C# Fundamentals

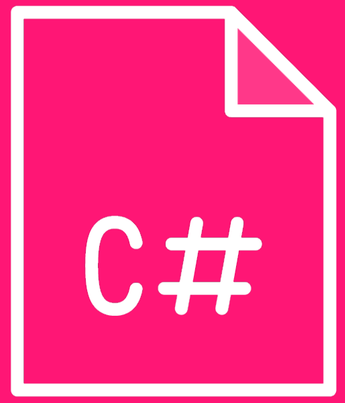
Getting Started with C# and .NET



Gill Cleeren

CTO Xebia Microsoft Services Belgium

@gillcleeren



Learning C# is a great choice!

C# is part of .NET

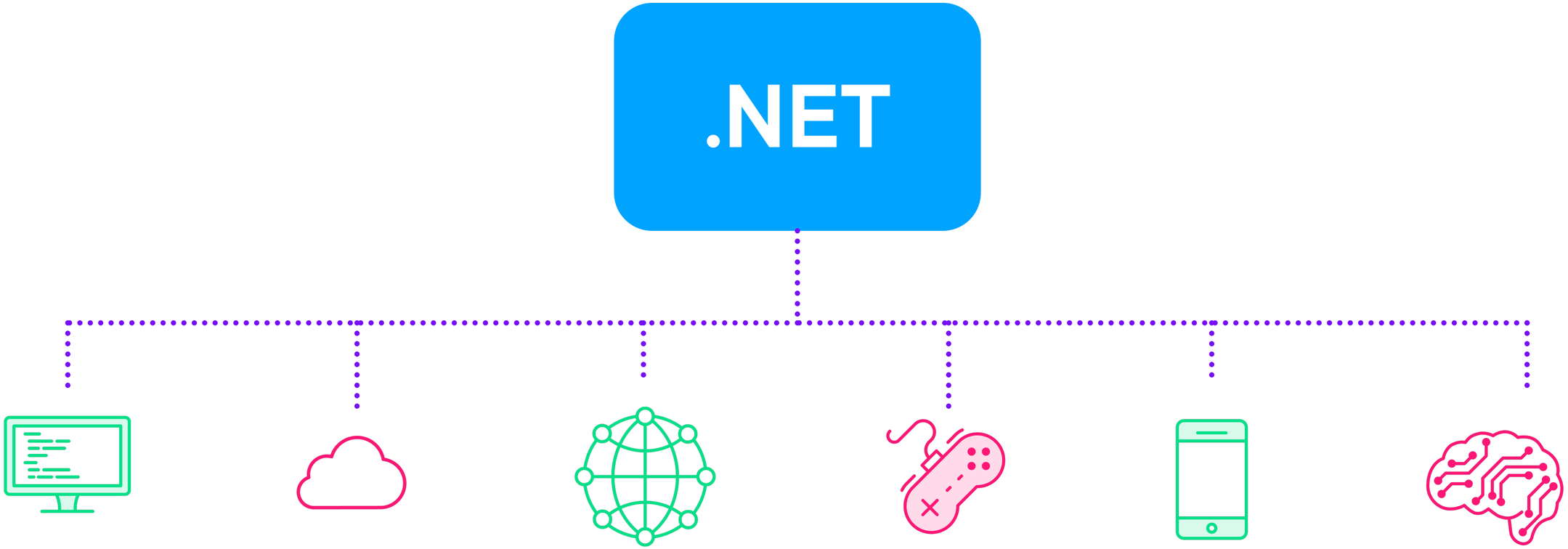


Hello .NET

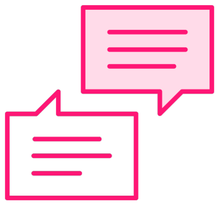
Developer platform

Open source

The Unification of .NET



