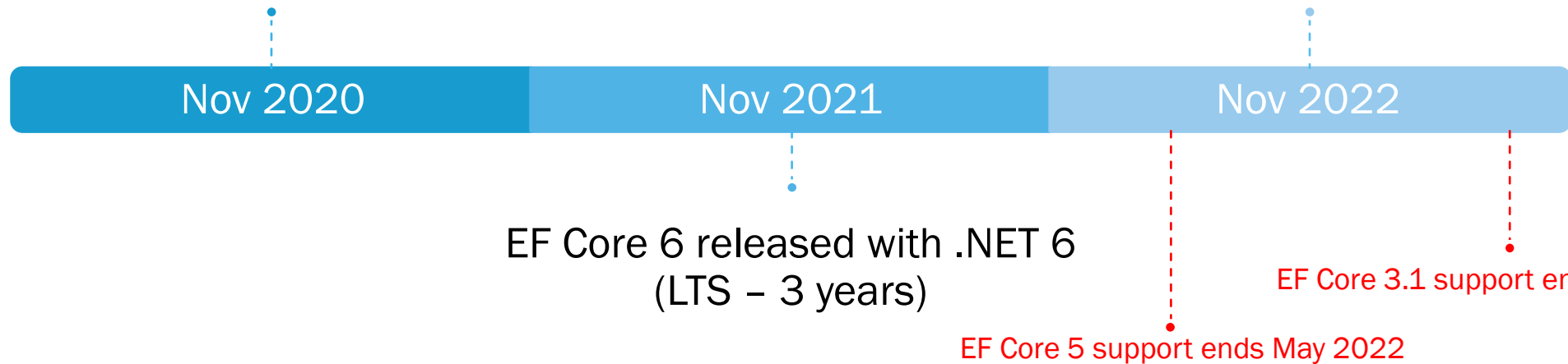
Various notable changes



# EF CORE RELEASES ALIGN WITH .NET

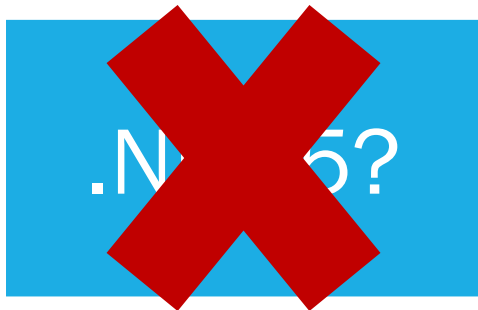
EF Core 5 released with .NET 5

.NET 7 scheduled release\*



\*[github.com/dotnet/core/blob/main/roadmap.md#net-release-schedule](https://github.com/dotnet/core/blob/main/roadmap.md#net-release-schedule)

## EF CORE 6 DEPENDS ON .NET 6



# QUERY PERFORMANCE



# RUNTIME PERFORMANCE PUSH WITH DAPPER AS BENCHMARK



Full stack (.NET6 + ASP.NET Core 6 + EF Core 6) perf is **70% faster** on the industry-standard [TechEmpower Fortunes benchmark](#), compared to 5.0.

“EF Core 6.0 itself is **31% faster** executing queries.”

# EFCORE & DAPPER IN TECHEMPOWER FORTUNES TESTS

All benchmarks executed on aspnet-citrine-lin (TechEmpower hardware), 3 iterations.

## Summary

Description	EF Core	Change	Dapper	Change	EF/Dapper Gap
Starting point (EF 5.0 + .NET 5.0)	147,852		230,394		55.8%
EF benchmark improvements (no product changes)	191,189	29.3%	230,394		20.5%
.NET 5 -> .NET 6	209,953	9.8%	263,314	14.3%	25.4%
EF 6.0 + .NET 6.0 (product optimizations)	251,992	31.8%	263,314		4.5%
Total change:		70.4%		14.3%	

Tweaking tests



Tweaking APIs



Fortune Benchmarks PREVIEW for Round 21:

<https://www.techempower.com/benchmarks/#section=test&runid=ab73a704-fc44-49d0-a92a-bae1ba7eb82e>

# KEY API CHANGES FOR PERFORMANCE GAINS

## Pooling & recycling (23%)

DbContext, DbConnection, DbCommand, DbDataReader, internal objects

## Reduce expensive checks for logging or interception points (7%)

One check, then delay any enabled logging/interception by 1 second

Avoids interfering with query performance

## Opt out of thread safety checks (6.7%)

Expensive for async queries

Opt-in for debugging/testing, opt-out for production

Full details for EF Core API improvements at [github.com/dotnet/efcore/issues/23611#issuecomment-778191277](https://github.com/dotnet/efcore/issues/23611#issuecomment-778191277)

---

**EF Core 6** focus for perf was on  
**NON-tracking** queries

**Team anticipates making similar effort for  
tracked queries in EF Core 7**

# RESULTS OF MY “BACKYARD” BENCHMARKDOTNET TESTS

EF Core 5  
on .NET 6

```
NET SDK=6.0.100
[Host]      : .NET 6.0.0 (6.0.21.52210), X64 RyuJIT
DefaultJob  : .NET 6.0.0 (6.0.21.52210), X64 RyuJIT
```

Method	Mean	Error	StdDev
EFC5_1KRows_withPooling	3,075.9 us	78.34 us	227.28 us
EFC5_1Row_WithPooling	487.2 us	9.74 us	14.57 us

