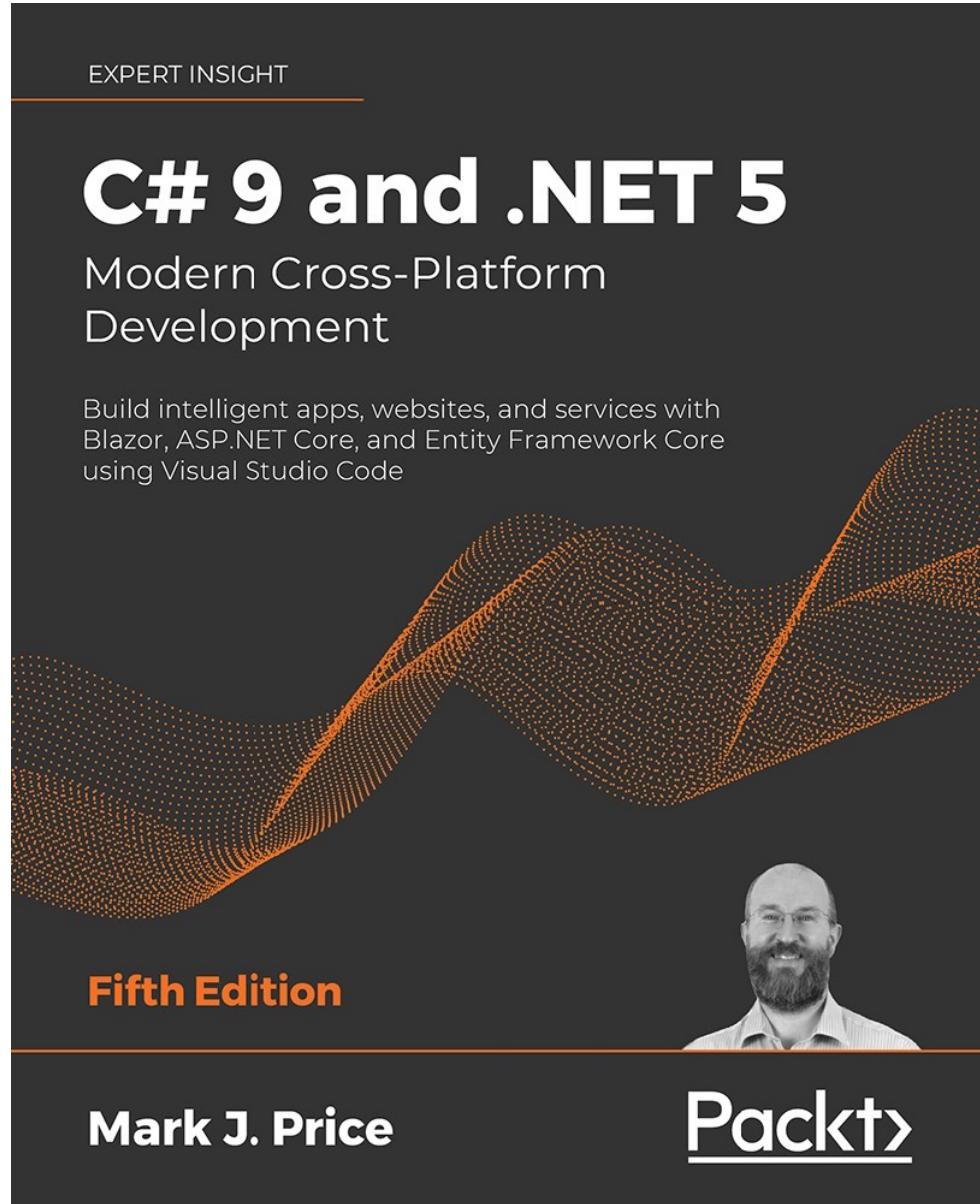


Book



Introduction

- C# vs .Net
- CLR – Common Language Runtime
- Architecture of .Net Applications
- First C# Application – Hello World!

C# vs .Net

C# is a programming language

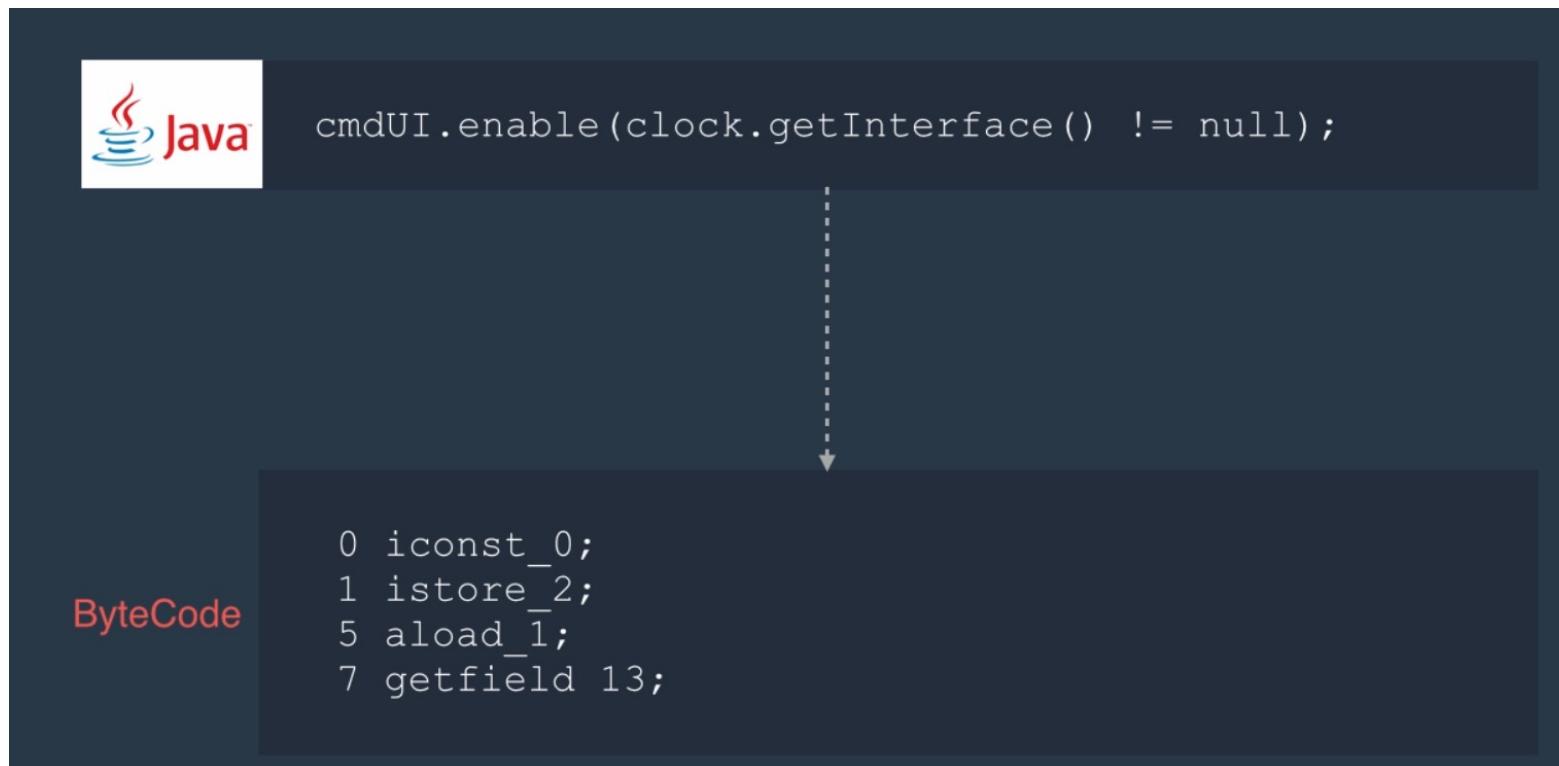
.Net is a framework or an ecosystem

C# is a programming language

- History of C#
- Java and C#
- Platform independent
- Bytecode and Intermediate Language Code
- Just Intime Compiler (JIT)

