BASTA!

What's cool with C# 11 and .NET 7

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Topics

- C# Language Enhancements

Auto Default Struct

C# 10 added

- struct records
- with expressions with structs
- custom parameterless constructors
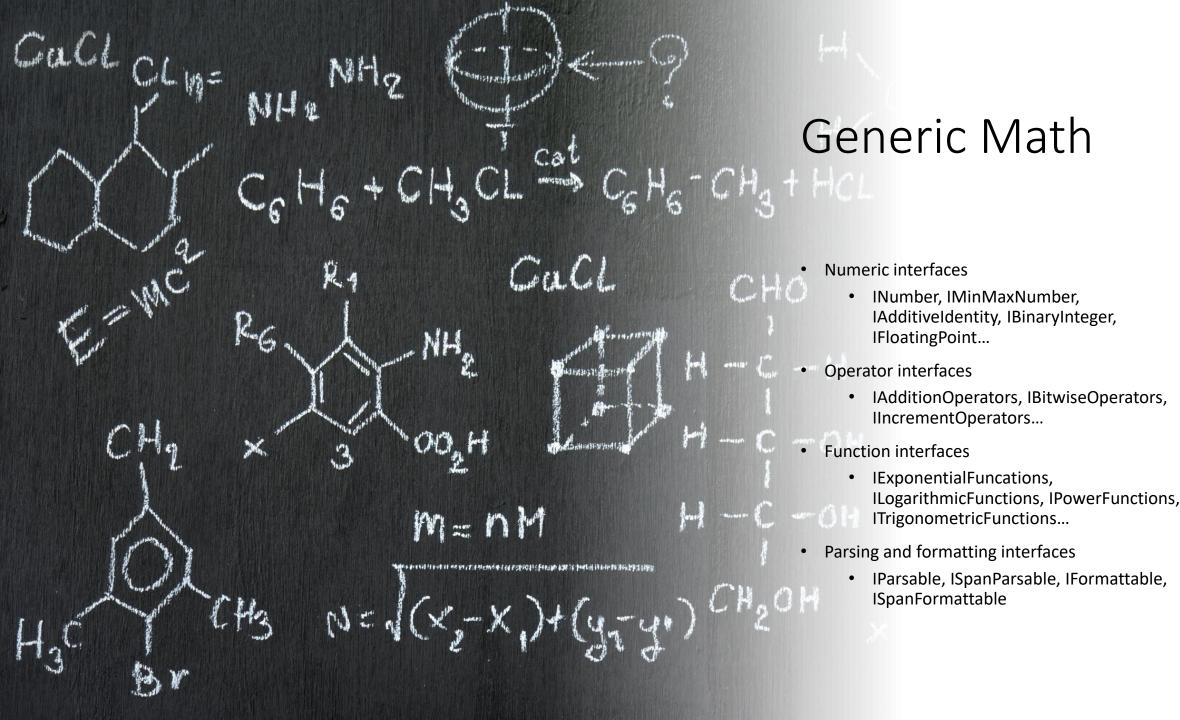
C# enhanced

- auto default struct

Required Modifier

- Nullable reference types solves problems

- Constructors adds complexity

- required: Initialize with *constructor* or *object initializer*

- Modifier for properties and fields

- *SetsRequiredMembers* Attribute on constructor

Interface Enhancements

- C# 8 added implementation in interfaces
  - Versioning
  - Mixin functionality
- C# 11 adds static members
  - Constraints with generic types

Generic Math

- Numeric interfaces
  - INumber, IMinMaxNumber, IAdditiveIdentity, IBinaryInteger, IFloatingPoint...
- Operator interfaces
  - IAdditionOperators, IBitwiseOperators, IIncrementOperators...
- Function interfaces
  - IExponentialFuncations, ILogarithmicFunctions, IPowerFunctions, ITrigonometricFunctions...
- Parsing and formatting interfaces
  - IParsable, ISpanParsable, IFormattable, ISpanFormattable

Pattern Matching Enhancements

- List Patterns
  - Apply a pattern on any element in the sequence
  - Discard pattern to match any element
  - Slice pattern to match zero or more elements
- Matching on Span<T>

Strings

- Utf8 String literals
  - U8 suffix
  - ReadOnlySpan<byte>
- Raw string literals
  - Three or more quotes
  - span multiple lines
  - Indentation based on end quotes
  - Combine with interpolated strings