EF Core 6  
on .NET 6

```
.NET SDK=6.0.100
[Host]      : .NET 6.0.0 (6.0.21.52210), X64 RyuJIT
DefaultJob  : .NET 6.0.0 (6.0.21.52210), X64 RyuJIT
```

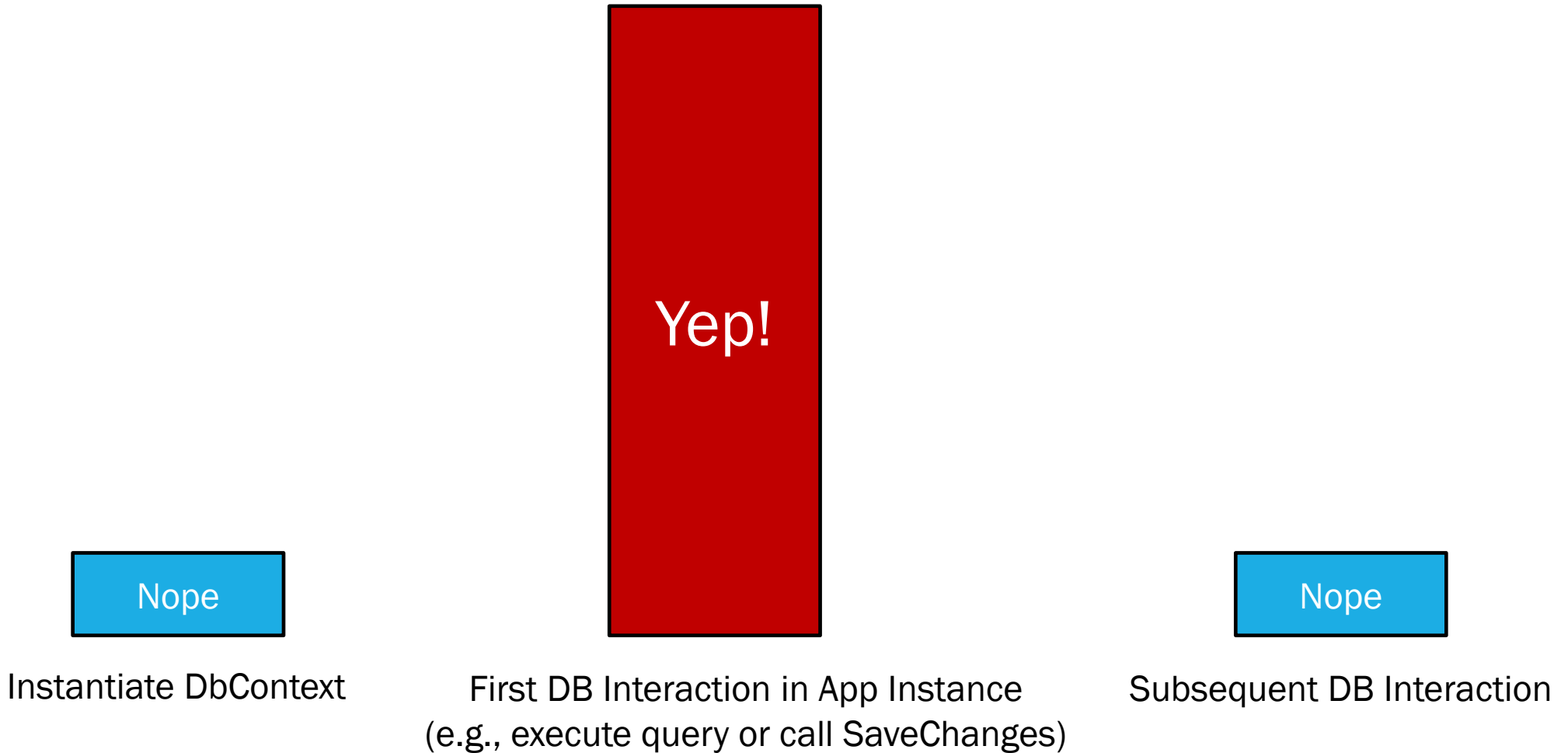
Method	Mean	Error	StdDev
EFC6_1KRows_withPooling	1,466.1 us	24.80 us	23.20 us
EFC6_1Row_WithPooling	483.3 us	5.97 us	5.59 us



# STARTUP PERFORMANCE

**“COMPILED MODELS”**

# WHEN DOES EF CORE BUILD ITS IN-MEMORY DATA MODEL?



# ARTHUR VICKER'S DEMO WITH COMPLEX MODEL USING SQLITE

Model: 449 entity types

6390 properties

720 relationships

## On-the-fly runtime model

```
AMD Ryzen 5 2600, 1 CPU, 12 logical and 6 physical cores
.NET SDK=6.0.100-rc.1.21463.6
[Host]      : .NET 6.0.0 (6.0.21.45113), X64 RyuJIT DEBUG
Job-SNYBMI  : .NET 6.0.0 (6.0.21.45113), X64 RyuJIT

InvocationCount=1  IterationCount=20  UnrollFactor=1

| Method | Mean | Error | StdDev |
|-----|-----|-----|-----|
| TimeToFirstQuery | 1.799 s | 0.0175 s | 0.0202 s |
```

## Using pre-compiled model

```
AMD Ryzen 5 2600, 1 CPU, 12 logical and 6 physical cores
.NET SDK=6.0.100-rc.1.21463.6
[Host]      : .NET 6.0.0 (6.0.21.45113), X64 RyuJIT DEBUG
Job-YOVZPM  : .NET 6.0.0 (6.0.21.45113), X64 RyuJIT

InvocationCount=1  IterationCount=20  UnrollFactor=1

| Method | Mean | Error | StdDev |
|-----|-----|-----|-----|
| TimeToFirstQuery | 157.2 ms | 6.52 ms | 7.51 ms |
```

