



.NET CONF POST PARTY HIGHLIGHTS AND MORE

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AGENDA


- .NET 7, C# 11, and Azure Highlights from .NET Conf 2022
- Minimal API + Containerization + Azure Container Apps

ABOUT MIKE DOUGLAS

- Solution Consultant and VP Digital Consulting – Engineering at Lunavi
- Microsoft MVP – Developer Technologies – DevOps
- Organizer of Omaha DevOps Meetup
- Competitive Robotics Club Coordinator for 7th – 8th Graders
- @mikedouglasdev on twitter

.NET CONF 2022

Keynote: Welcome to .NET 7



dotnetconf.net
.NET Conf 2022
November 8-10

.NET Conf 2022

dotnet
88 videos Last updated on Nov 15, 2022









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▶ Play all Shuffle

.NET Conf is our annual virtual developer event co-organized by the .NET community and Microsoft and sponsored by the .NET Foundation and ecosystem partners. It is a chance to learn and get inspired for your next software project. You will learn to build for web, mobile, cloud, desktop, games, services, libraries and more for a variety of platforms and devices all with .NET. We have sessions for everyone, no matter if you are just beginning or are a seasoned engineer. We'll have presentations on .NET 7, C# 11, Azure, Visual Studio, and much more.

<https://www.dotnetconf.net>

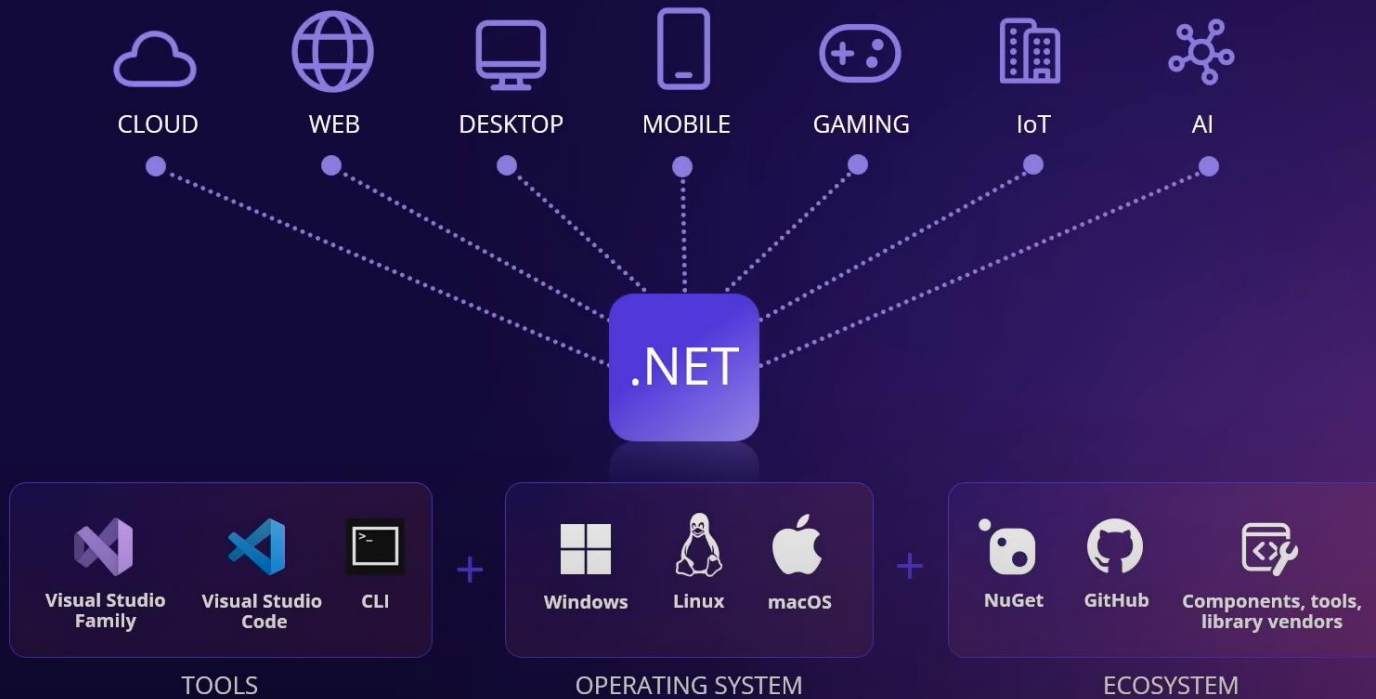
1 unavailable video is hidden

-  **.NET Conf 2022 Keynote: Welcome to .NET 7 | .NET Conf 2022**
dotnet • 41K views • 3 weeks ago