The .NET Ecosystem



Languages



Libraries



Tools



.NET 8

Cross-platform



The Languages of .NET

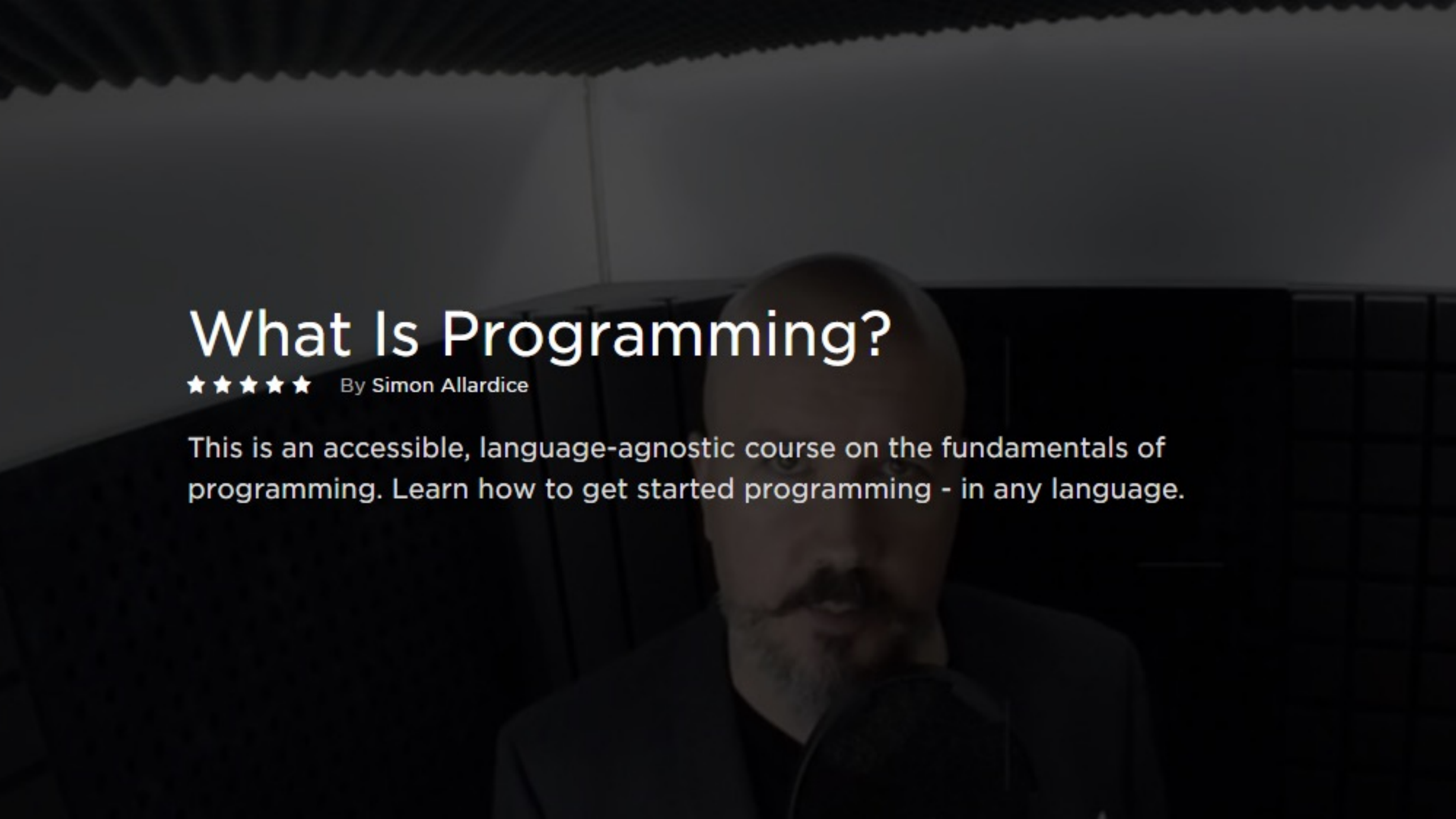
C#

Visual Basic

F#



No C# knowledge is required!


What Is Programming?
★★★★★ By Simon Allardice
This is an accessible, language-agnostic course on the fundamentals of programming. Learn how to get started programming - in any language.