Approximately 11X faster

\*Using SQLite


Caching is disabled for testing purposes

[github.com/ajcvickers/CompiledModelsDemo](https://github.com/ajcvickers/CompiledModelsDemo)

# IMPLEMENTING COMPILED MODELS

CLI: dotnet ef dbcontext optimize

PS: Optimize-DbContext



Creates a folder with optimized model files

Tell DbContext to use the version from those optimized files:

```
protected override void OnConfiguring (DbContextOptionsBuilder optionsBuilder) {  
    optionsBuilder.UseSqlite("Data Source=MyDatabase.db");  
    .UseModel(MyDbContextModel.Instance);  
}
```

# “DEVOPS FRIENDLY” MIGRATIONS



“MIGRATION BUNDLES”

---

# APPLYING MIGRATIONS IN WEB BASED APPS IS TRICKY

Migrations in app startup? **NOPE!**

Generate SQL script and feed to your favorite tool e.g., FlywayDB

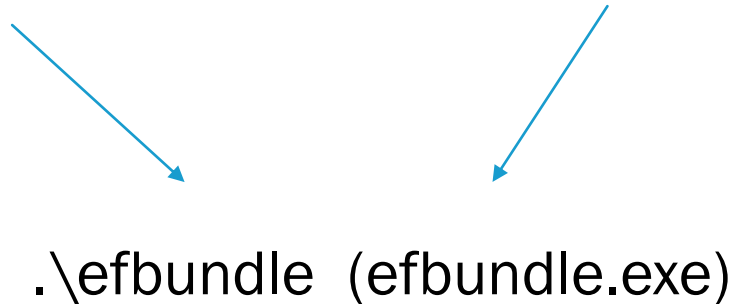
New to EF Core 6: Bundle migrations and execute

# IMPLEMENTING MIGRATION BUNDLES

CLI: dotnet ef migrations bundle

PS: Bundle-Migration

Key Options -- output, -- self-contained, -- force



.\efbundle (efbundle.exe)

Can be run with -- connection  
Creates idempotent logic

# TEMPORAL TABLE SUPPORT





# WHAT ARE TEMPORAL TABLES?

dbo.People (System-Versioned)

dbo.PeopleHistory (History)

Columns

- Id (PK, uniqueidentifier, not null)
- FirstName (nvarchar(max), null)
- LastName (nvarchar(max), null)
- MiddleName (nvarchar(max), null)
- PeriodEnd (datetime2(7), not null)
- PeriodStart (datetime2(7), not null)



dbo.PeopleHistory (History)

Columns

- Id (uniqueidentifier, not null)
- FirstName (nvarchar(max), null)
- LastName (nvarchar(max), null)
- MiddleName (nvarchar(max), null)
- PeriodEnd (datetime2(7), not null)
- PeriodStart (datetime2(7), not null)

*Table view from SSMS Object Explorer*

# EF CORE 6 MAPPINGS, MIGRATIONS & SCHEMA

## Map with IsTemporal()

```
modelBuilder.Entity<entity>()  
    .ToTable(tb => tb.IsTemporal());
```

## Migration adds

```
PeriodStart datetime + temporal annotations  
PeriodEnd datetime + temporal annotations  
Temporal annotations for table
```

## Generated SQL

```
DECLARE @historyTableSchema sysname = SCHEMA_NAME()  
EXEC(N'CREATE TABLE [People] (  
    [columns from properties]  
    [PeriodEnd] datetime2 GENERATED ALWAYS AS ROW END NOT NULL,  
    [PeriodStart] datetime2 GENERATED ALWAYS AS ROW START NOT NULL,  
    CONSTRAINT [PK_People] PRIMARY KEY ([Id]),  
    PERIOD FOR SYSTEM_TIME([PeriodStart], [PeriodEnd])  
) WITH (SYSTEM_VERSIONING = ON  
    (HISTORY_TABLE = [' + @historyTableSchema + N'].[PersonHistory]))');
```

---

# LINQ METHODS FOR QUERYING TEMPORAL TABLES

TemporalAsOf

TemporalAll

TemporalBetween

TemporalFromTo

TemporalContainedIn



# BULK CONVENTIONS & CONVERSIONS

## SIMPLER BULK CONFIGURATIONS

**OLD**

```
foreach (var entity in modelBuilder.Model.GetEntityTypes ())
{
    foreach (var prop in entity.GetProperties ()
        .Where (p => p.ClrType == typeof (string)))
    {
        prop.SetColumnType ("nvarchar(100)");
    }
}
```

**NEW**

```
configurationBuilder.Properties<string>()
    .HaveColumnType ("nvarchar(100)");
```

# NEW DBCONTEXT METHODS, TYPES & “HAVE” MAPPINGS FOR BULK MAPPINGS

```
protected override void ConfigureConventions
(ModelConfigurationBuilder configurationBuilder)
{
    configurationBuilder.Properties<string>()
        .HaveColumnType ("nvarchar(100)");

    configurationBuilder.Properties<AddressTypeEnum>()
        .HaveConversion<string>();

    configurationBuilder.Properties<Color>()
        .HaveConversion<MyCustomColorToStringConverter>();
}
```