-  **State of ASP.NET Core | .NET Conf 2022**
dotnet • 15K views • 4 weeks ago
-  **What's new for Blazor in .NET 7 | .NET Conf 2022**
dotnet • 23K views • 4 weeks ago
-  **Making the Most of Minimal APIs in .NET 7 | .NET Conf 2022**
dotnet • 6K views • 4 weeks ago
-  **Building modern high performance services with ASP.NET Core and .NET 7**
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-  **The Whirlwind Tour of Building .NET Apps in Azure | .NET Conf 2022**
dotnet • 2.2K views • 4 weeks ago
-  **Building Serverless Applications with .NET 7 and Azure functions | .NET Conf 2022**

ANNOUNCEMENTS

- .NET 7 and C# 11 Official Launch

Build anything with a unified platform



Ecosystem

#1

Most Loved Developer Framework (2019-2022)

.NET Core/.NET  stackoverflow

Top 5

Language on GitHub

C# 

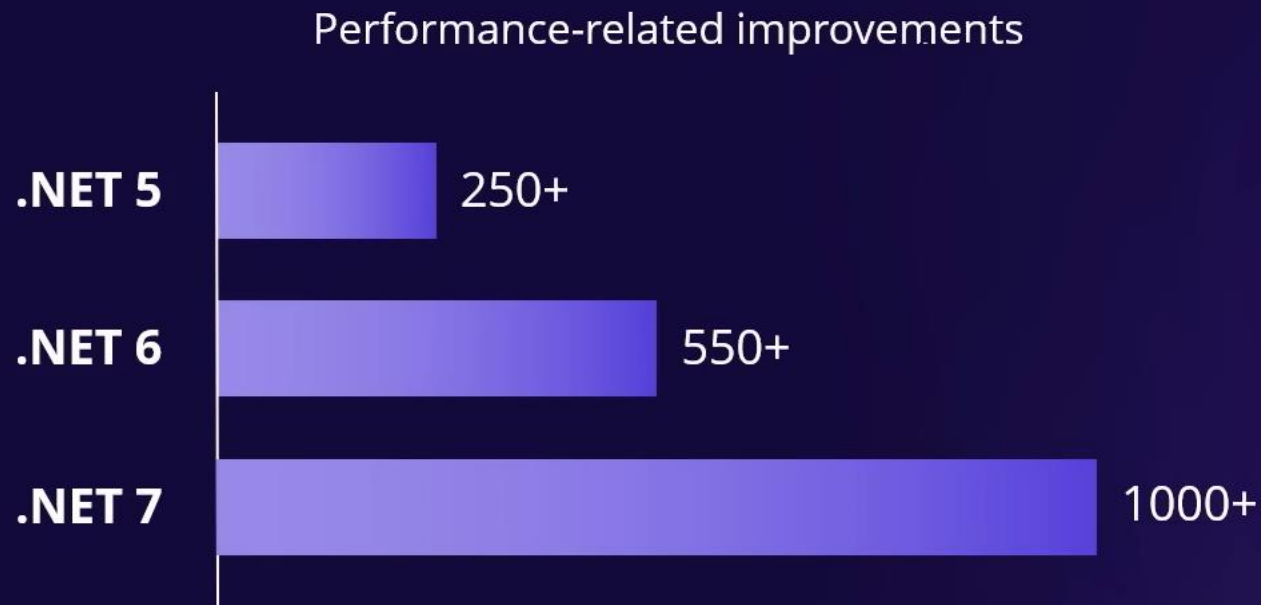
Top 5

Highest velocity OSS project

github.com/dotnet 

PERFORMANCE IMPROVEMENTS

Performance Improvements in every release



Performance Improvements in .NET 7



Stephen Toub - MSFT

August 31st, 2022 | 154 | 92

TL;DR: .NET 7 is fast. Really fast. A thousand performance-impacting PRs went into runtime and core libraries this release, never mind all the improvements in ASP.NET Core and Windows Forms and Entity Framework and beyond. It's the fastest .NET ever. If your manager asks you why your project should upgrade to .NET 7, you can say "in addition to all the new functionality in the release, .NET 7 is super fast."

