



C# 11 and .NET 7

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Topics

- 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

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





Do you prefer object initializers?

- **required** keyword
 - SetsRequiredMembers attribute
- 

Static virtual Members in Interfaces




Static Virtual Members in Interfaces

static abstract or static virtual members

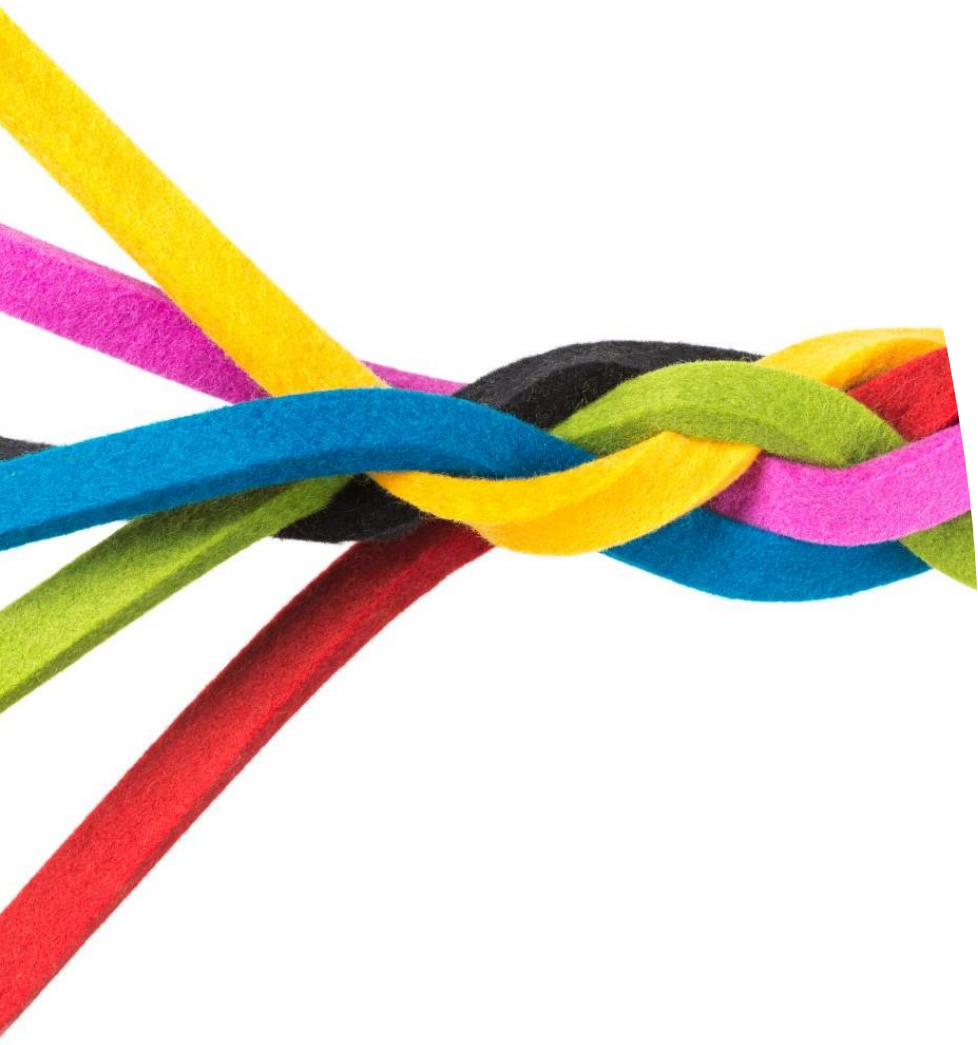
Use operators with generic types

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

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



Raw String Literals

- 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 looped.