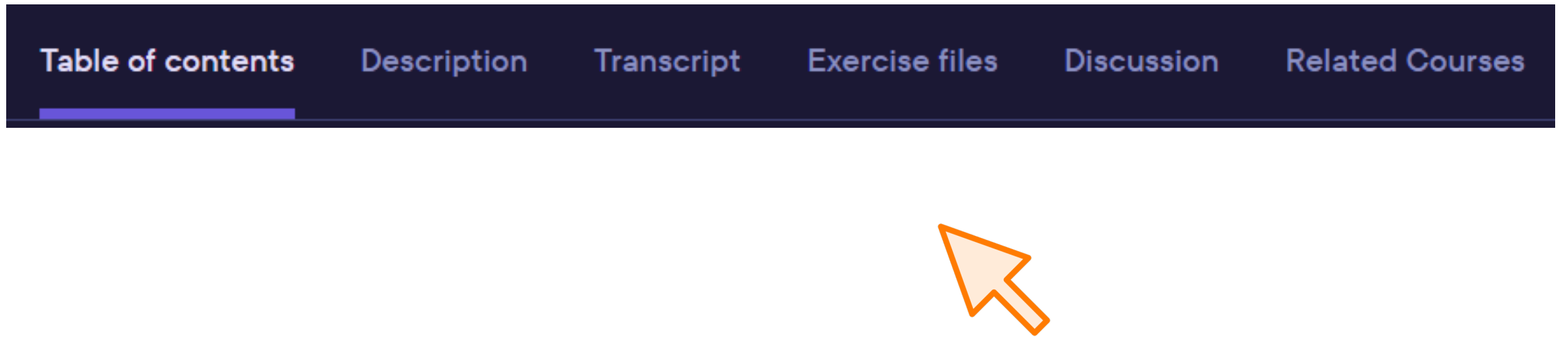
Bethany’s Pie Shop HR

- HR Management software



Follow along with everything I'm doing!

Downloads for This Course



Version Check



This version was created by using:

- C# 12
- .NET 8
- Visual Studio 2022 Community Edition

Version Check



This course is 100% applicable to:

- C# 10, C# 11, C# 12 and C# 13
- .NET 6, .NET 7, .NET 8 and .NET 9
- Visual Studio 2022 (any edition)

