



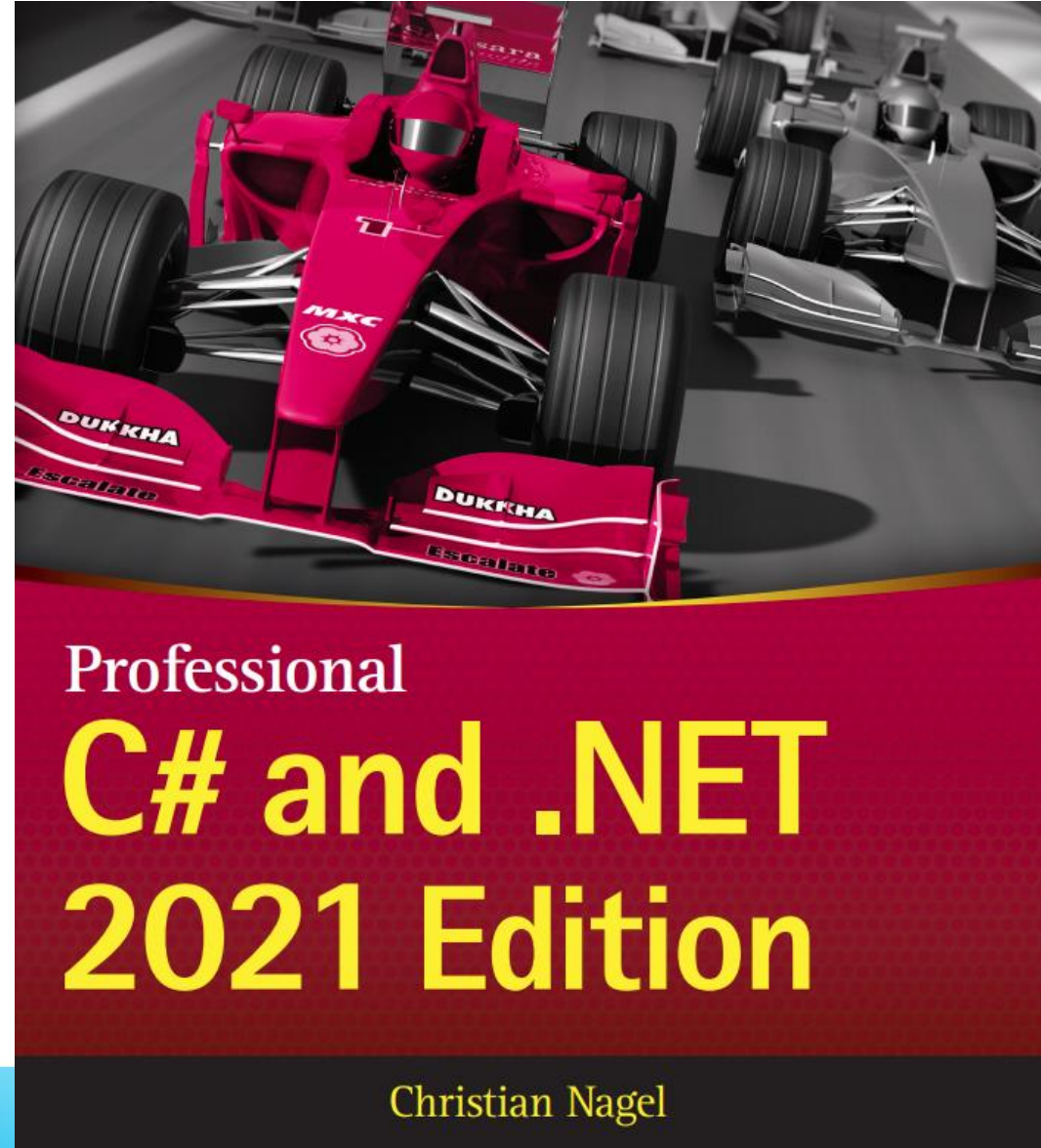
# C# 11 and .NET 7

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# Christian Nagel

- Training
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# Topics

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- Focus on new C# features
- Few .NET 7 updates
- Subset of all the new features released in November-2022



# Small but still nice...

- Extended nameof scope
- Generic attributes
- Unsigned right shift >>>

```
[MyAttr(nameof(p1))]  
public void Foo(int p1,  
                [MyAttr(nameof(p1))] int p2)  
{  
}
```


# Records with Classes and Structs

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- C# 9: records with classes
- C# 10: records with structs
- Positional records (syntax with primary constructors)
- Nominal records








# Do you prefer object initializers?

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- **required** keyword
  - SetsRequiredMembers attribute
- 