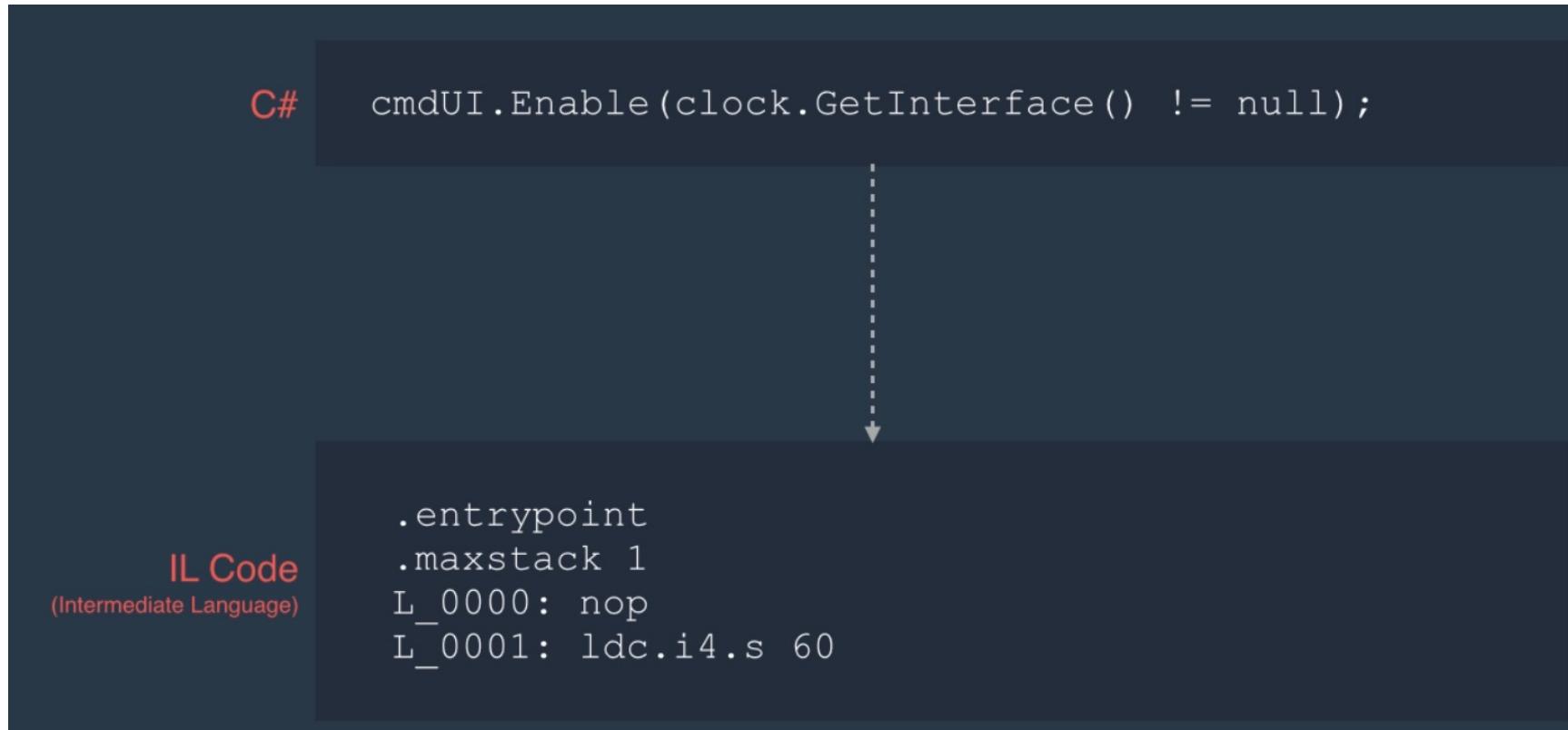
What is CLR – Common Language Runtime?

We have different OSs, and computer architectures; Java have the following solution to become platform independent. In java we have bytecode and bytecode run on native machine using JVM



What is CLR – Common Language Runtime?

In C# we have IL code and CLR with the same objective



What is CLR – Common Language Runtime?

CLI - An application to translate the IL code to machine code to make C# as an platform independent. This process is known as Just in time Compilation (JIT)

What is .Net?

.NET = The Ecosystem

Languages - C#, F#, Visual Basic, etc.

Runtimes – Common Language Runtime CLR or Core CLR

Libraries – Basic Class Libraries

Others

Nuget – Package manager

dotnet cli -> command line

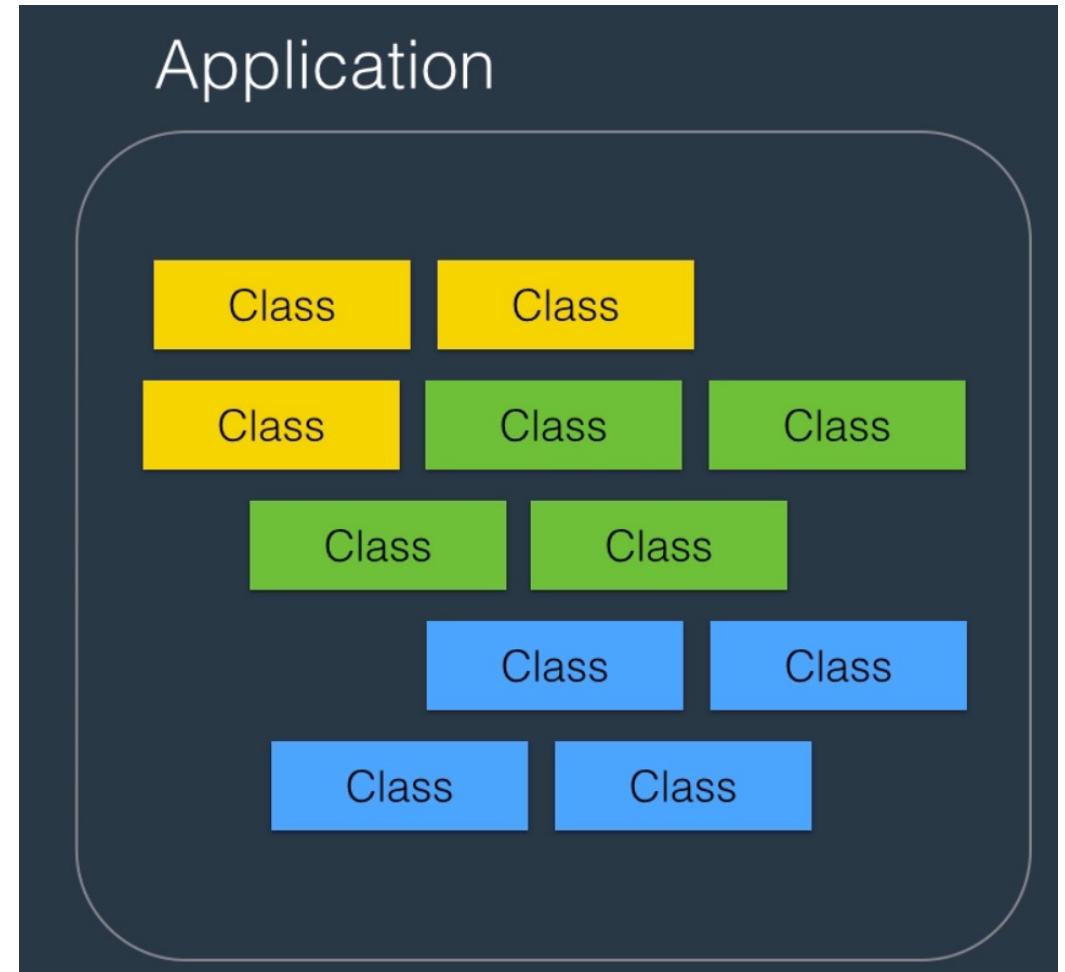
dotnet new

dotnet run

dotnet publish

Architecture of .Net Applications

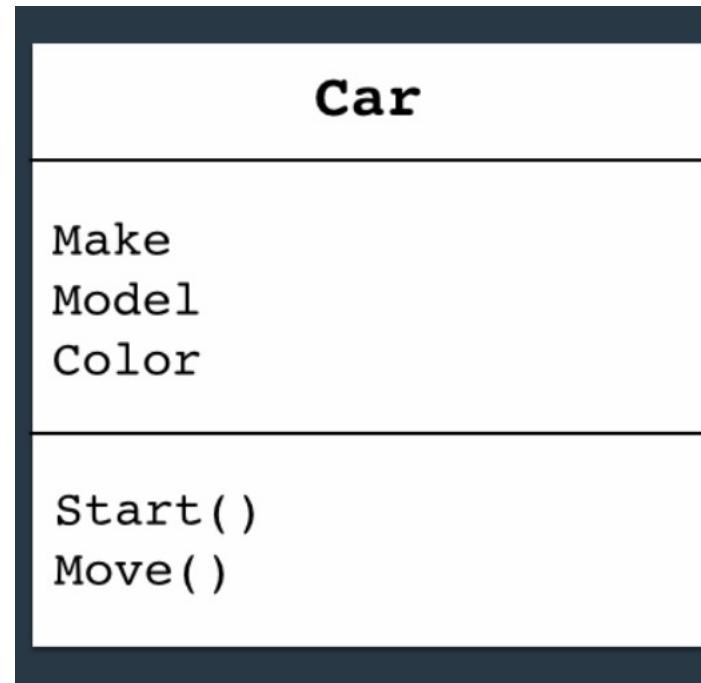
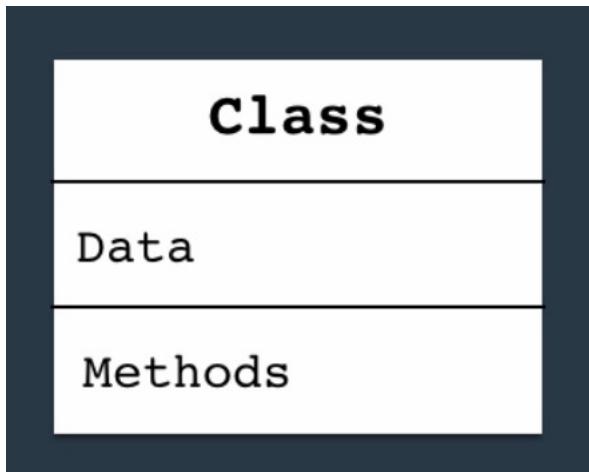
Building Blocks of program are classes which collaborate with each other at run to provide the functionality.