## NOTE: LESS OPTIONS FOR BULK CUSTOM CONVERSIONS

Single property: specify write & read functions on-the-fly, in a method or custom class

```
modelBuilder.Entity<Address>()  
    .Property(ad=>ad.StructureColor)  
    .HasConversion(c=>c.ToString(), s=>Color.FromName(s));
```

Write to DB                      Read from DB

Bulk conversion: custom converter class only. Why? Can't pre-compile the model!

```
public class ColorToStringConverter : ValueConverter<Color, string> {  
    public ColorToStringConverter () : base (ColorString, ColorStruct) { }  
  
    private static Expression<Func<Color, string>> ColorString = v => new String (v.Name);  
    private static Expression<Func<string, Color>> ColorStruct = v => Color.FromName (v);  
}
```

# DOCUMENT DB (COSMOS DB) IMPROVEMENTS





## DOCUMENT DATABASE: **IMPLICIT OWNERSHIP**

No need to specify OwnsOne/OwnsMany mapping

```
{
  "Id": "18369f48-c9c9-41e0-a6c1-427dcca4816b",
  "Discriminator": "Person",
  "id": "Person|
        18369f48-c9c9-41e0-a6c1-427dcca4816b",
  "Name": {
    "FirstName": "Andriy",
    "LastName": "Svyryd"
  }
}
```

*Also will nest related objects with no DbSets*

Related objects with no DbSet

```
{
  "Id": "18369f48-c9c9-41e0-a6c1-427dcca4816b",
  "Discriminator": "Person",
  "id": "Person|
        18369f48-c9c9-41e0-a6c1-427dcca4816b",
  "Addresses": [
    {
      "Id": "16b8dda6-f3d5-43d0-a58b-ced48724666c",
      "AddressType": 2,
      "PostalCode": "12345",
      "Street": "Two Main",
      "StreetLine2": null
    }
  ],
}
```

## DOCUMENT DATABASE: RICHER LOGGING DETAILS

info: 8/30/2021 14:41:13.651

CosmosEventId.ExecutedReadNext[30102]

(Microsoft.EntityFrameworkCore.Database.Command) Executed ReadNext  
(169.6126 ms, 2.93 RU) ActivityId='4e465fae-3d49-4c1f-bd04-  
142bc5d0b0a1', Container='Shapes', Partition='(null)', Parameters=[]  
SELECT c FROM root c WHERE ((c["Discriminator"] = "Triangle") AND  
(c["id"] = "Equilateral")) OFFSET 0 LIMIT 2

# DOCUMENT DATABASE: STORE COLLECTIONS & DICTIONARIES OF PRIMITIVES



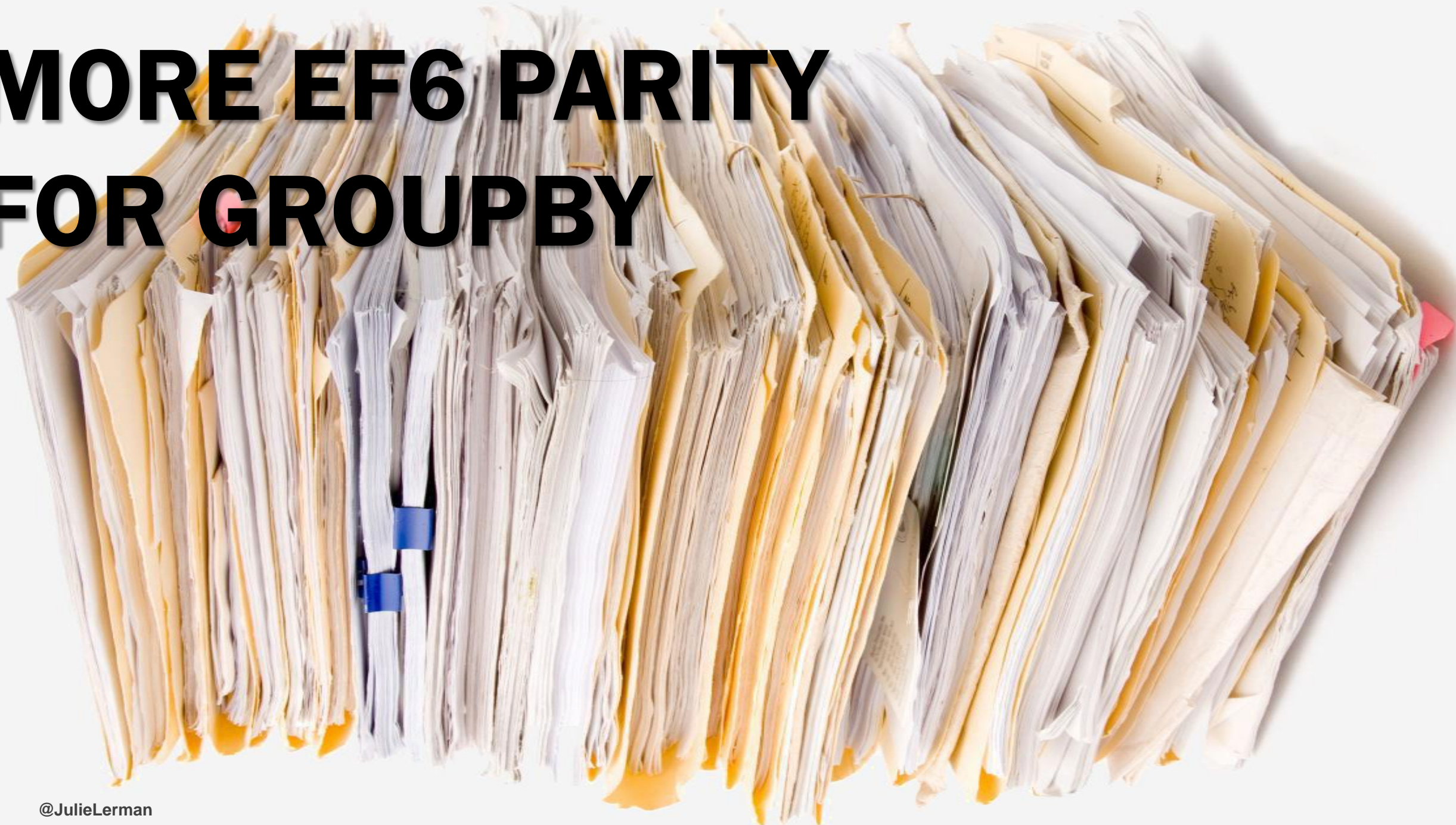
```
person.Nicknames = new List<string>
{ "Shay", "Roji", "Postgres Guy" };

person.DailyChocolate =
new Dictionary<string, string>
{ { "Monday", "Dark Chocolate" },
  { "Tuesday", "Salted Milk Chocolate" }
};
```

```
"Nicknames": [
  "Shay",
  "Roji",
  "Postgres Guy"
],

"DailyChocolate": {
  "Monday": "Dark Chocolate",
  "Tuesday": "Salted Milk Chocolate"
}
```