Native AOT Deployment

- Self-contained
- AOT compiled to native code
- Quick startup, less memory
- Can run where JIT is not allowed

- No dynamic loading
- No reflection emit
- No C++/CLI
- Requires trimming
- Compilation into a single file
- Includes runtime-libraries
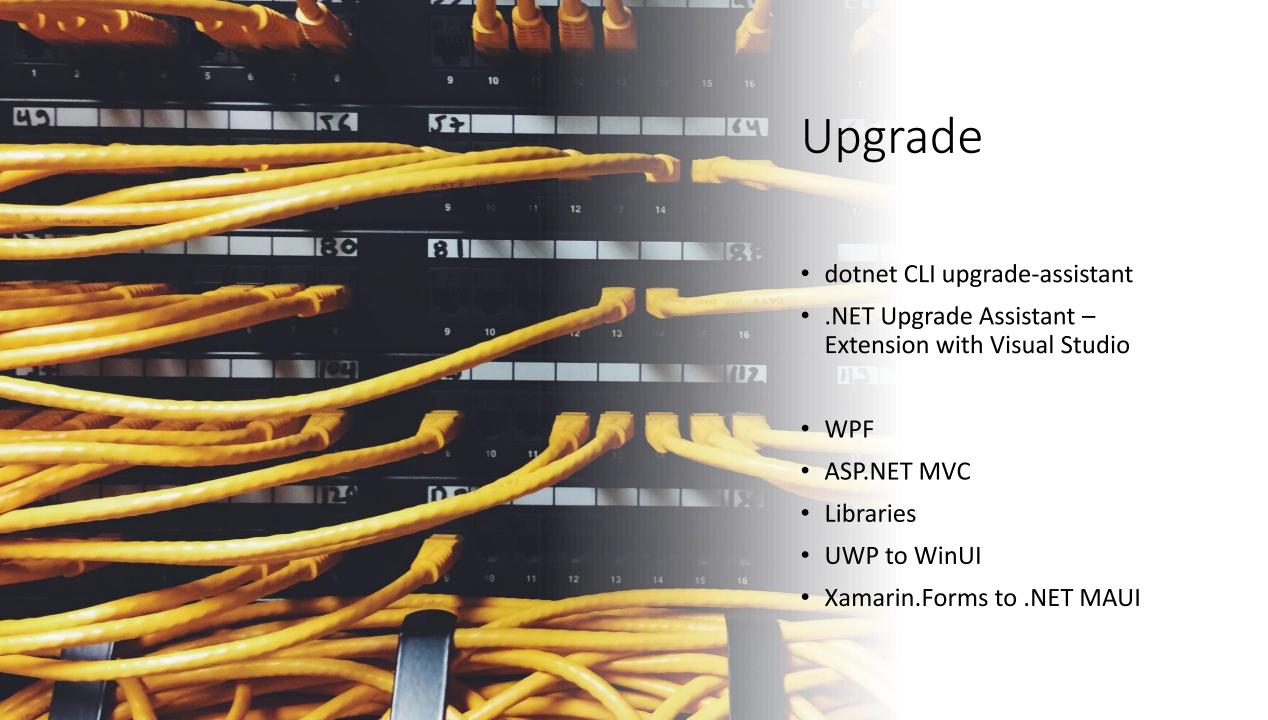- ASP.NET Core not supported (yet)

.NET 7 Source Generators

- Logging
- Regex
- JSON Serialization
- Platform Invoke
- JavaScript Interop
- ...
- More at 7 PM

Upgrade

- dotnet CLI upgrade-assistant
- .NET Upgrade Assistant – Extension with Visual Studio

- WPF
- ASP.NET MVC
- Libraries
- UWP to WinUI
- Xamarin.Forms to .NET MAUI

What's next?

- Semi-auto properties (field keyword)
- Primary constructors
- params Span<T>
- lambda default parameters
- Default in deconstruction
- Collection literals
- Roles (extend everything, implement interfaces on behalf of the underling type – act as adapters)

Summary

- What's new with C#?
- Required...interfaces...pattern matching...strings...AOT...

- Directions going forward
- Source code: https://github.com/cnilearn/bastaspring2023
- Blog: https://csharp.christiannagel.com

Questions?