WAYS TO GET .NET 7

- Visual Studio 17.4+



Visual Studio Enterprise 2022

17.4.2

Scalable, end-to-end solution for teams of any size

- [Download .NET 7.0 \(Linux, macOS, and Windows\)
\(microsoft.com\)](https://microsoft.com)

Build apps - SDK ⓘ

SDK 7.0.100

OS	Installers	Binaries
Linux	Package manager instructions	Arm32 Arm32 Alpine Arm64 Arm64 Alpine x64 x64 Alpine
macOS	Arm64 x64	Arm64 x64
Windows	Arm64 x64 x86 winget instructions	Arm64 x64 x86
All	dotnet-install scripts	

.NET 7 STS

- .NET 7 is Standard Term Support (STS) – 18 months
- .NET 6 is Long Term Support (LTS) – 3 years

Version	Original release date	Latest patch version	Patch release date	Release type	Support phase	End of support
.NET 7	November 8, 2022	7.0.0	November 8, 2022	STS	Active	May 14, 2024
.NET 6	November 8, 2021	6.0.11	November 8, 2022	LTS	Active	November 12, 2024
.NET Core 3.1	December 3, 2019	3.1.31	November 8, 2022	LTS	Maintenance	December 13, 2022

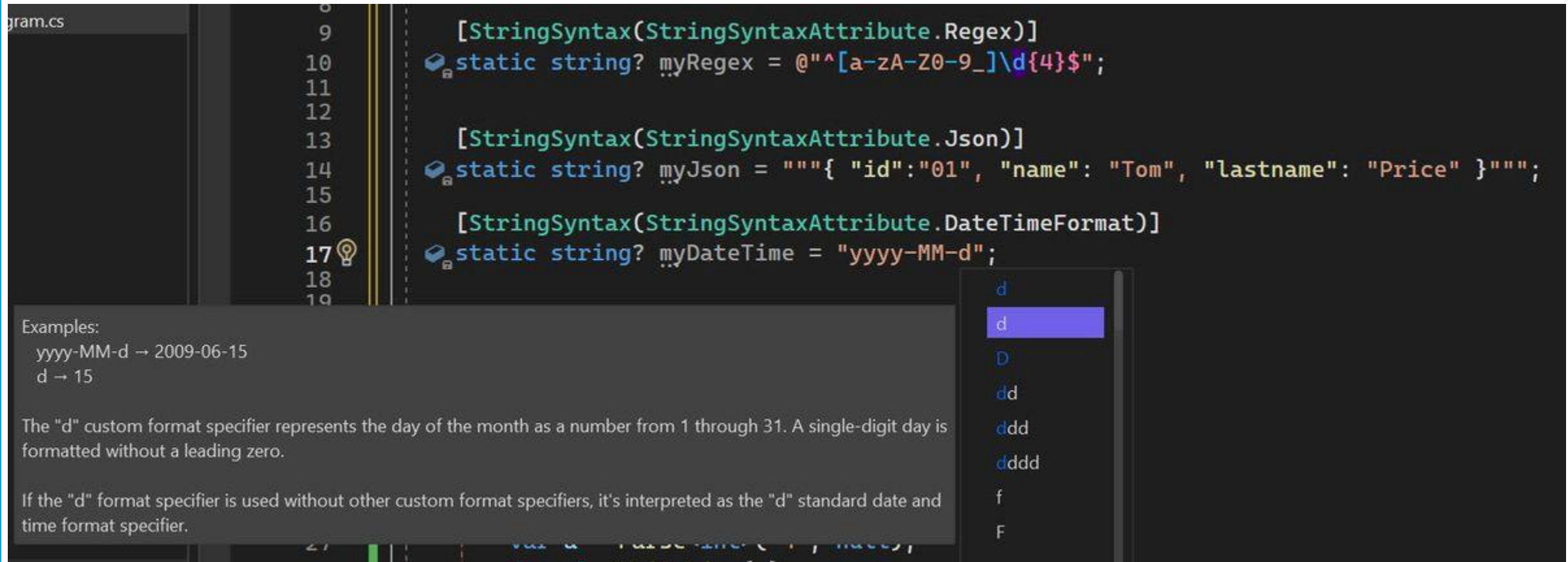
**** PSA - .NET Core 3.1 is almost end of life! ****