Class

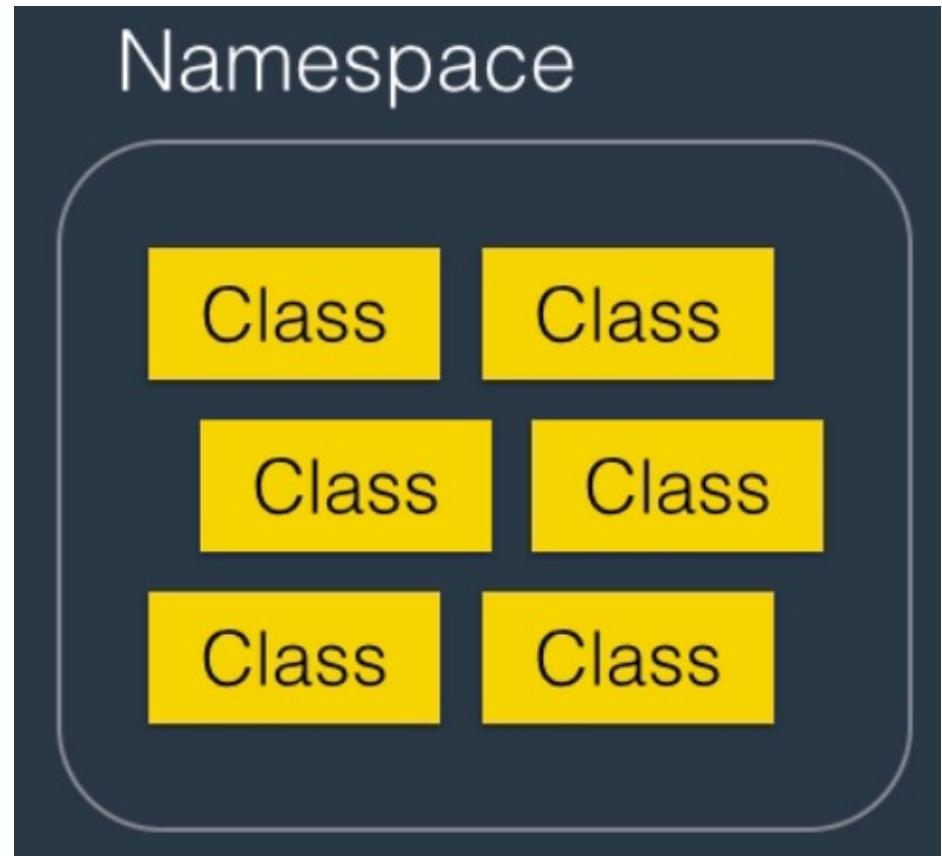
Class is a container which have

1. Data or Attribute (Represents the state of the application)
2. Functions or Methods (its a behavior or do some work on data)



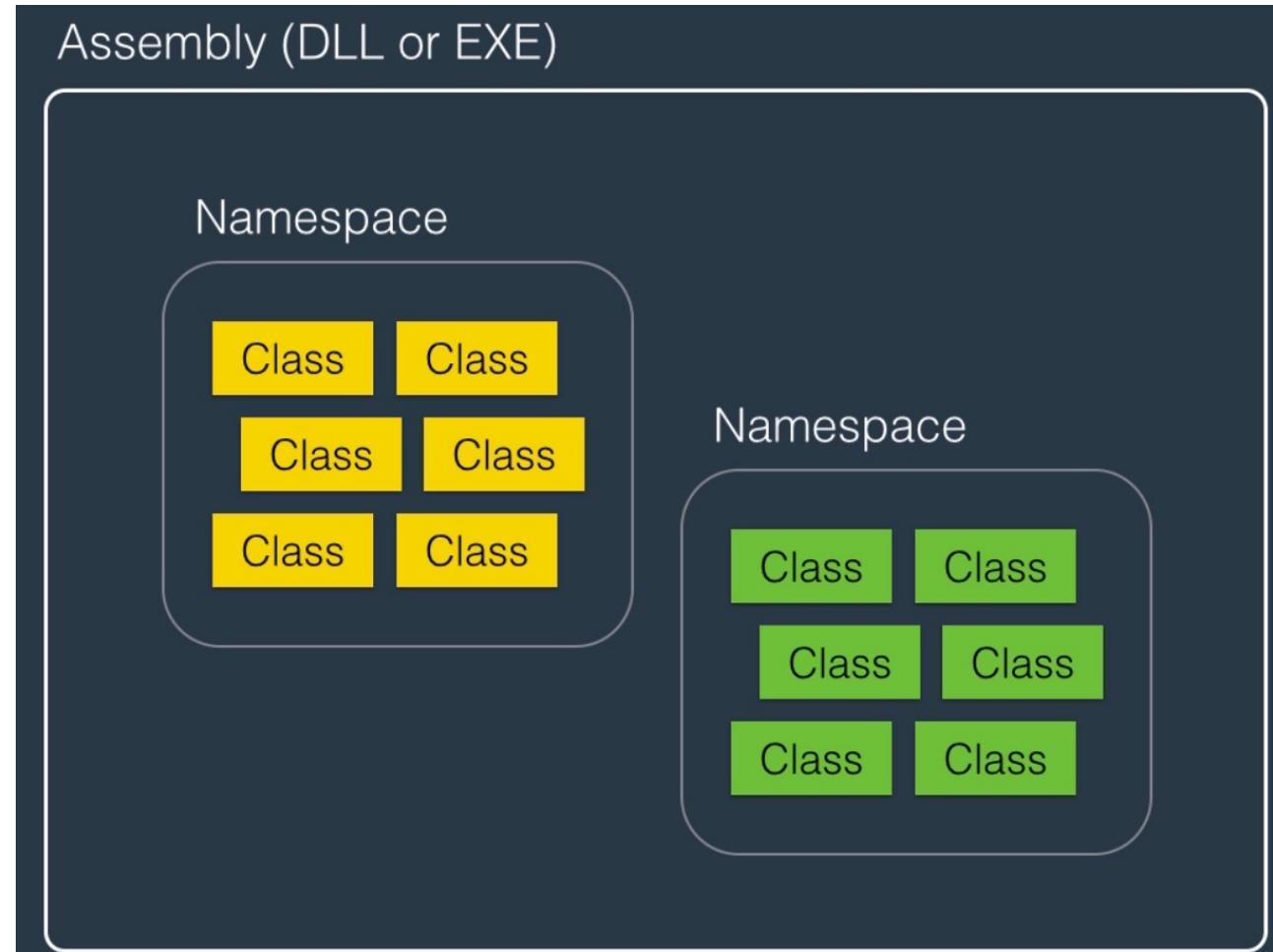
Namespaces

To organize similar classes - we group them into namespaces. Thus, namespace is a container for similar classes. For example, in dot net we have namespaces with tens of related classes to work with databases, graphics & images, security, etc.



