

Class Libraries in C# 10

Getting Started with Class Library Projects



Jason Roberts

.NET Developer

@robertsjason

dontcodetired.com



Version Check



This version was created by using:

- C# 10
- .NET 6
- Visual Studio 2022



Version Check



This course is 100% applicable to:

- C# 11
- .NET 7
- Visual Studio 2022



Course Outline

**Getting
Started with
Class Library
Projects**

**Configuring
and Building
Class Libraries**

**Supporting
Multiple .NET
Versions in a
Class Library
Project**

**Unit Testing
Class Library
Projects**

**Versioning,
Packaging,
and
Distributing
Class Libraries**



Demo Files

**Download from course home page at
Pluralsight.com**



Overview



What is a class library?

Why use class library projects?

Create a class library project:

- Visual Studio
- Visual Studio Code / command line

Class libraries, namespaces, and assemblies

Add code to a class library project

Reference and using a class library

Reuse a class library project from multiple applications

The different flavours of .NET



What is a Class Library?

Separate project (may be part of a solution containing multiple projects)

Not just for classes:

- Enums
- Structs
- Records
- Interfaces
- Delegates

Compiles to a single assembly (.dll file)

- Have version number
- No entry point
- Not designed to be executed as a standalone application
- Multiple .dll files with multi-targeting



Why Use Class Library Projects?

Can be referenced from executable applications:

- Console apps, ASP.NET, WPF, etc.

Share functionality

- Write once and use in multiple apps
- Versioned independently of the app(s) that use them

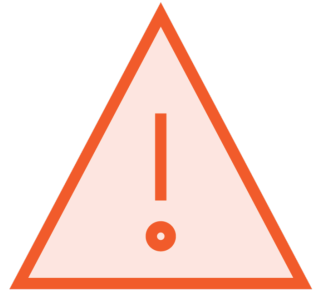
Be unit tested independently of the apps that use them

Can be packaged up and shared within organization or publicly (e.g. nuget.org)

Separate out and package up some functionality from an app to resell/distribute



Why Not Just Copy & Paste Source Code?



Error prone: make mistakes while copying/pasting



If there's a bug, all the copies have to be fixed separately



Copies may get out of sync over time



Business rule changes will have to be changed in the source of multiple apps



Class Libraries, Namespaces, and Assemblies

```
namespace User
{
    ...
}

namespace Data
{
    ...
}

namespace Calculators
{
    ...
}
```

Class library project
“Common”



Common.dll

Class Library Project Naming



Assembly .dll files default to project name

“choose names for your assembly DLLs that suggest large chunks of functionality, such as `System.Data`.” [MS docs]

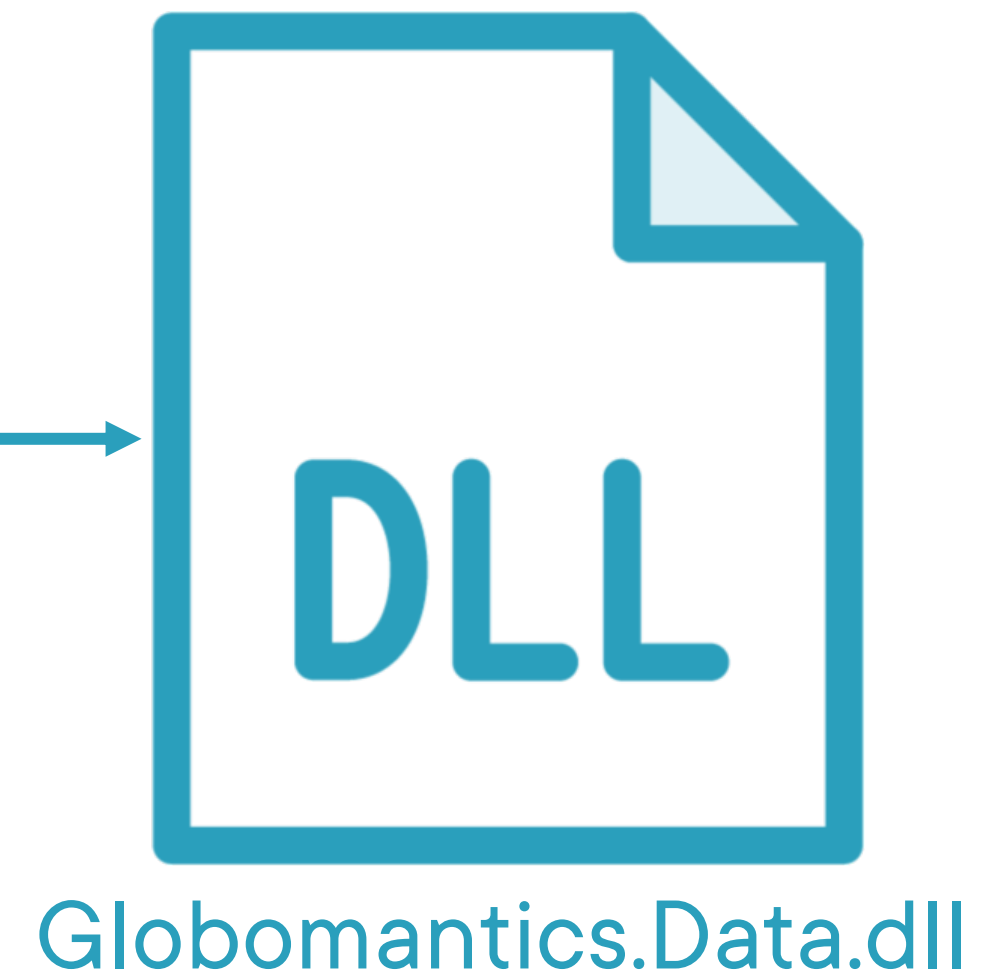
**Microsoft suggests to consider the format:
`<Company>.<Component>.dll`**



Class Libraries, Namespaces, and Assemblies

```
namespace Globomantics.Data.DTO
{
    ...
}
namespace Globomantics.Data.Entity
{
    ...
}
namespace Globomantics.Data.Validation
{
    ...
}
```

Class library project: “Globomantics.Data”



The Different Flavors of .NET

.NET

Different implementations (“flavors”) of .NET

.NET Framework

- Original implementation
- Windows only

.NET Core

- Cross platform
- Open source



The Different Flavors of .NET

.NET

.NET Standard

- Not an actual implementation/“flavor”
- API specification for .NET
- Create class libraries that target one or more implementations of .NET

.NET 5+

- Evolution of .NET Core
- Future direction of .NET development



The Different Flavors of .NET

.NET

Other implementations

Mono

- Small runtime
- Xamarin apps (Android, macOS, iOS, etc.)

Universal Windows Platform (UWP)

- Modern/touch-enabled Windows apps



Summary



What is a class library?

Why use class library projects?

Created a class library project:

- Visual Studio UI
- `dotnet new classlib`

Class libraries, namespaces, and assemblies

Refactored code into a class library project

Added a project reference to a class library

Reused a class library from multiple applications

The different flavors of .NET



Up Next:
Configuring and Building Class Libraries