VISUAL STUDIO 2022

- 17.4 released
- Includes .NET 7, C# 11, etc.
- First ARM64 Support
- Roll back a Visual Studio Update
- Allow multiple Git repos active at once
- Test Explorer – Reset button > “not run”
- Dev Tunnels for Power Apps / Automate
- Tagged Strings – Syntax Highlighting

TAGGED STRINGS

- Visual Studio will apply appropriate syntax highlighting



The screenshot shows a Visual Studio code editor with a C# file named 'gram.cs'. The code defines three static string variables, each with a `StringSyntax` attribute:

```
8  
9 [StringSyntax(StringSyntaxAttribute.Regex)]  
10 static string? myRegex = @"^[a-zA-Z0-9_]\d{4}$";  
11  
12  
13 [StringSyntax(StringSyntaxAttribute.Json)]  
14 static string? myJson = "{ \"id\": \"01\", \"name\": \"Tom\", \"lastname\": \"Price\" }";  
15  
16 [StringSyntax(StringSyntaxAttribute.DateTimeFormat)]  
17 static string? myDateTime = "yyyy-MM-d";  
18  
19
```

A tooltip is displayed for the `"d"` format specifier in the string `"yyyy-MM-d"`. The tooltip contains the following text:

Examples:
yyyy-MM-d → 2009-06-15
d → 15

The "d" custom format specifier represents the day of the month as a number from 1 through 31. A single-digit day is formatted without a leading zero.

If the "d" format specifier is used without other custom format specifiers, it's interpreted as the "d" standard date and time format specifier.

The tooltip also shows a list of format specifiers: `d`, `D`, `dd`, `ddd`, `dddd`, `f`, and `F`. The `d` option is currently selected.

MIGRATION

- .NET Upgrade Assistant
 - <https://aka.ms/dotnet-upgrade-assistant>
- Supported Project Types
 - ASP.NET MVC
 - Windows Forms
 - Windows Presentation Foundation (WPF)
 - Console apps
 - Class libraries
 - Xamarin.Forms
 - Universal Windows Platform (UWP)

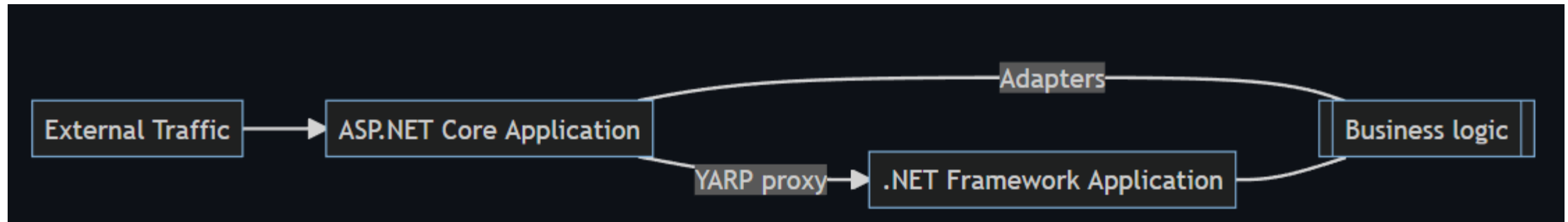
```
C:\Program Files\Microsoft Visual Studio\2022\Enterprise>dotnet tool install -g --add-source "https://api.nuget.org/v3/index.json" --ignore-failed-sources upgrade-assistant
You can invoke the tool using the following command: upgrade-assistant
Tool 'upgrade-assistant' (version '0.4.355802') was successfully installed.
```

```
upgrade-assistant analyze MyApp.csproj
```

```
upgrade-assistant upgrade MyApp.csproj
```

MIGRATION

- Incremental Upgrade from ASP.NET to ASP.NET “Core”
 - YARP Proxy



Microsoft Project Migrations (Experimental)

Microsoft | 📄 2,597 installs | ★★★★★ (3) | Free

Provides experimental experience for migrating ASP.NET applications to ASP.NET Core.