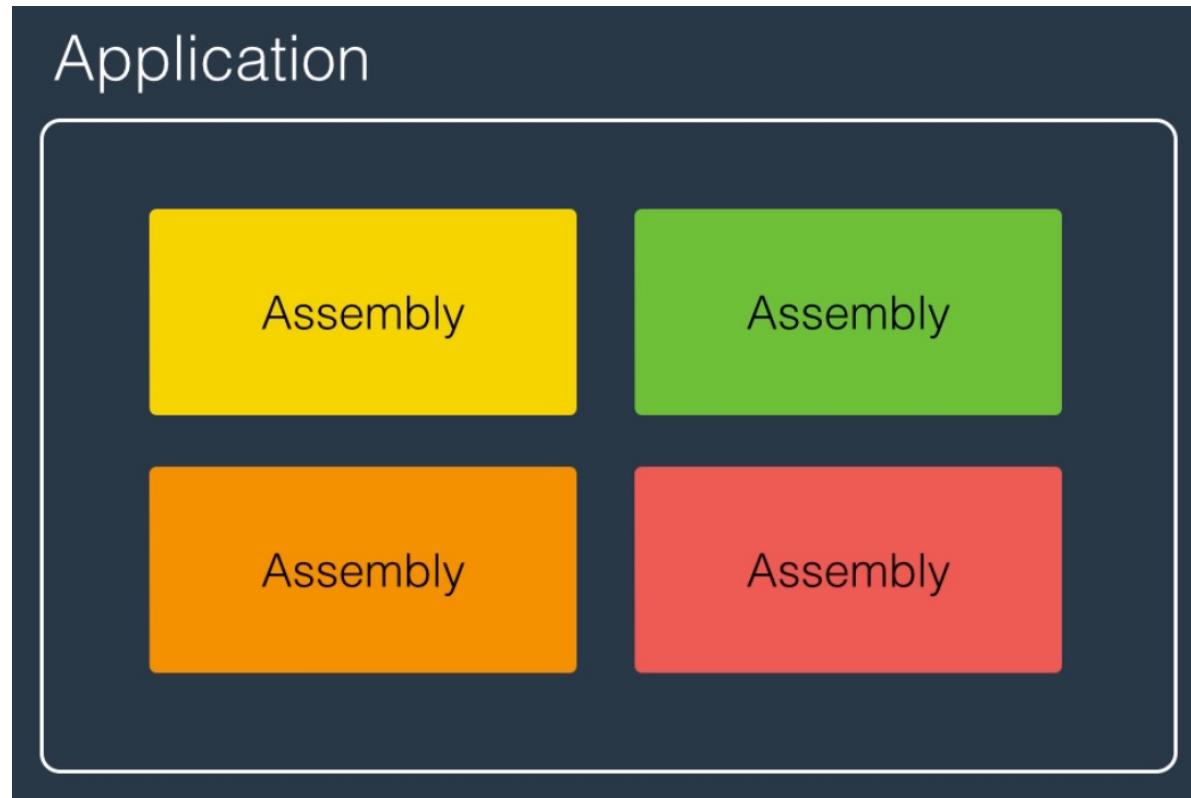
Assembly

In real world application, as these namespaces grows - we have a different way to partitioning the application known as assembly. Simply an assembly is a container of related namespaces.



Assembly

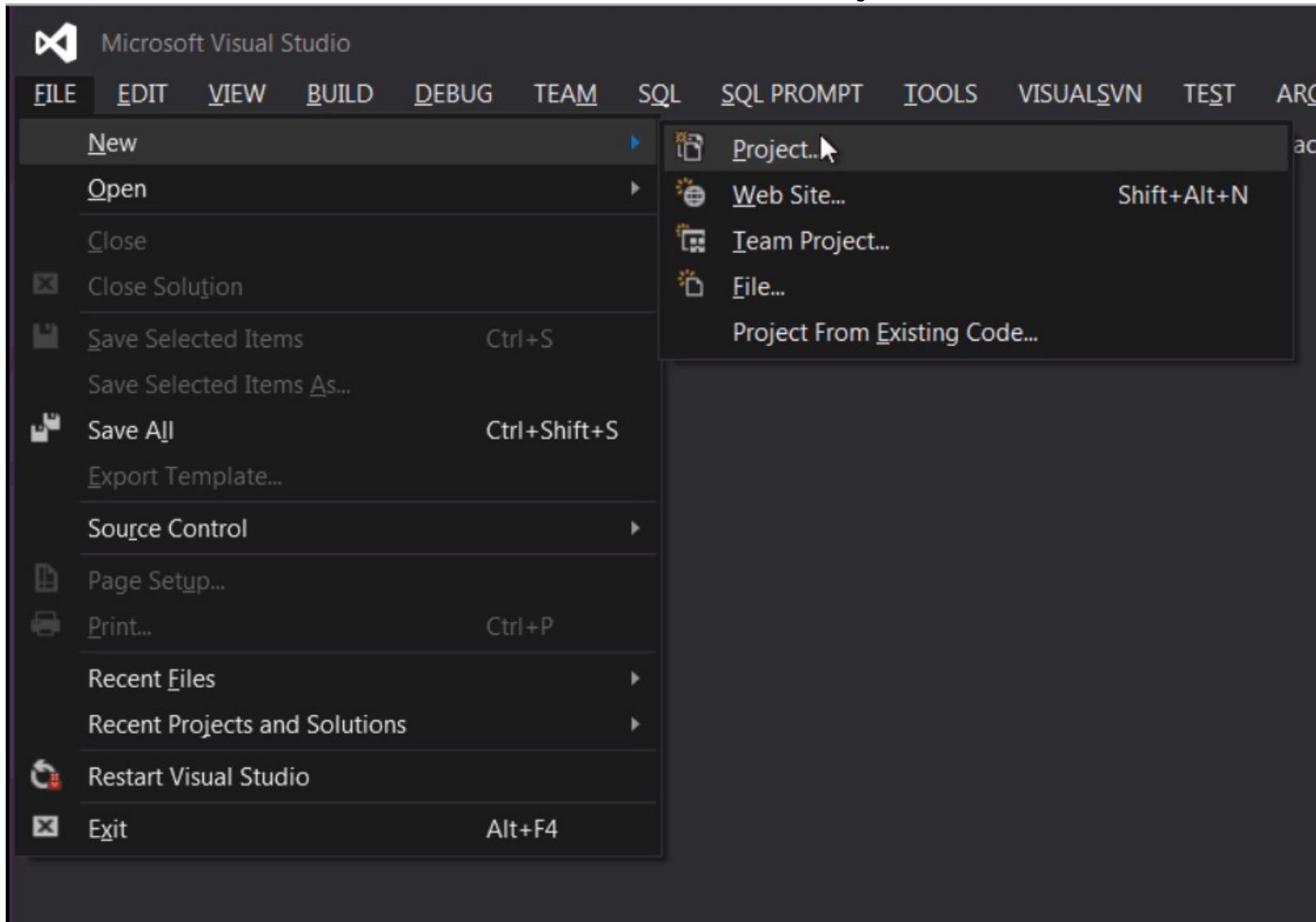
Physically, it is a file on the disk which can either be a executable or DLL file - Dynamic Linked Library. When you compile an application, compiler builds one or more assemblies depending how you partition the code. An EXE file represents a program that can be executed. A DLL is a file that includes code that can be re-used across different programs.