# Static virtual Members in Interfaces




# Static Virtual Members in Interfaces

static abstract or static virtual members

Use operators with generic types

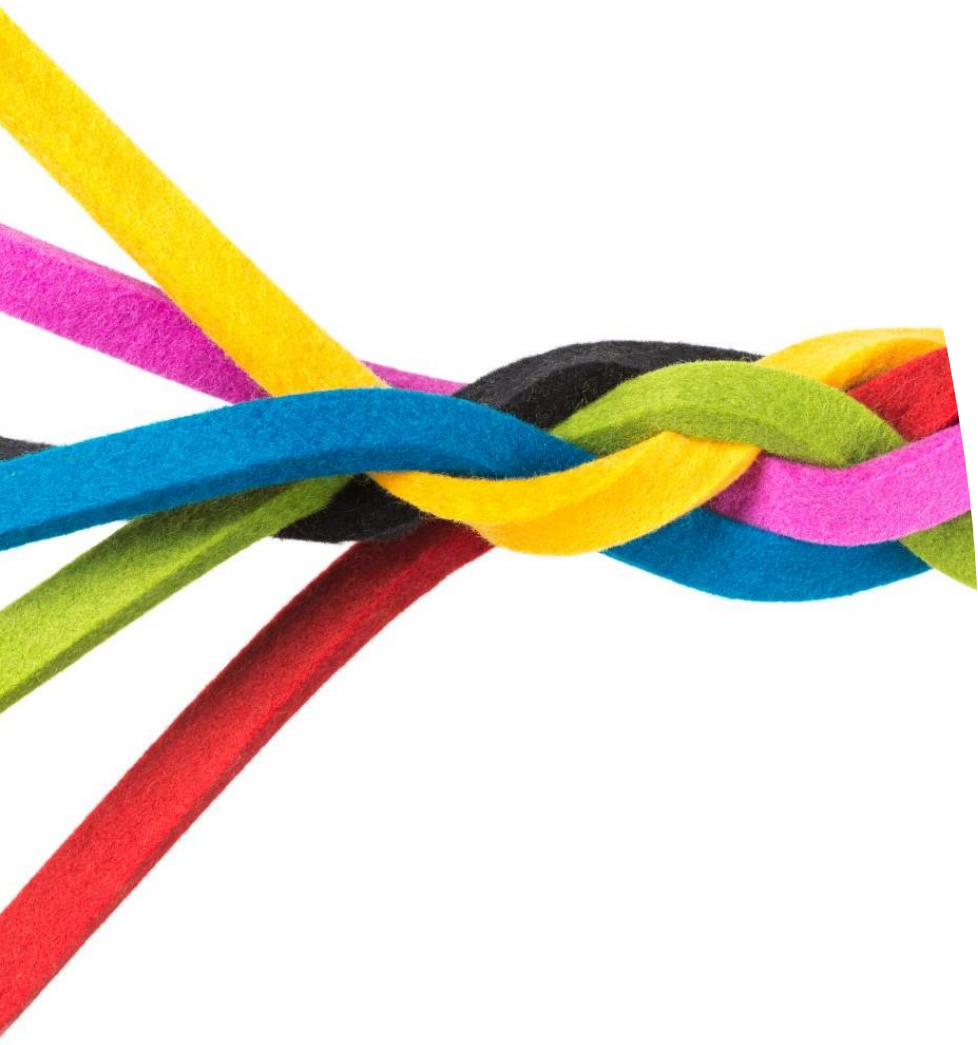
Generic math: Number types implement `INumber<T>`

- `IAdditionOperators`, `IDecrementOperators`, `IDivisionOperators`...
  - `IAdditiveIdentity`, `IMultiplicativeIdentity`, `ISpanFormattable`, `ISpanParsable`...
- 



# List Patterns

- Sequence of elements using [ ]
- Match elements with type, property, relational patterns
- `_` discard: match a single element
- `...` range: match a sequence of zero or more



# UTF-8 String Literals

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- String format used on the Internet
- u8 suffix on strings
- Native type. `ReadOnlySpan<byte>`
- Convert to byte array with `Span - ToArray`



# Raw String Literals

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- Write code in a string?
- New format of strings literals
- Arbitrary text, whitespace, newlines, embedded quotes
- JSON, XML, C#...



A large blue circle on the left side of the slide, containing a white rope that is knotted and loops around.