Most code will work fine with older versions of C#

Overview



Hello C#

Setting up your environment

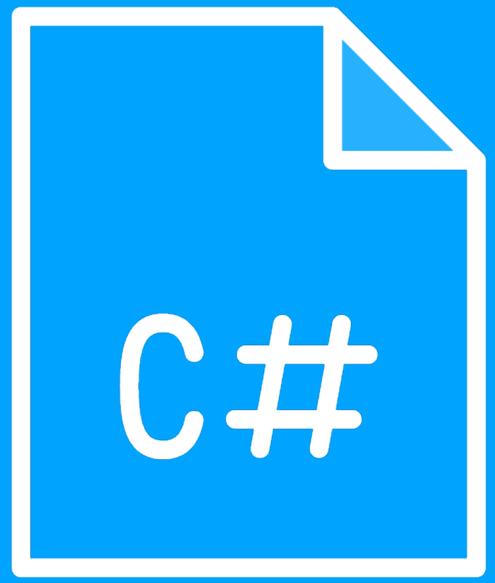
Building your first C# program

Debugging our code

Building applications using VS Code and the CLI

Browsing the docs

Hello C#



Hello C#

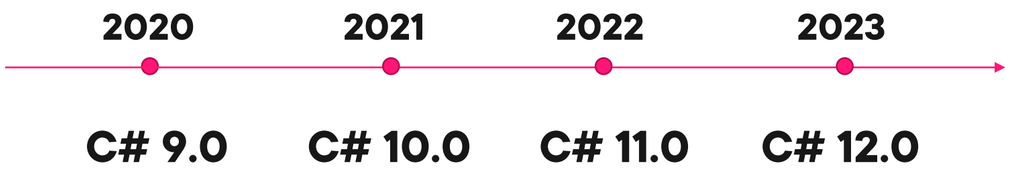
Main language for .NET development

Object-oriented and type-safe programming language

Familiar for C, C++, Java and JS developers

C# Is Actively Maintained





Hello C#

Console applications

Desktop applications

Web applications

Mobile applications

Services

Setting up Your Environment

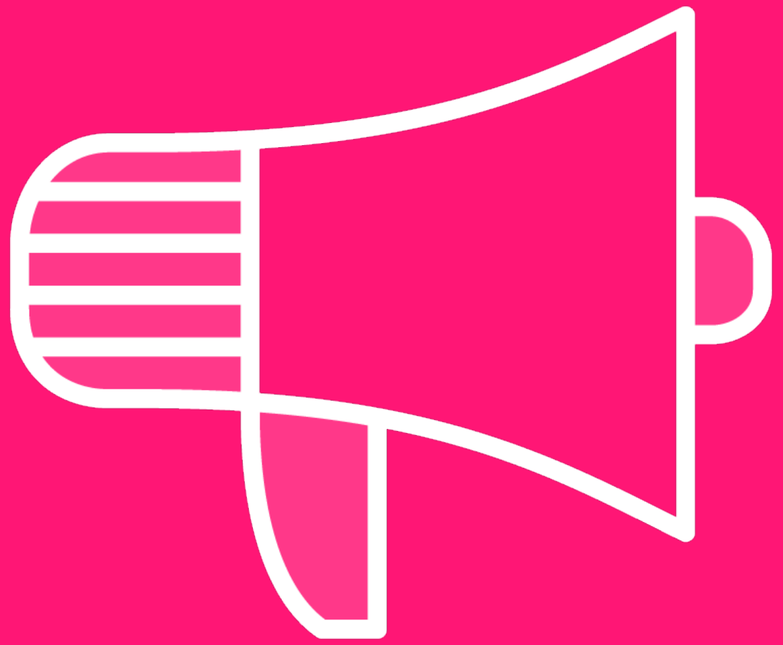