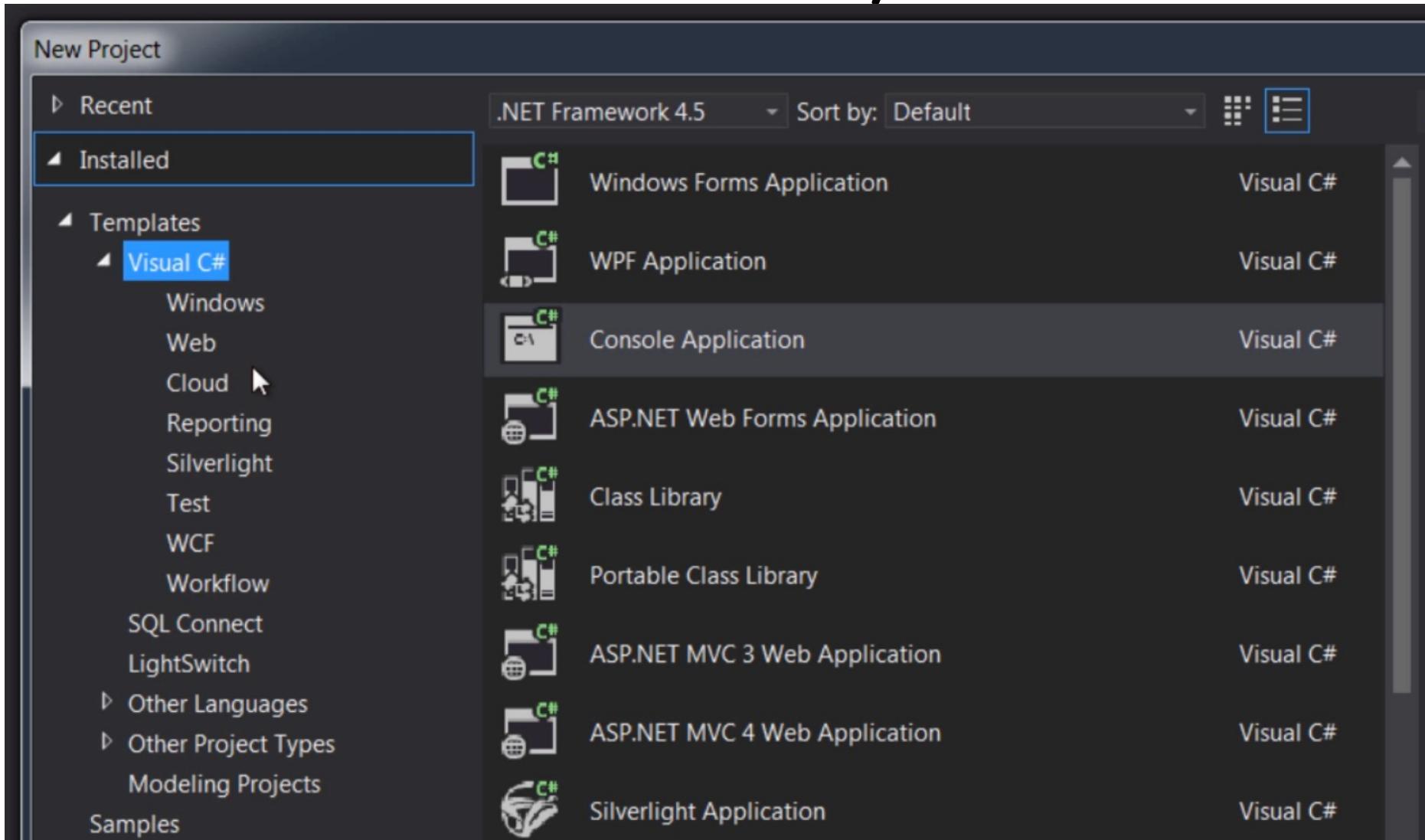
Visual Studio Code

Follow Book

Visual Studio – Community Edition



Visual Studio – Community Edition



HelloWord – Types of files

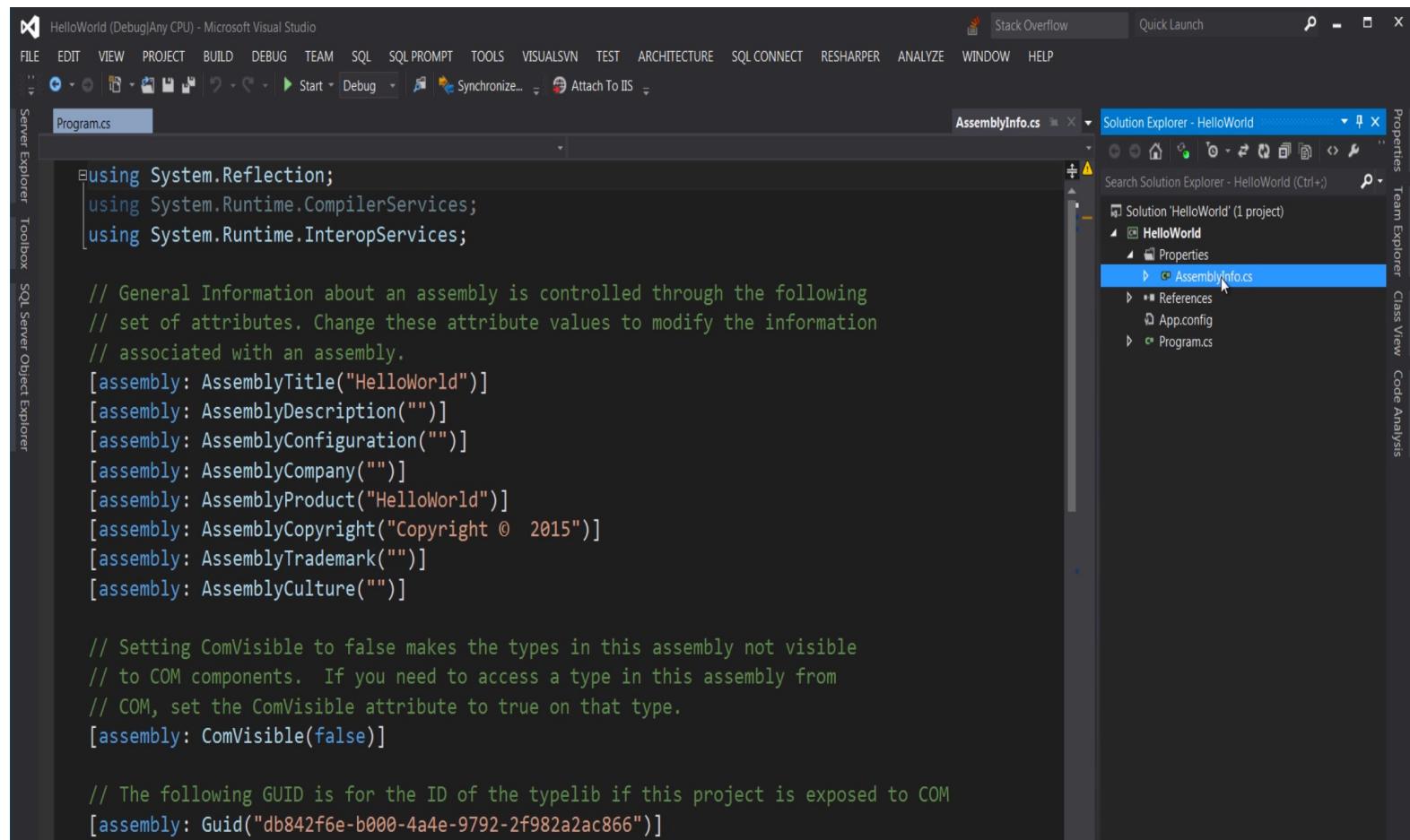
Solution files – Can have multiple projects

HelloWorld - Contains multiple items

1. Properties -> Assemblyinfo.cs
2. Reference
3. App.config
4. Program.cs

1. Assemblyinfo.cs

It is the identification for the Assembly that will be produced as result of compiling the project. As result, we will get an executable which is an assembly. It contains identifications and also known as assembly manifest required when we need to distribute the application.



The screenshot shows the Microsoft Visual Studio interface with the title bar "HelloWorld (Debug|Any CPU) - Microsoft Visual Studio". The menu bar includes FILE, EDIT, VIEW, PROJECT, BUILD, DEBUG, TEAM, SQL, SQL PROMPT, TOOLS, VISUALSVN, TEST, ARCHITECTURE, SQL CONNECT, RESHARPER, ANALYZE, WINDOW, and HELP. The toolbar includes icons for Start, Debug, Synchronize, and Attach To IIS. The Solution Explorer on the right shows a project named "HelloWorld" with files: Properties, AssemblyInfo.cs (selected), References, App.config, and Program.cs. The code editor displays the contents of the AssemblyInfo.cs file:

```
using System.Reflection;
using System.Runtime.CompilerServices;
using System.Runtime.InteropServices;

// General Information about an assembly is controlled through the following
// set of attributes. Change these attribute values to modify the information
// associated with an assembly.
[assembly: AssemblyTitle("HelloWorld")]
[assembly: AssemblyDescription("")]
[assembly: AssemblyConfiguration("")]
[assembly: AssemblyCompany("")]
[assembly: AssemblyProduct("HelloWorld")]
[assembly: AssemblyCopyright("Copyright © 2015")]
[assembly: AssemblyTrademark("")]
[assembly: AssemblyCulture("")]

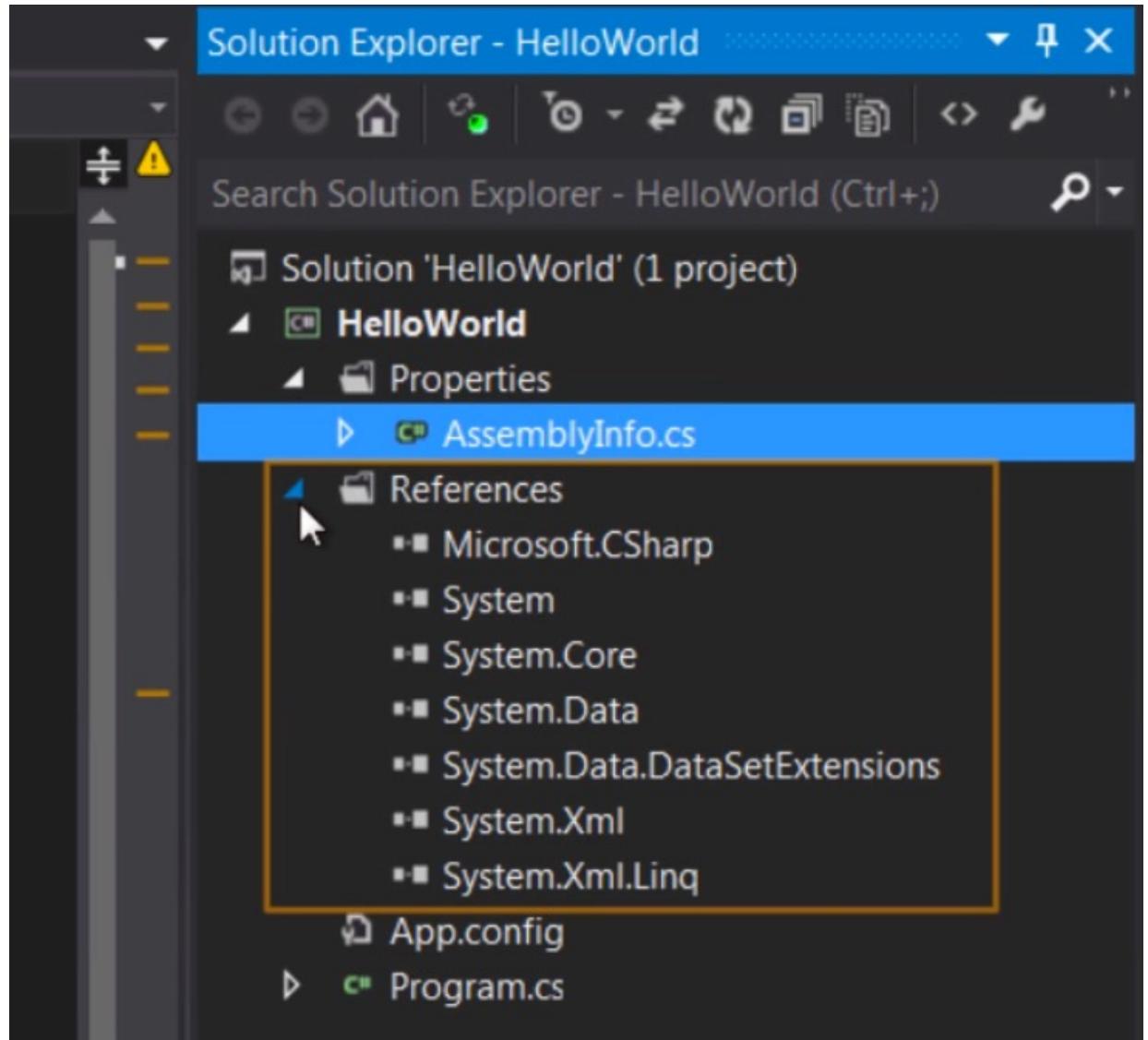
// Setting ComVisible to false makes the types in this assembly not visible
// to COM components. If you need to access a type in this assembly from
// COM, set the ComVisible attribute to true on that type.
[assembly: ComVisible(false)]

// The following GUID is for the ID of the typelib if this project is exposed to COM
[assembly: Guid("db842f6e-b000-4a4e-9792-2f982a2ac866")]
```