# Raw String Literal Syntax

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- Three or more quotes
- Interpolation with \$ or multiple \$

# Access Modifier

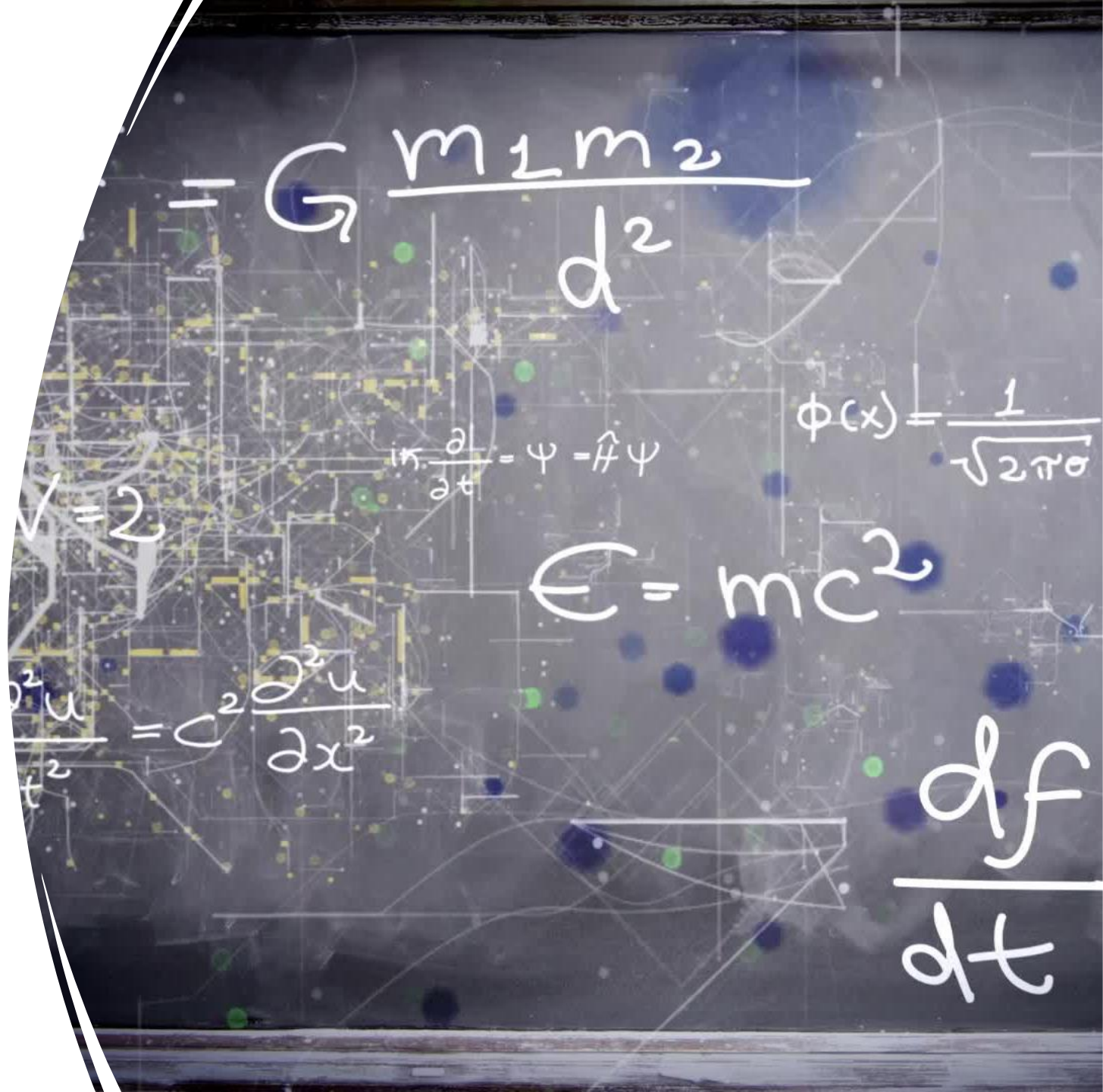
- Access modifiers:
  - public
  - protected
  - private
  - internal
  - protected internal
  - private protected
- New access modifier: **file**
- Class only visible within the file, scope to the file



# Source Generators

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- LibraryImport instead of DllImport
  - Partial instead of extern
  - Generate code
- GeneratedRegex
  - Performance of RegexOptions.Compiled



# Ahead of Time (AOT) Compilation

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- Native AOT Deployment
- Start quickly, less memory consumption
- Restrictions
  - No runtime-code generation
  - No reflection
  - Limited number of libraries
- Self-contained apps
- Trimming

# Summary – C# 11 Highlights

- Required modifier
- Raw string literals
- List Patterns
- Static virtual members in interfaces
- Kick-off AOT





Questions?

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Thank you!