Building .NET Applications with C#

Visual Studio 2022

Windows

.NET CLI & Visual Studio Code

All platforms



Introducing Visual Studio 2022

Flagship IDE
(Integrated Development Environment)

Many features



Visual Studio 2022 Editions

Community

Free to use

Professional

Paid
Aimed at smaller teams

Enterprise

Paid
Aimed at larger teams

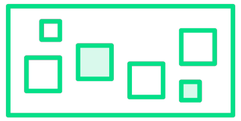
Demo



Setting up your environment for C# development

Building Your First C# Program Using Visual Studio

Using Projects



Containers for code files

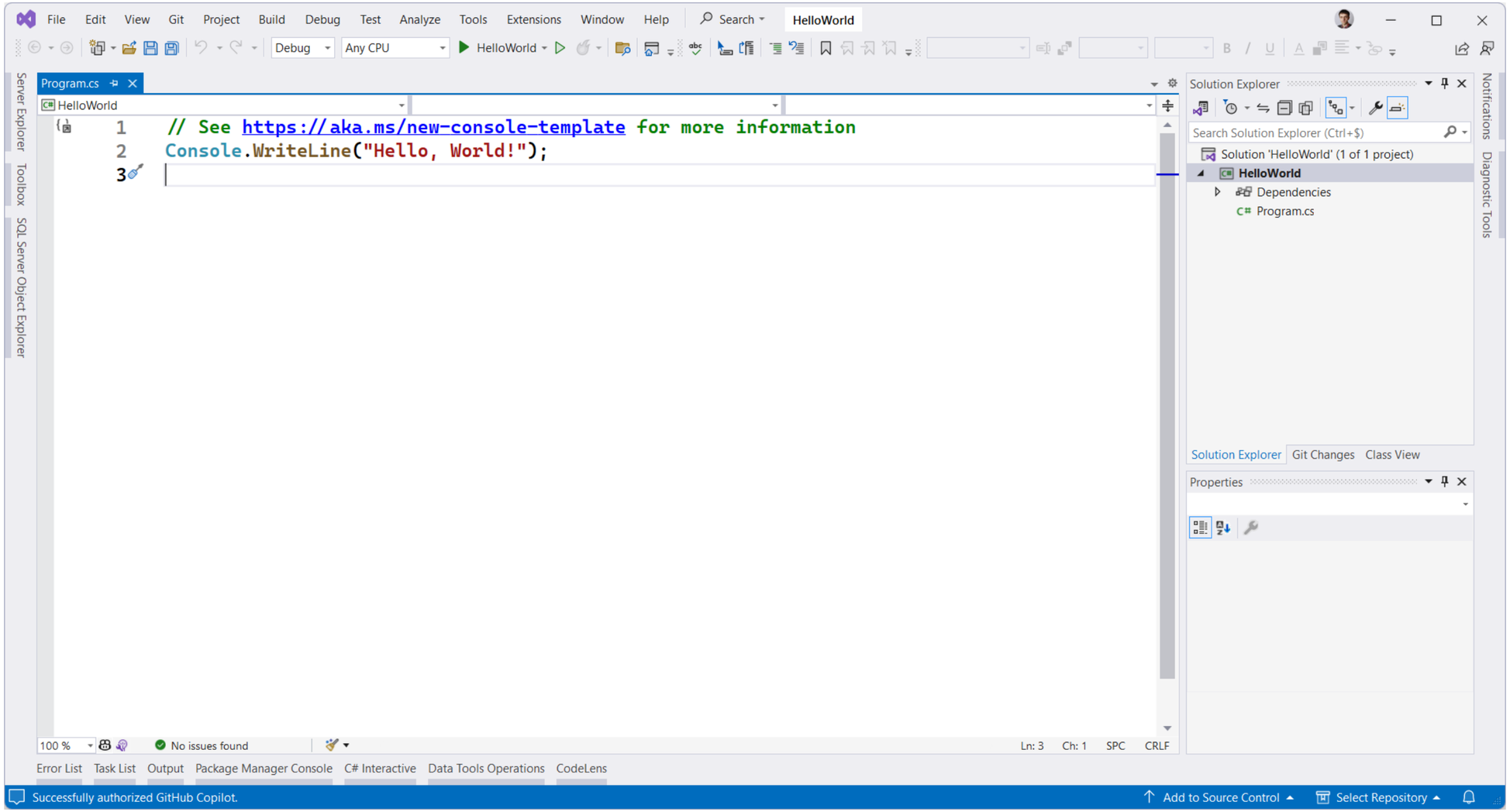


Compiled into executable files (assembly)