# **MORE EF6 PARITY FOR GROUPBY**



# ACCESS PROPERTIES OF NAVIGATIONS AFTER GROUPBY

```
_context.People.Include(p=>p.Addresses)
    .GroupBy(p=>p.LastName)
    .Select(g=>new
    { g.Key, Count=g.Count(),
      AddressCount=g.Sum(p=>
        p.Addresses.Count(a=>a.Street.Contains("Main")))
    }).ToList();
```

# SERVER SIDE EVAL CAN RETURN ENTITIES WITH GROUPBY

## EF Core 5: Aggregates like Count are supported

```
_context.Set<Address>()  
.AsEnumerable()  
.GroupBy(g=>new {g.Key, g.Count})  
.ToList();
```

## EF Core 5: AsEnumerable required for entity details

```
_context.Set<Address>()  
.AsEnumerable()  
.GroupBy(ad=>ad.PostalCode)  
.ToList();
```

## EF Core 6: Entities can be selected

```
_context.Addresses  
.GroupBy(ad=>ad.PostalCode)  
.Select(g=>new {g.Key, All=g.ToList()})  
.ToList();
```

```
▼ streetgroup [List]: Count = 2  
  ▼ [0]: { Key = "01234", All = Count = 1 }  
    > All [List]: Count = 1  
      Key [string]: "01234"  
  ▼ [1]: { Key = "12345", All = Count = 3 }  
    ▼ All [List]: Count = 3  
      > [0]: {Address}  
      > [1]: {Address}  
      > [2]: {Address}  
      > Raw View  
      Key [string]: "12345"
```

## THIS ALLOWS US TO USE **FIRST & FIRSTORDEFAULT** ...

### FirstOrDefault (in each group)

```
_context.Addresses
  .GroupBy(ad=>ad.PostalCode)
    .Select(g=>new{g.Key,
                  First=g.FirstOrDefault() } )
  .ToList();
```

```
▼ streetgroup [List]: Count = 2
  ▼ [0]: { Key = "01234", First = {Address} }
    > First: {Address}
      Key [string]: "01234"
  ▼ [1]: { Key = "12345", First = {Address} }
    > First: {Address}
      Key [string]: "12345"
```

# AND ... TOP N WORK!

## Top N via Take (in each group)

```
_context.Addresses
  .GroupBy(ad=>ad.PostalCode)
  .Select(g=>new{g.Key, Top2=g.Take(2)})
  .ToList();
```

## Top N via Take with Projection (in each group)

```
_context.Addresses
  .GroupBy(ad=>ad.PostalCode)
  .Select(g=>g.Take(2).Select(ad=>ad.Street))
  .ToList();
```

```
▼ streetgroup [List]: Count = 2
  ▼ [0]: { Key = "01234", Top2 = Count = 1 }
    Key [string]: "01234"
    ▼ Top2 [IEnumerable]: Count = 1
      > [0]: {Address}
      > Raw View
  ▼ [1]: { Key = "12345", Top2 = Count = 2 }
    Key [string]: "12345"
    ▼ Top2 [IEnumerable]: Count = 2
      > [0]: {Address}
      > [1]: {Address}
```

```
▼ streetgroup [List]: Count = 2
  ▼ [0] [IEnumerable]: Count = 1
    [0] [string]: "1 Cross"
  ▼ [1] [IEnumerable]: Count = 2
    [0] [string]: "1 Main"
    [1] [string]: "2 Main"
```





# MINIMAL API SUPPORT IN ASP.NET CORE APPS

```
var builder = WebApplication.CreateBuilder(args);  
builder.Services.AddSqlite<MyDbContext>("Data Source=mydatabase.db");
```

# CONTROL THE ORDER COLUMNS FOR DB MIGRATIONS

```
modelBuilder.Entity<Address>()  
    .Property(ad=>ad.Street).HasColumnOrder(1);
```

```
Column(Order=1)]  
public string PostalCode { get; set; }
```