Raw String Literal Syntax

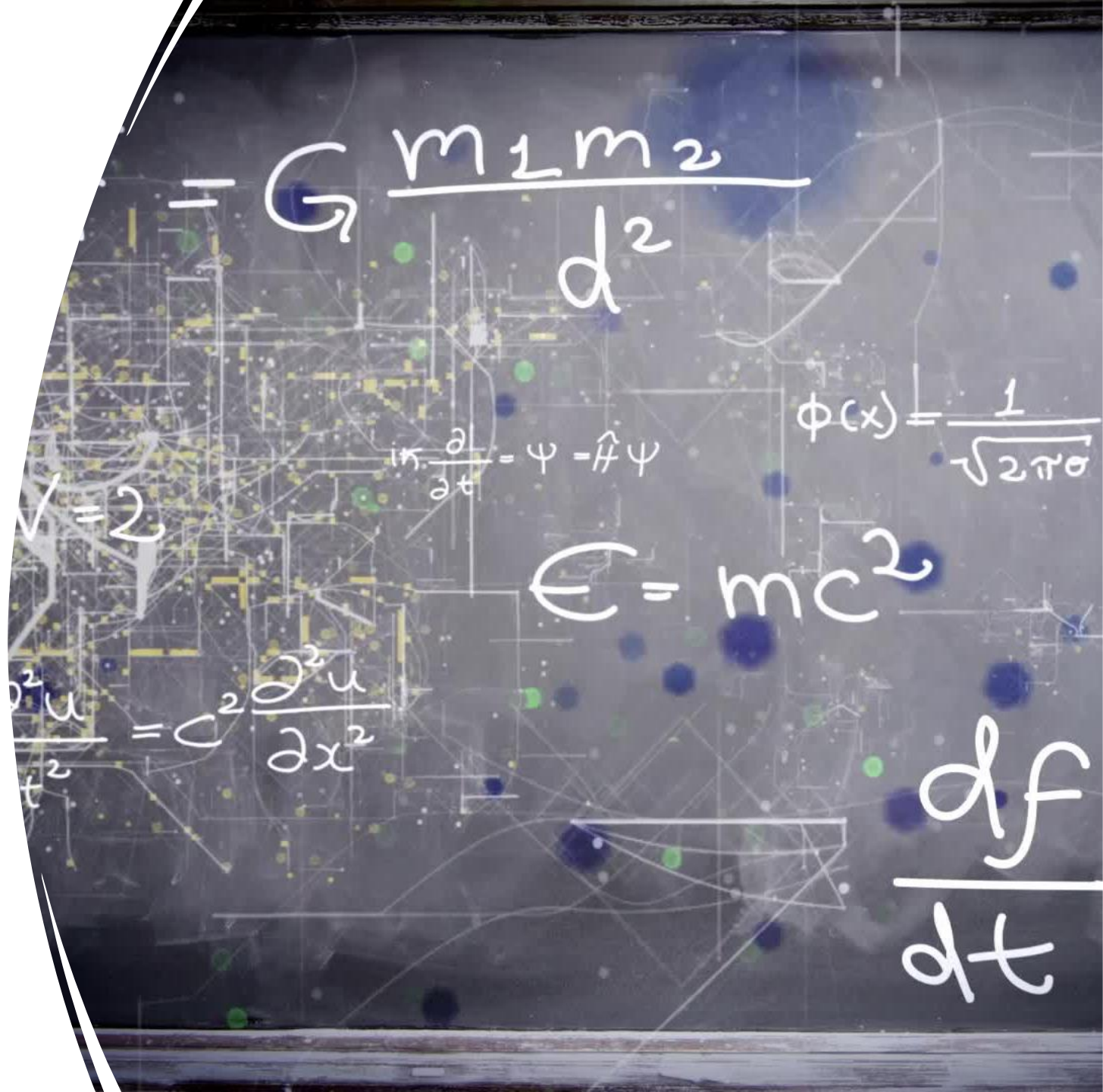
- Three or more quotes
- Interpolation with \$ or multiple \$

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

New Source Generators

- LibraryImport instead of DllImport
 - Partial instead of extern
 - Generate code



Ahead of Time (AOT) Compilation

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

Summary – C# 11 Highlights

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



Questions?



Thank you!