Different templates

The Visual Studio 2022 Interface



Demo



Creating your first C# application

Running the application

Demo



Writing C# code

Fixing a syntax error

Demo



Looking at the generated files

- Project
- Solution
- Executable file

Executing our compiled application

Debugging Our Code

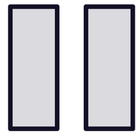


We will make errors!

Debugging using Visual Studio



Introducing Breakpoints



Pause the running code

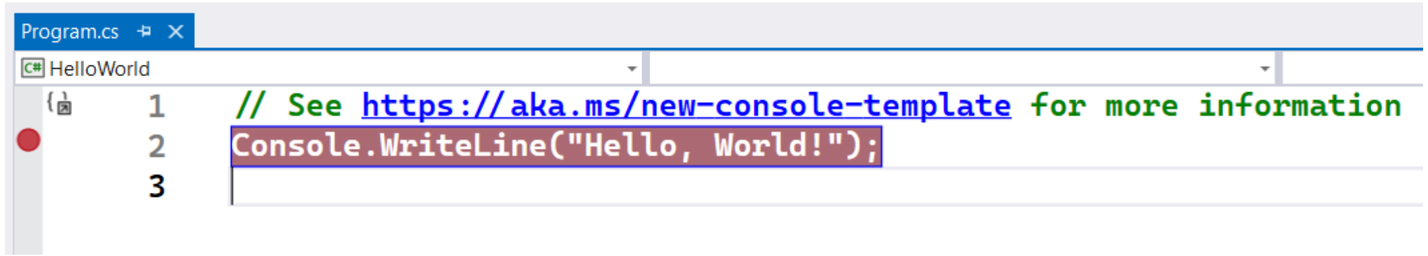


Inspect the state of the running application

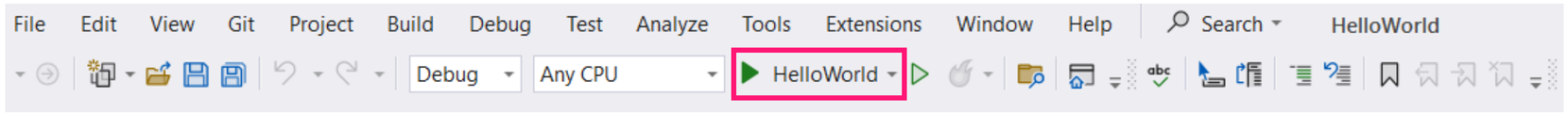


Step through the different lines of code