# MORE FLEXIBLE SQL SERVER FREE-TEXT SEARCH



Name type property

is mapped to store as JSON  
in nvarchar(max)  
(this is not new!)

```
public class Person
{
    public int Id { get; set; }
    public Name Name { get; set; }
}
public class Name
{
    public string First { get; set; }
    public string Last { get; set; }
}
```

```
modelBuilder.Entity<Person>() .Property(e => e.Name).HasConversion(
    v => JsonSerializer.Serialize (v, (JsonSerializerOptions)null),
    v => JsonSerializer.Deserialize<PersonName>(v, (JsonSerializerOptions)null));
```

Results		Messages
Id	Name	
1	fb36934b-931d-4843-d029-08d9... {"FirstName":"Max","LastName":"Arshinov","FullName":"Max Arshinov"}	



## ...AND NOW WE CAN QUERY THAT DATA

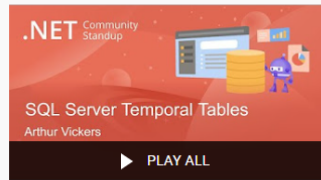
In EF Core 5, this query to search the NAME property **will fail** because Contains & FullText functions only accept strings

```
var result = context.Customers
    .Where(e => EF.Functions.Contains(e.Name, "Max"))
    .ToList();
```

EF Core 6 relaxes the parameter requirements. Here is the SQL searching the nvarchar(max) field

```
SELECT [c].[Id], [c].[Name]
FROM [Customers] AS [c]
WHERE CONTAINS([c].[Name], N'Max')
```

# COMMUNITY, TRANSPARENCY, OPEN SOURCE

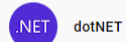


## Entity Framework Community Standup

33 videos • 2,439 views • Last updated on Sep 30, 2021



Join the Entity Framework Core team as they discuss data-related topics with community guests, highlight community contributions and share insights about the EF Core roadmap. Watch our live sessions and have your questions answered in real-time! We cover all topics related to data in .NET and .NET Core.



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- 1 Entity Framework Community Standup - SQL Server Temporal Tables and EF Core 6  
dotNET  
56:32
  - 2 Entity Framework Community Standup - EF Core with ASP.NET Core  
dotNET • Scheduled for 10/20/21, 1:00 PM  
LIVE
  - 3 Entity Framework Community Standup - PostgreSQL and EF Core  
dotNET  
1:12:31
  - 4 Entity Framework Community Standup - Dapper  
dotNET  
1:16:44
  - 5 Entity Framework Community Standup - EF Core's Global Query Filter  
dotNET  
1:06:46
  - 6 Entity Framework Community Standup - OData  
dotNET  
1:21:32
  - 7 Entity Framework Community Standup - Visualizing database query plans  
dotNET  
57:36
- Entity Framework Community Standup - Azure Cosmos DB and EF Core

[bit.ly/EFCoreStandup](https://bit.ly/EFCoreStandup)

← → ↻ 🔒 <https://github.com/dotnet/efcore/issues/23884> 📄 ★ Update ⋮

dotnet / **efcore** Public

<> Code Issues 1.5k Pull requests 13 Actions Projects 1 ...

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## Entity Framework Biweekly Status Updates (2021) #23884

Open ajcvickers opened this issue on Jan 14 · 16 comments

Milestone Discussions

ajcvickers commented on Jan 14 • edited

Member ⋮

This issue contains status updates from the Entity Framework team to provide insight into what we are focused on, progress made, and other interesting highlights of current work.

[Jump to latest update](#)

### More Information

Broader information on EF Core planning can be found in the [EF Core roadmap](#).

Use GitHub queries to find full details of:

- Issues [fixed for EF Core 6.0.0](#) but not yet shipped
  - Issues [fixed for EF Core 6.0.0 RC2](#) but not yet shipped
  - Issues [fixed for EF Core 6.0.0 RC1](#)
  - Issues [fixed for EF Core 6.0.0 preview 7](#)

[github.com/dotnet/efcore/issues/23884](https://github.com/dotnet/efcore/issues/23884)

# PUTTING A FACE TO THE TEAM ... AND THE COMMUNITY!

<https://bit.ly/3BJf7EK>

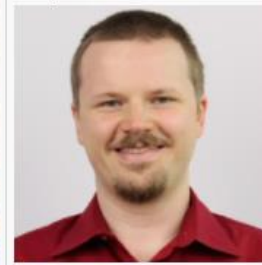
@JulieLerman

## Thank you from the team

A big thank you from the EF team to everyone who has used EF over the years!



[Arthur Vickers](#)



[Andriy Svyryd](#)



[Brice Lambson](#)



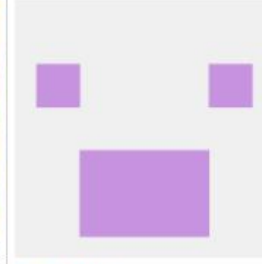
[Jeremy Likness](#)



[Maurycy Markowski](#)



[Shay Rojansky](#)



[Smit Patel](#)