INCREMENTAL ASP.NET MIGRATION DEMO

.NET AND CONTAINERS

- No Docker client required!
- Dotnet publish command supports containers

```
dotnet publish -r linux-x64 /t:PublishContainer -c Release
```

MINIMAL APIS

- Unit testing
- Integration testing
- **Endpoint filters**

```
var builder = WebApplication.CreateBuilder(args);

var app = builder.Build();

string ColorName(string color) => $"Color specified: {color}!";

app.MapGet("/colorSelector/{color}", ColorName)
    .AddEndpointFilter(async (invocationContext, next) =>
    {
        var color = invocationContext.GetArgument<string>(0);

        if (color == "Red")
        {
            return Results.Problem("Red not allowed!");
        }
        return await next(invocationContext);
    });

app.Run();
```

GRPC

- Azure App Service Support
- Transcoding with REST
 - Support both REST and gRPC

```
syntax = "proto3";  
  
import "google/api/annotations.proto";  
  
package greet;  
  
service Greeter {  
  rpc SayHello (HelloRequest) returns (HelloReply) {  
    option (google.api.http) = {  
      get: "/v1/greeter/{name}"  
    };  
  }  
}
```


APP SERVICES USING GRPC DEMO

SIMPLIFIED AUTHN / AUTHZ

- Adding Single Auth

```
var builder = WebApplication.CreateBuilder(args);  
  
builder.Authentication.AddJwtBearer();
```

- New Authentication section in appsettings.json

```
{  
  "AllowedHosts": "*",  
  "Authentication": {  
    "DefaultScheme": "JwtBearer",  
    "Schemes": {  
      "JwtBearer": {  
        "Audiences": [ "http://localhost:5000", "https://localhost:5001" ],  
        "ClaimsIssuer": "dotnet-user-jwts"  
      }  
    }  
  }  
}
```

- Add Endpoint specific authorization policies

```
app.MapGet("/special-secret", () => "This is a special secret!")  
    .RequireAuthorization(p => p.RequireClaim("scope", "myapi:secrets"));
```

SIMPLIFIED AUTHN / AUTHZ

- Generate tokens locally
 - dotnet user-jwts create --role "trainer" --claim "permission=admin"

```
PS C:\Users\safia\TrainingApi\TrainingApi> dotnet user-jwts create --role "trainer" --claim "permission=admin"
New JWT saved with ID '289e54d4'.
Name: safia
Roles: [trainer]
Custom Claims: [permission=admin]
```

C# 11 IMPROVEMENTS

C# 11 IMPROVEMENTS

- Syntactic simplifications, less boilerplate
- **Generic math support**
- List patterns
- **Required members**
- Raw string literals

GENERIC MATH SUPPORT

```
public static TResult Sum<T, TResult>(IEnumerable<T> values)
    where T : INumber<T>
    where TResult : INumber<TResult>
{
    TResult result = TResult.Zero;

    foreach (var value in values)
    {
        result += TResult.Create(value);
    }

    return result;
}

public static TResult Average<T, TResult>(IEnumerable<T> values)
    where T : INumber<T>
    where TResult : INumber<TResult>
{
    TResult sum = Sum<T, TResult>(values);
    return TResult.Create(sum) / TResult.Create(values.Count());
}
```

REQUIRED MEMBERS

- Fields or properties must be initialized by all constructors or by using an object initializer

```
class Person
{
    public required string FirstName { get; init; }
    public string MiddleName { get; init; }
    public required string LastName { get; init; }
}

var gaurav = new Person { FirstName = "Gaurav" };
//ERROR: LastName Required
```

REQUIRED MEMBERS DEMO

REFERENCES

- .NET Conf 2022 YouTube Videos - https://youtube.com/playlist?list=PLdo4fOcmZ0oVlqu_V8EXUDDnPsYwemxjn
- What's New - <https://learn.microsoft.com/en-us/dotnet/core/whats-new/dotnet-7>
- STS and LTS - <https://dotnet.microsoft.com/en-us/platform/support/policy>
- New with VS 2022 - <https://learn.microsoft.com/en-us/visualstudio/ide/whats-new-visual-studio-2022?view=vs-2022>
- Auth - <https://devblogs.microsoft.com/dotnet/asp-net-core-updates-in-dotnet-7-preview-5/>
- Incremental Migration - <https://learn.microsoft.com/en-us/aspnet/core/migration/inc/overview?view=aspnetcore-7.0>
- gRPC Transcoding - <https://devblogs.microsoft.com/dotnet/announcing-grpc-json-transcoding-for-dotnet/>
- Tagged Strings - <https://www.infoq.com/news/2022/11/visual-studio-tagged-strings/>
- Dev Tunnels - <https://learn.microsoft.com/en-us/connectors/custom-connectors/port-tunneling>

MINIMAL APIS, CONTAINERS, AND CONTAINER APPS WITH ALEC

QUESTIONS?