Adding a Breakpoint



Running with the Debugging Attached

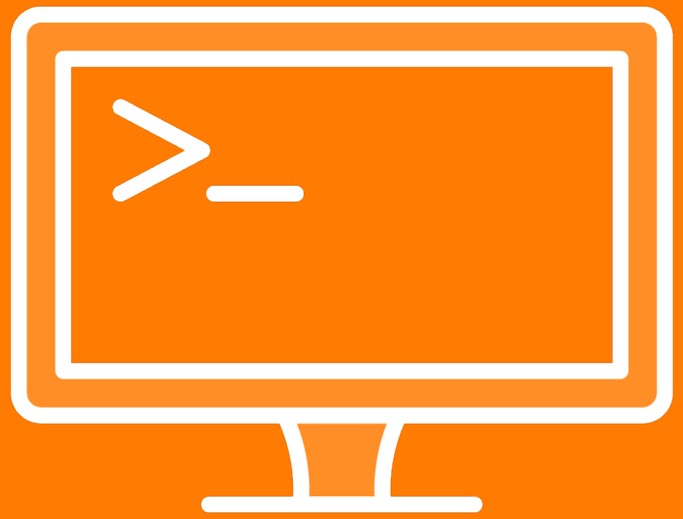


Demo



Understanding the debugger

Building applications using VS Code and the CLI



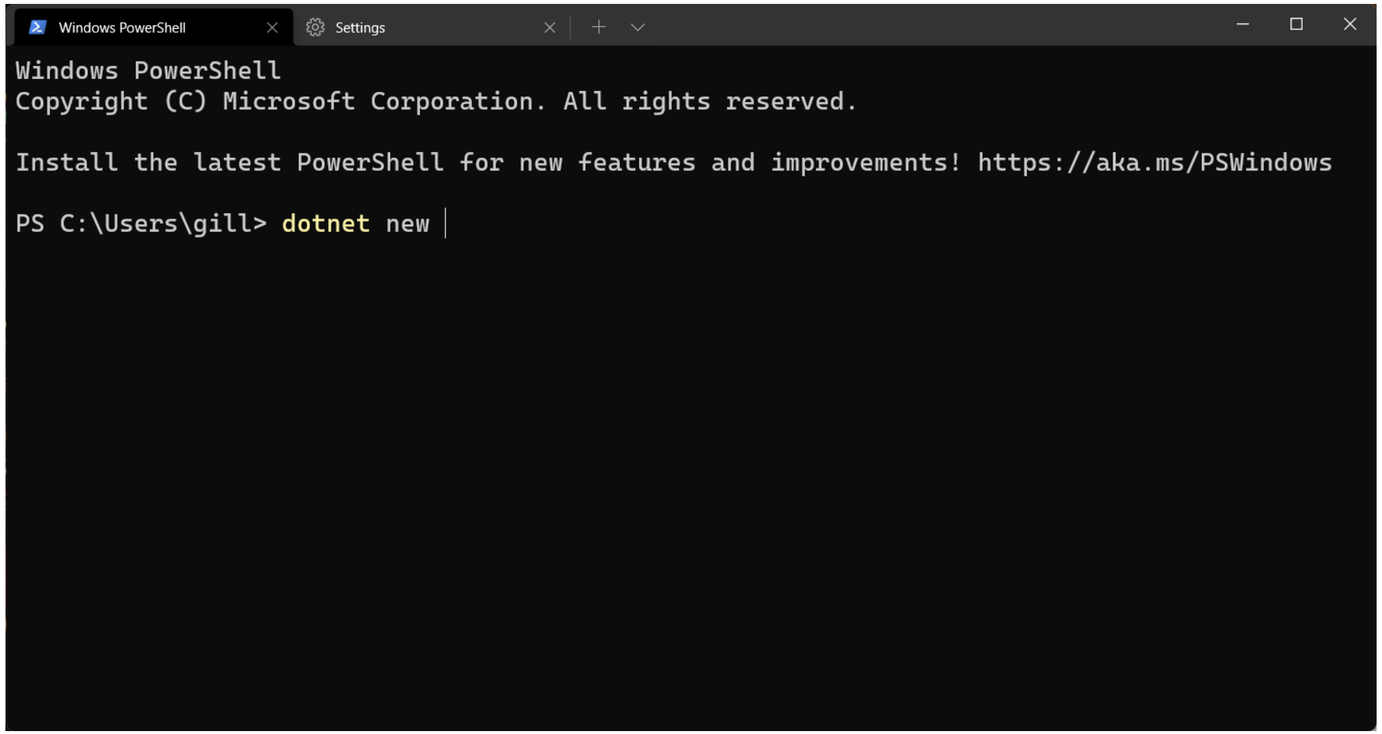
Understanding the CLI

Command-line interface for .NET

Cross-platform tools

“dotnet” command with parameters

Understanding the CLI



Creating a New Project

Create a new app

Name of app

```
dotnet new console -n "FirstProgram"
```

Type of app

```
dotnet new
```

◀ Create a new project

```
dotnet build
```

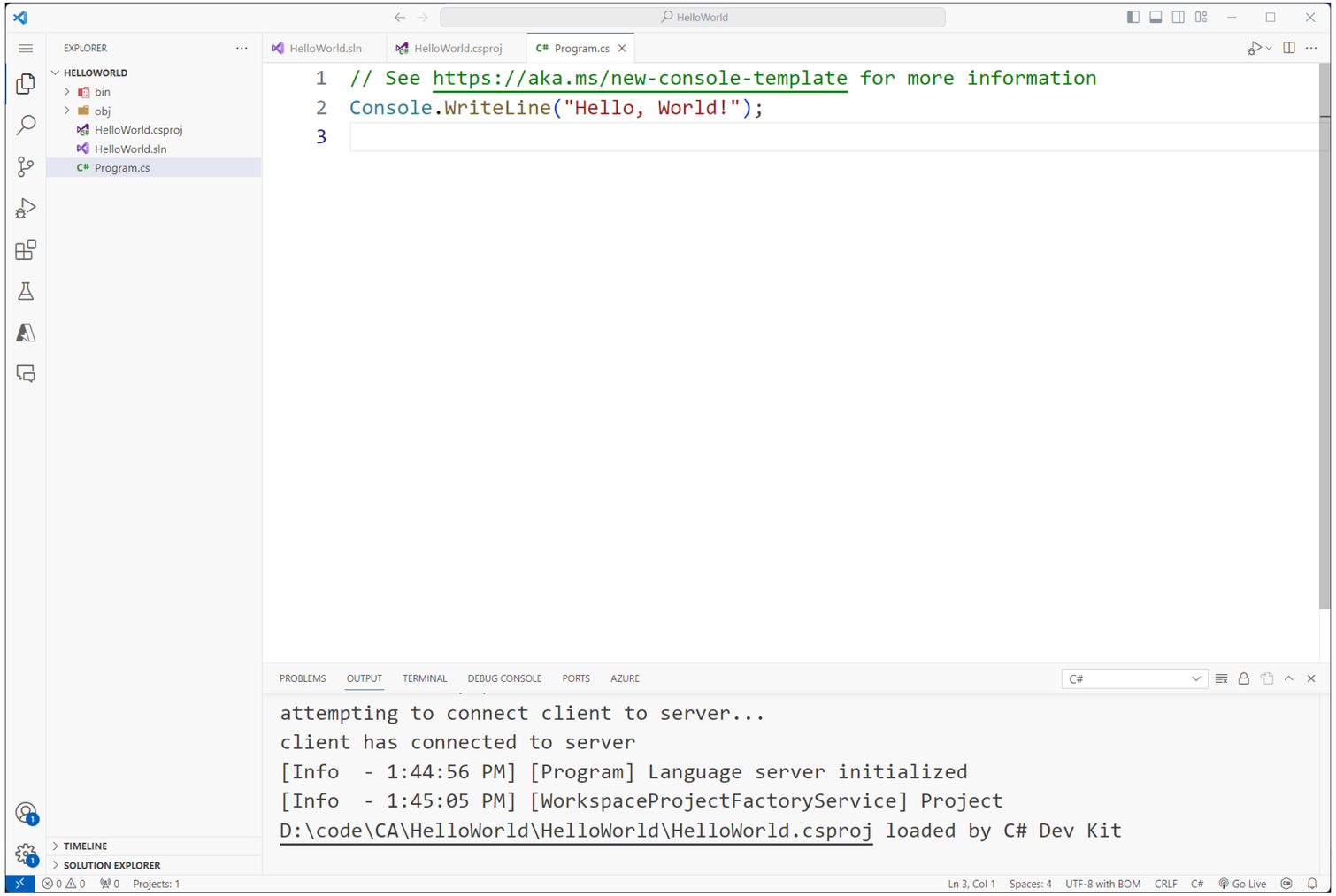
◀ Compile your application

```
dotnet run
```