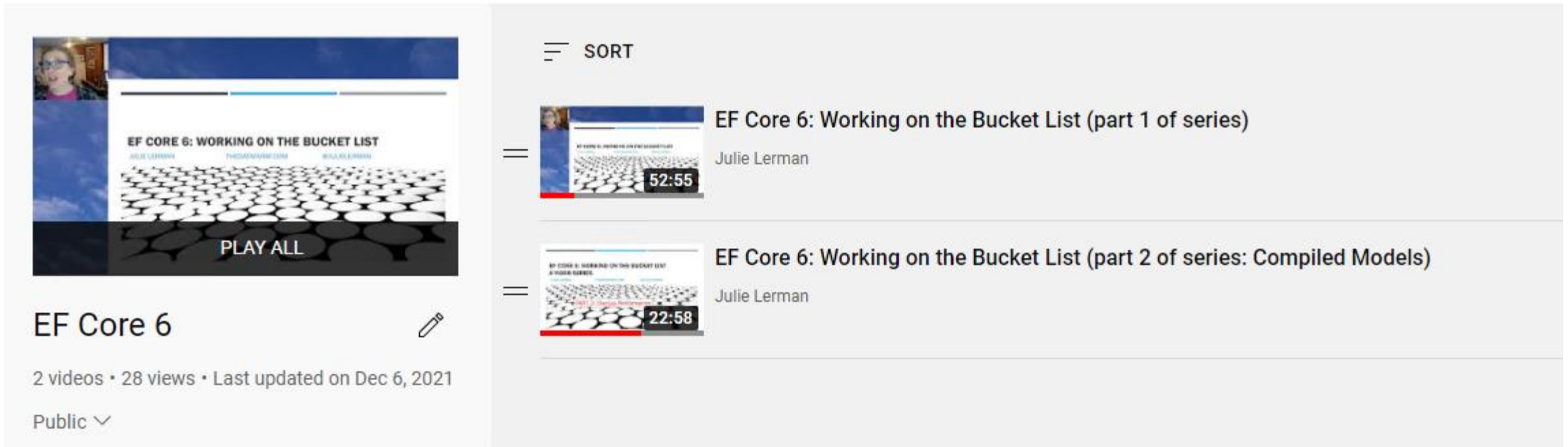
## Thank you to our contributors!

We are grateful to our amazing community of contributors. Our success is founded upon the shoulders of your efforts and feedback. If you are interested in contributing but not sure how or would like help, please reach out to us! We want to help you succeed. We would like to publicly acknowledge and thank these contributors for investing in the success of EF Core 6.0.

<a href="#">AkinSabriCam</a>	<a href="#">alexernest</a>	<a href="#">alexpotter10</a>	<a href="#">Ali-YousefiTelori</a>
#1	#1	#1	#1, #2
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# WORKING (SLOWLY) ON A VERY EXPANDED VERSION OF THIS TALK

[bit.ly/efc6youtube](https://bit.ly/efc6youtube)



The image shows a YouTube playlist page. On the left is a large video player thumbnail with the title 'EF CORE 6: WORKING ON THE BUCKET LIST' and a 'PLAY ALL' button. Below the player, the playlist title 'EF Core 6' is displayed with a pencil icon, and the details '2 videos • 28 views • Last updated on Dec 6, 2021' and 'Public' are visible. On the right is a list of two videos. The first video is 'EF Core 6: Working on the Bucket List (part 1 of series)' by Julie Lerman, with a duration of 52:55. The second video is 'EF Core 6: Working on the Bucket List (part 2 of series: Compiled Models)' by Julie Lerman, with a duration of 22:58. A 'SORT' menu icon is located at the top of the video list.

EF Core 6

2 videos • 28 views • Last updated on Dec 6, 2021

Public

SORT

- EF Core 6: Working on the Bucket List (part 1 of series)  
Julie Lerman  
52:55
- EF Core 6: Working on the Bucket List (part 2 of series: Compiled Models)  
Julie Lerman  
22:58

---

**PLURALSIGHT COURSE COMING IN LATE WINTER 2022**

# Entity Framework Core 6 Fundamentals

---



**Julie Lerman**

Most Trusted Authority on Entity Framework

@julielerman thedatafarm.com



## IMPORTANT LINKS

- Julie Lerman website: [thedatafarm.com](https://thedatafarm.com)
- Demos from this session: [github.com/Julielerman/EFCore6Demos](https://github.com/Julielerman/EFCore6Demos)
- My Pluralsight Author Page: [bit.ly/PSJulie](https://bit.ly/PSJulie)
  
- MS Docs: What's New in EF Core 6 [bit.ly/EFCore6New](https://bit.ly/EFCore6New)
- MS Docs: Breaking Changes in EF Core 6: [bit.ly/EFCore6Breaking](https://bit.ly/EFCore6Breaking)
- Announcing EF Core 6.0 Preview 4: Performance Edition: [bit.ly/EFCore6Perf](https://bit.ly/EFCore6Perf)
- EF Core Repository: [github.com/dotnet/efcore](https://github.com/dotnet/efcore)
- Entity Framework Team Community Standups on YouTube: [bit.ly/EFCoreStandup](https://bit.ly/EFCoreStandup)

---

## JULIE LERMAN CONTACT INFO

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[github.com/JulieLerman](https://github.com/JulieLerman)



# Other Announcements

# Event Survey – Win \$100!

- Complete this very short 12 question survey for a chance at a \$100 Amazon Gift Card!

<https://bit.ly/3sSJ9nS>

- Survey must be completed by **11:59pm ET** on **Friday 01/14/2022** to be eligible!
- Completed survey is required to be eligible.

## CODE Presents: EF Core 6: Fulfilling the Bucket List with Julie Lerman

The survey will take just a couple of minutes to complete.

Thank you for attending! Please complete this brief 12 question survey to be eligible to win a \$100 Amazon Gift Card. Your survey must be completed by 11:59pm EDT (UTC-5) on 1/14/2022 to be eligible to win! One entry per person please. Drawing will occur and the individual winner notified by 1/21/2022.