2. References

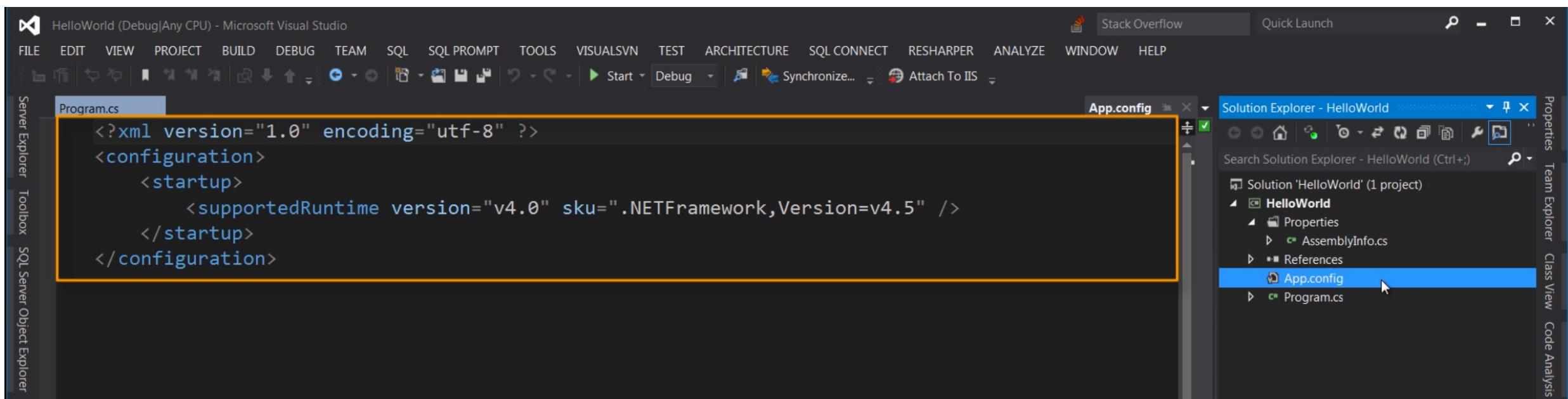
It contains list of the assemblies this project is referencing to do his job.

When you create a project with visual studio by default include reference to a bunch of assemblies that are going to be used by the project like System and others.



3. App.config

An xml file which stores the conflagration for this application. Sometimes you may want to store connection strings through the database or you may want to have some about your application.



4. Program.cs

This is the file where we will be going to write our code.

The screenshot shows the Microsoft Visual Studio interface with the following details:

- Title Bar:** HelloWorld (Debug|Any CPU) - Microsoft Visual Studio
- Menu Bar:** FILE, EDIT, VIEW, PROJECT, BUILD, DEBUG, TEAM, SQL, SQL PROMPT, TOOLS, VISUALSVN, TEST, ARCHITECTURE, SQL CONNECT, RESHARPER, ANALYZE, WINDOW, HELP
- Toolbar:** Standard development tools like New, Open, Save, Cut, Copy, Paste, Find, etc.
- Code Editor:** The file `Program.cs` is open, showing the following C# code:

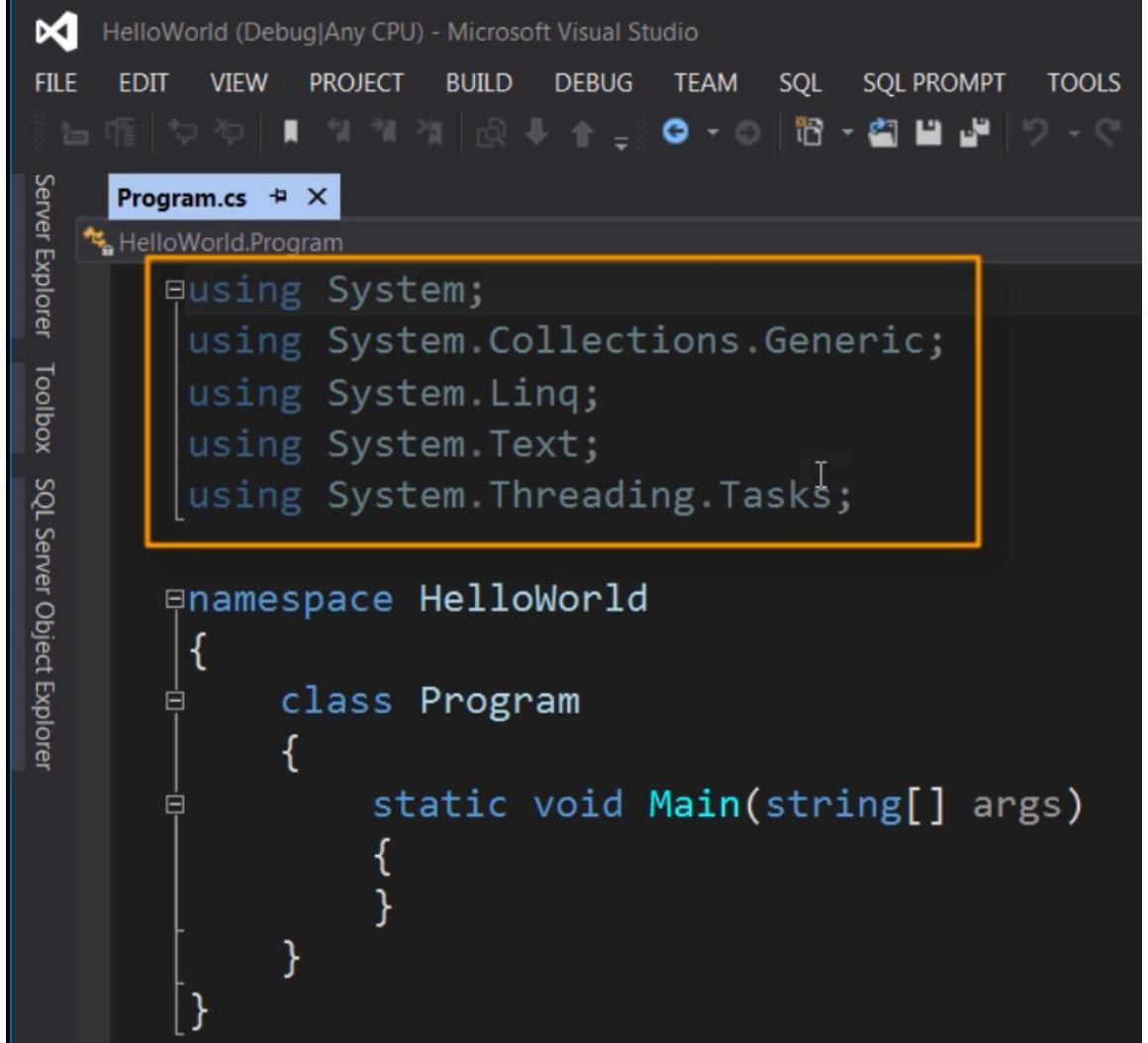
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
        }
    }
}
```
- Solution Explorer:** Shows the project structure for `HelloWorld`.
 - Solution 'HelloWorld' (1 project)
 - HelloWorld
 - Properties
 - AssemblyInfo.cs
 - References
 - App.config
 - Program.cs (selected)
- Properties, Team Explorer, Class View, Code Analysis:** Standard Visual Studio navigation tabs.

HelloWorld

using statements - by default visual studio creates a namespace called Hello world when you write code in this namespace. we have access to any classes defined in this namespace.

if we want to use a class that is defined in a different namespace we need to import it in our code.