◀ Execute your application



Writing Code with Visual Studio Code

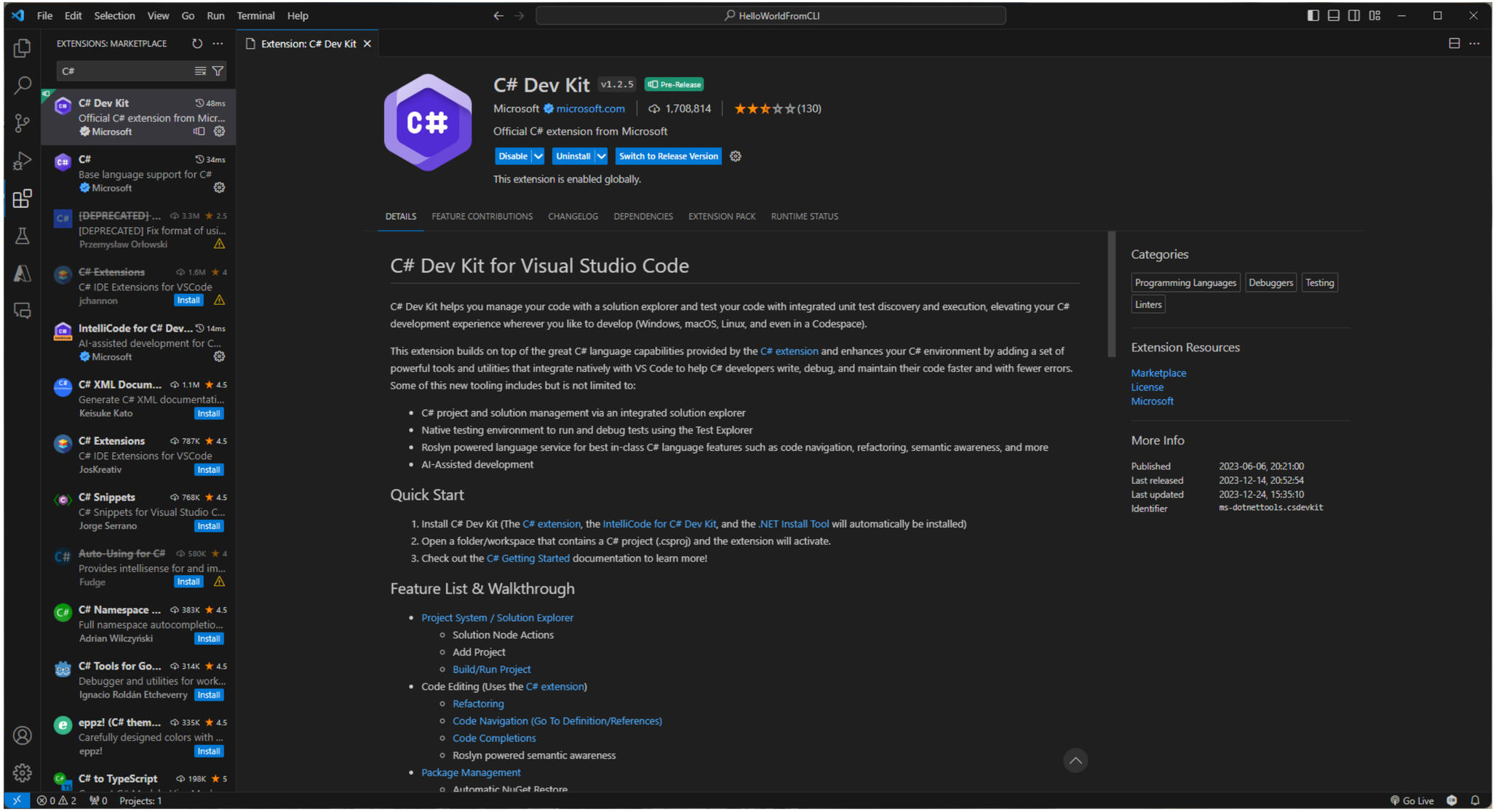


Demo



- Installing the required tools
- Creating an application using the CLI
- Editing code with VS Code
- Compiling using the CLI
- Running with VS Code and the CLI

Using C# Dev Kit in VS Code

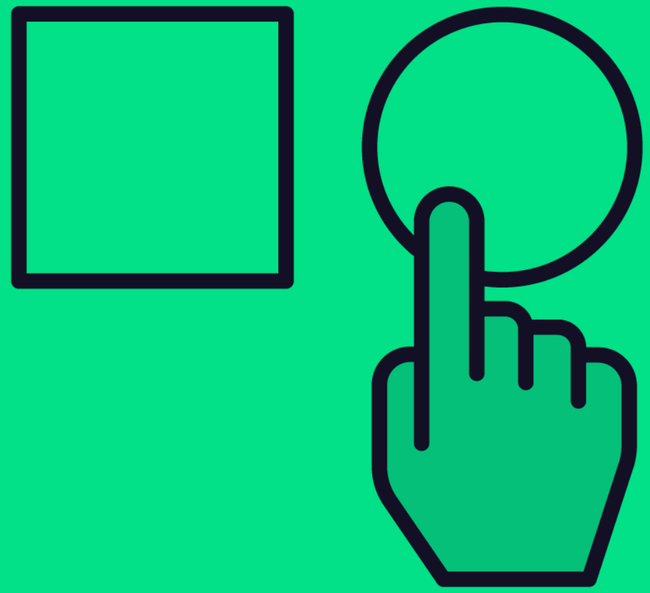


Demo



Using the C# Dev Kit in VS Code

- Creating a new project
- Writing C# code
- Running and debugging our code



The choice is yours!

No matter what platform, you can write C# applications!

Browsing the Docs

Demo



Finding information in the docs

Summary



C# is an object-oriented and type-safe language to write .NET applications

C# is actively maintained

C# can be used to build all types of .NET applications

Applications can be created using

- Visual Studio
- VS Code and CLI

Up Next:

Learning the C# syntax