Thank you for attending! Please complete this brief survey. Yes, we still want to hear from you if you were unable to attend but watched the recording instead. :-)

\* Required

1. Full Name \*

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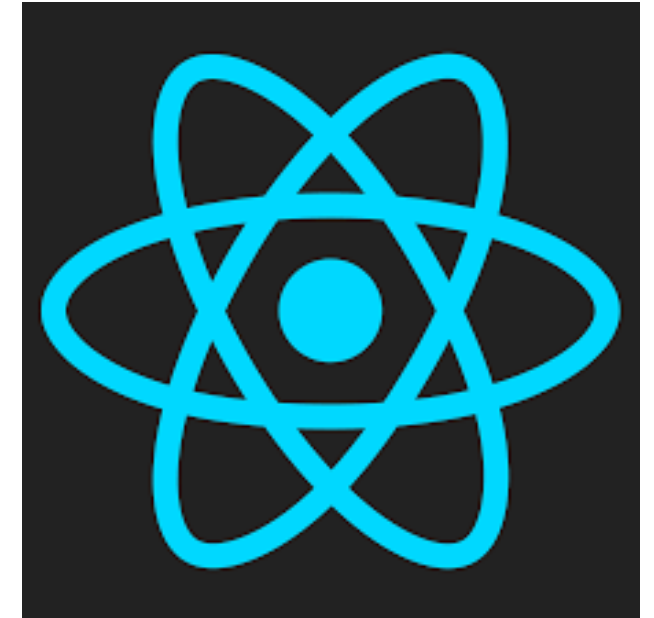
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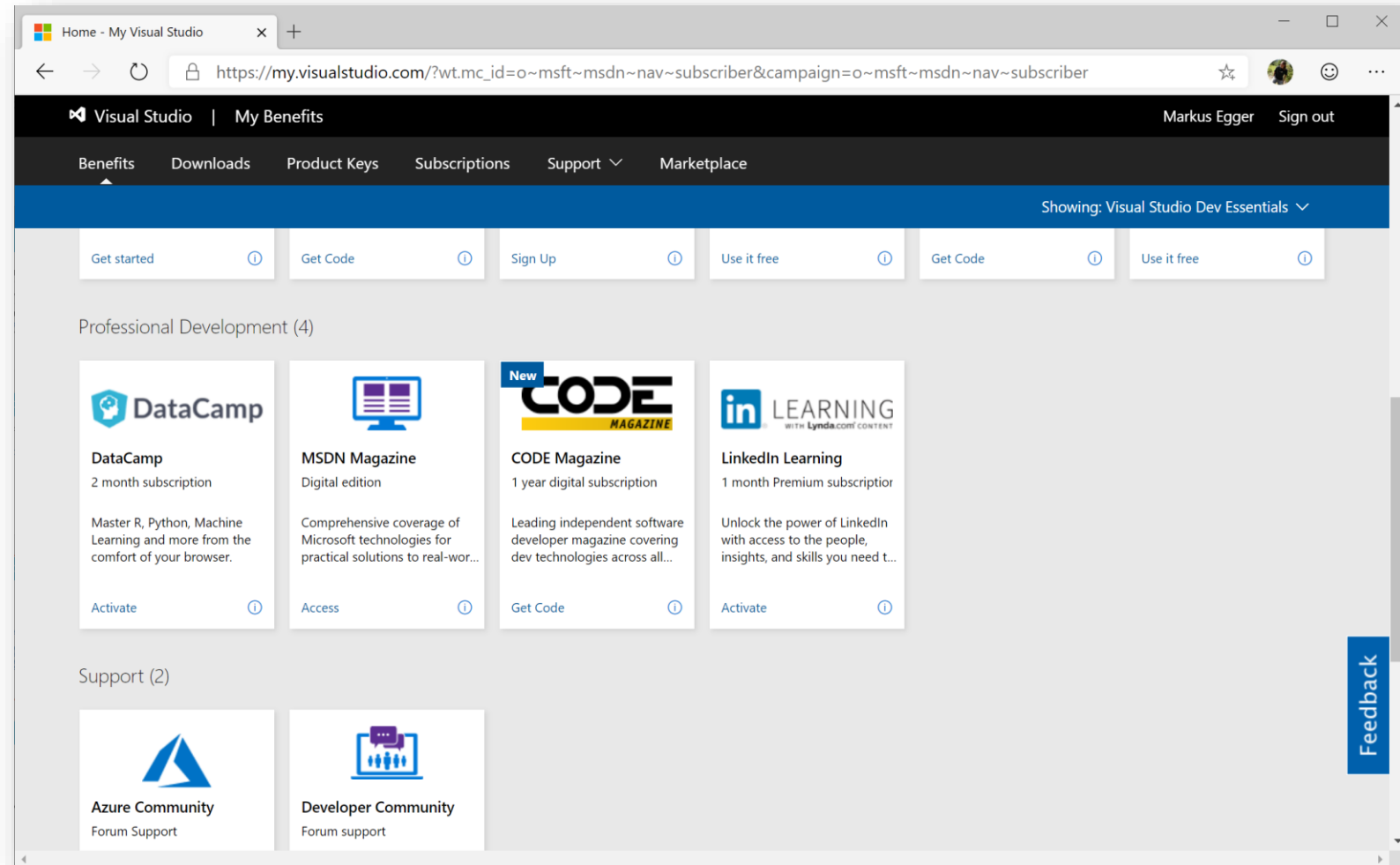
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# Q&A

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