```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
        }
    }
}
```

using system

system is a namespace in a Dot Net Framework and contains all basic utility classes and primitive types

class – Program

By default, we have a class called program so every console application you create with Visual Studio has a class called program Inside program by default.

Method – Main which is an entry point to the application

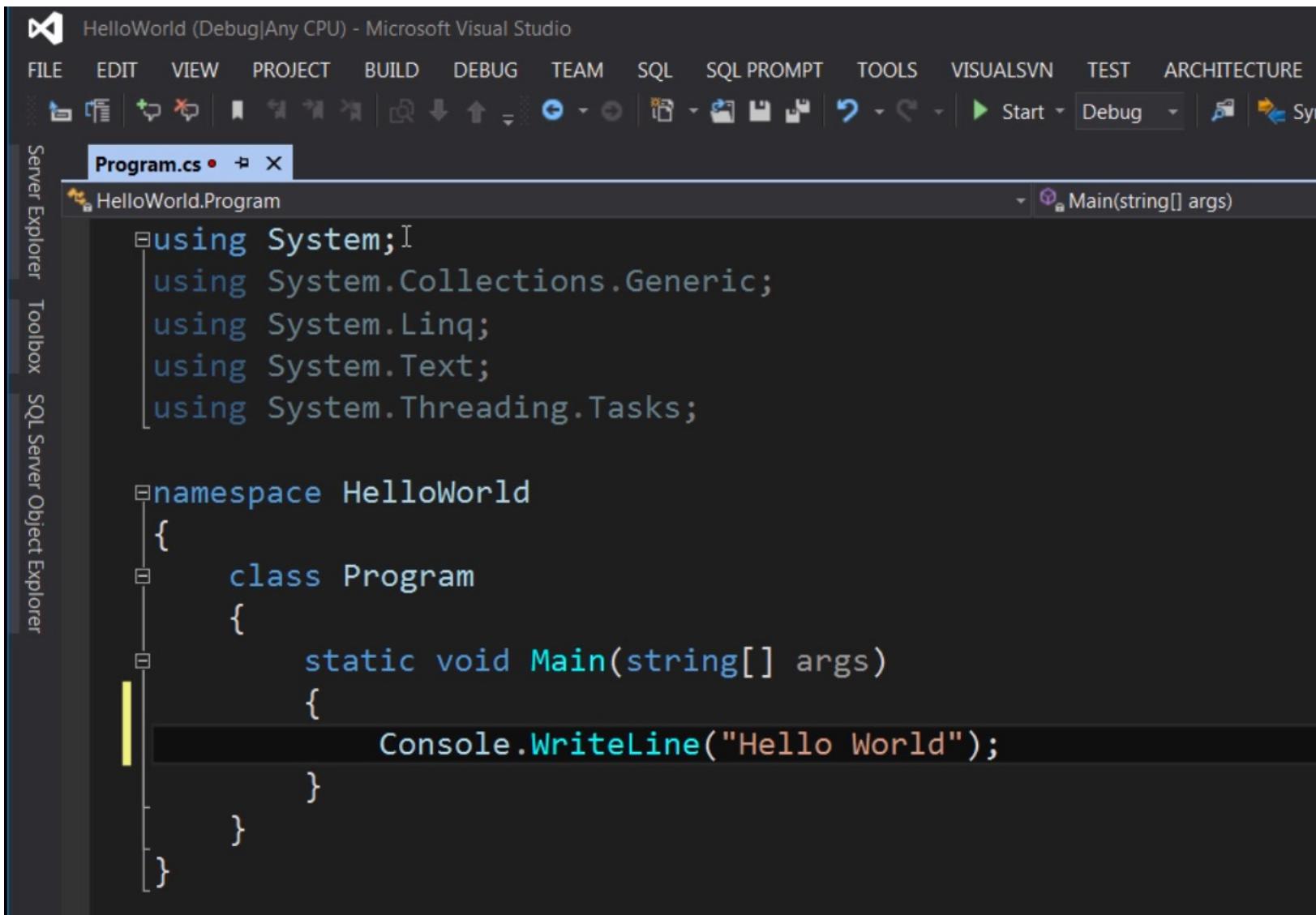
```
namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
        }
    }
}
```

class – Program

1. Boilerplate Code
2. Method Names and Conventions
3. Block names and curly braces
4. Indentation
5. Whitespace ignore
6. Case Sensitive
7. Methods have input and outputs
 1. void – method does not return anything
 2. Arguments – input to the methods (like string array args)

```
namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
        }
    }
}
```

Body of the program



The screenshot shows the Microsoft Visual Studio interface with a dark theme. The title bar reads "HelloWorld (Debug|Any CPU) - Microsoft Visual Studio". The menu bar includes FILE, EDIT, VIEW, PROJECT, BUILD, DEBUG, TEAM, SQL, SQL PROMPT, TOOLS, VISUALSVN, TEST, and ARCHITECTURE. The toolbar has various icons for file operations like Open, Save, and Build. The status bar at the bottom shows "Main(string[] args)". The code editor window displays the following C# code:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace HelloWorld
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello World");
        }
    }
}
```

VS Code and C#

A screenshot of a Google search results page for the query "visual studio code". The search bar at the top contains the text "visual studio code". Below the search bar, there are navigation links for "All", "Images", "Videos", "Books", "News", "More", and "Tools". A message indicates "About 579,000,000 results (0.80 seconds)". The first result is a link to the Visual Studio Code website: <https://code.visualstudio.com>. The snippet from the page reads: "Visual Studio Code is a code editor redefined and optimized for building and debugging modern web and cloud applications. Visual Studio Code is free and ...". Below this, there are several cards with links: "Download", "Docs", "Python", "October 2021 (version 1.62)", "Insiders", and "VS Code setup overview".

Google visual studio code

All Images Videos Books News More Tools

About 579,000,000 results (0.80 seconds)

<https://code.visualstudio.com> ::

Visual Studio Code - Code Editing. Redefined

Visual Studio Code is a code editor redefined and optimized for building and debugging modern web and cloud applications. Visual Studio Code is free and ...

Download

Visual Studio Code is free and available on your favorite ...

Docs

Visual Studio Code is a lightweight but powerful source code editor ...

Python

Extension for Visual Studio Code - IntelliSense (Pylance), Linting, ...

October 2021 (version 1.62)

Visual Studio Code for the Web provides a zero-install ...

Insiders

For early adopters, you can get the latest release of VS Code each ...

VS Code setup overview

Linux - System Requirements - Portable Mode - ...



Visual Studio Code



Visual Studio Code is a source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. [Wikipedia](#)

Size: Windows: 40.8–68.3 MB; Linux: 46.5–66.6 MB;
macOS: 67.5 MB

Developer(s): Microsoft



Visual Studio Code

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API

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Download

↓ Windows

Windows 7, 8, 10, 11

User Installer

64 bit
32 bit
ARM

System Installer

64 bit
32 bit
ARM

.zip

64 bit
32 bit
ARM

↓ .deb

Debian, Ubuntu

↓ .rpm

Red Hat, Fedora, SUSE

↓ Mac

macOS 10.11+

.zip Universal
Intel Chip
Apple Silicon

.deb 64 bit
ARM
ARM 64

.rpm 64 bit
ARM
ARM 64

.tar.gz 64 bit
ARM
ARM 64

Snap Store



License Agreement

Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

This license applies to the Visual Studio Code product. Source Code for Visual Studio Code is available at <https://github.com/Microsoft/vscode> under the MIT license agreement at <https://github.com/microsoft/vscode/blob/master/LICENSE.txt>. Additional license information can be found in our FAQ at <https://code.visualstudio.com/docs/supporting/faq>.

- I accept the agreement
 I do not accept the agreement

Next >

Cancel



Select Additional Tasks

Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing Visual Studio Code, then click Next.

Additional icons:

- Create a desktop icon

Other:

- Add "Open with Code" action to Windows Explorer file context menu

- Add "Open with Code" action to Windows Explorer directory context menu

- Register Code as an editor for supported file types

- Add to PATH (requires shell restart)

< Back

Next >

Cancel



Ready to Install

Setup is now ready to begin installing Visual Studio Code on your computer.



Click **Install** to continue with the installation, or click **Back** if you want to review or change any settings.

Additional tasks:

Additional icons:

Create a desktop icon

Other:

Add to PATH (requires shell restart)



< Back

Install

Cancel

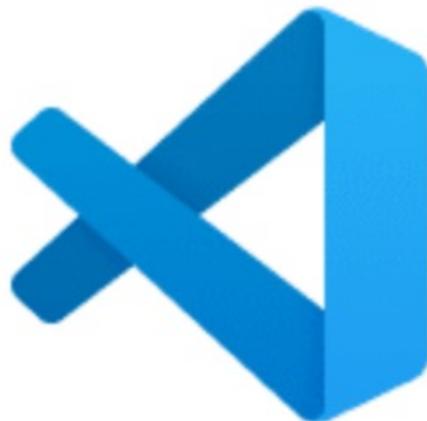


Completing the **Visual Studio Code** Setup Wizard

Setup has finished installing Visual Studio Code on your computer. The application may be launched by selecting the installed icons.

Click Finish to exit Setup.

Launch Visual Studio Code



Finish

The screenshot shows the VS Code interface with several numbered callouts:

- 1**: Points to the package.json file in the Explorer sidebar.
- 2**: Points to the terminal tab in the bottom navigation bar.
- 3**: Points to the status bar at the bottom of the screen.
- 4**: Points to the Cypress Workshop extension icon in the Explorer sidebar.
- 5**: Points to the terminal window showing a disconnected automation client error.

package.json — CypressWorkshop

```
1 {  
2   "name": "automation",  
3   "version": "1.0.0",  
4   "description": "",  
5   "main": "index.js",  
6   "scripts": {  
7     "test": "echo \\"Error: no test specified\\" && exit 1"  
8   },  
9   "author": "AashishKhetarpal",  
10  "license": "ISC",  
11  "devDependencies": {  
12    "cypress": "^3.6.0"  
13  }  
14}  
15
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

```
1: zsh
```

```
GET /wp-content/themes/jqueryui-child/js/wdelaof.js.download 200 295.176 ms --  
GET /wp-content/themes/jqueryui/style.css?ver=5.3.2 200 1485.363 ms --  
GET /wp-content/themes/jqueryui/js/touch-keyboard-navigation.js?ver=1.1 200 292.535 ms --  
GET /wp-includes/js/wp-embed.min.js?ver=5.3.2 200 286.320 ms --  
GET /wp-content/themes/jqueryui/print.css?ver=1.0.0 200 299.842 ms --  
GET /wp-includes/js/wp-emoji-release.min.js?ver=5.3.2 200 303.870 ms --  
GET /wp-content/themes/jqueryui-child/js/jquery-1.11.3.js.download 200 500.425 ms --  
GET /wp-content/themes/jqueryui-child/images/gauze.png 200 272.560 ms --  
GET /wp-content/themes/jqueryui-child/images/colorbox/overlay.png 200 270.587 ms --  
GET /wp-content/themes/jqueryui-child/images/bg-footer-noise.jpg 200 285.271 ms --  
GET /wp-content/themes/jqueryui-child/images/bullet.png 200 297.752 ms --  
HEAD / -- ms --  
The automation client disconnected. Cannot continue running tests.  
The automation client disconnected. Cannot continue running tests.  
GET /__cypress/iframes/integration/examples/cypressTest1.js 200 2.036 ms - 762  
GET /__cypress/tests?p=cypress/support/index.js-052 200 2.967 ms -  
GET /__cypress/tests?p=cypress/integration/examples/cypressTest1.js-575 200 7.454 ms -  
Aashish's-MacBook-Pro []
```

Ln 1, Col 1 Spaces: 2 UTF-8 LF JSON ▲ ☀ 🔍

1. **Editor** - *It is the main area to edit your files. You can open as many editors as possible side by side vertically and horizontally.*
2. **SideBar** - *Contains different views like the Explorer to assist you while working on your project.*
3. **Status Bar** - *It contains the information about the opened project and the files you edit.*
4. **Activity Bar** - *It is located on the far left-hand side. It lets you switch between views and gives you additional context-specific indicators, like the number of outgoing changes when Git is enabled.*
5. **Panels** - *It displays different panels below the editor region for output or debug information, errors, and warnings, or an integrated terminal. Additionally, the panel can also move to the right for more vertical space.*

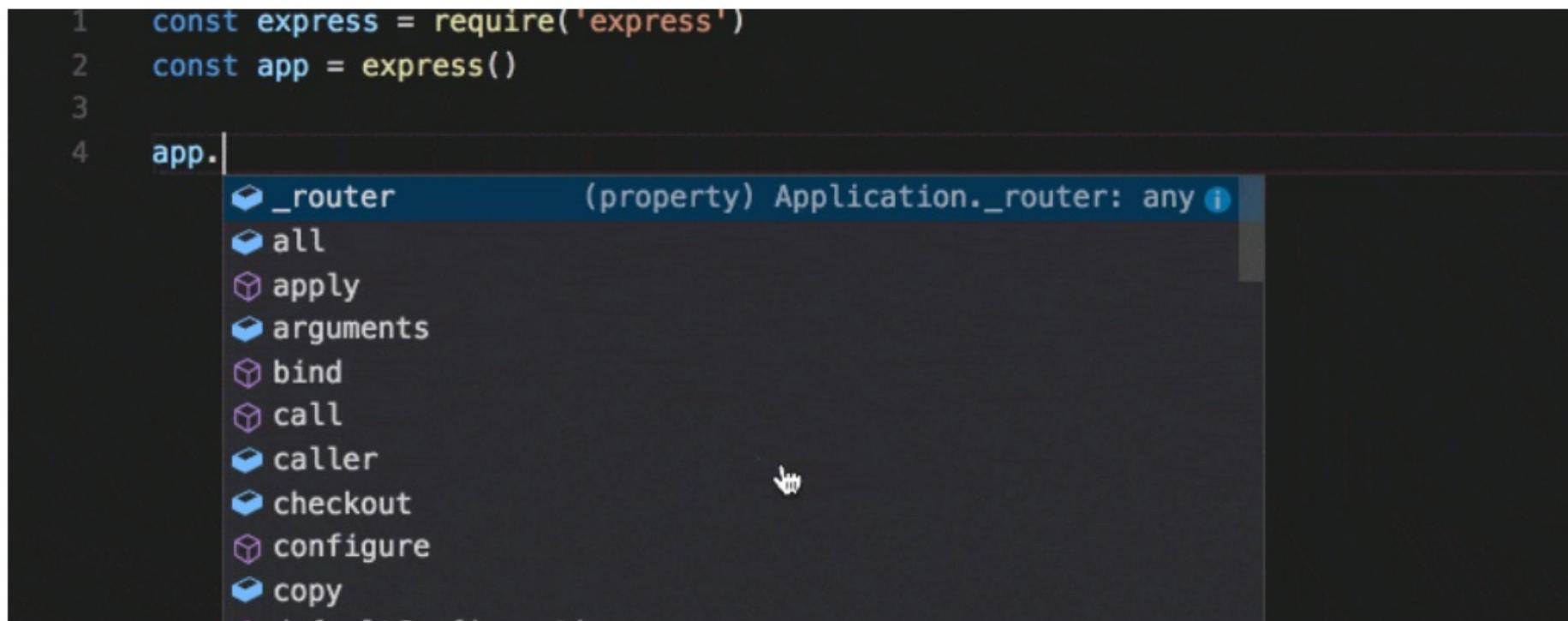
What are the language-specific features provided by VS Code?

Visual Studio Code supports the maximum of the modern programming languages. It provides various features that can be language-specific but are available in almost all the supported programming languages.

Few of them are:

- **Syntax highlighting and bracket matching:** *Syntax highlighting determines the color and style of source code displayed in the Visual Studio Code editor. Moreover, it is responsible for colorizing keywords like if or for in JavaScript differently than strings and comments and variable names.*

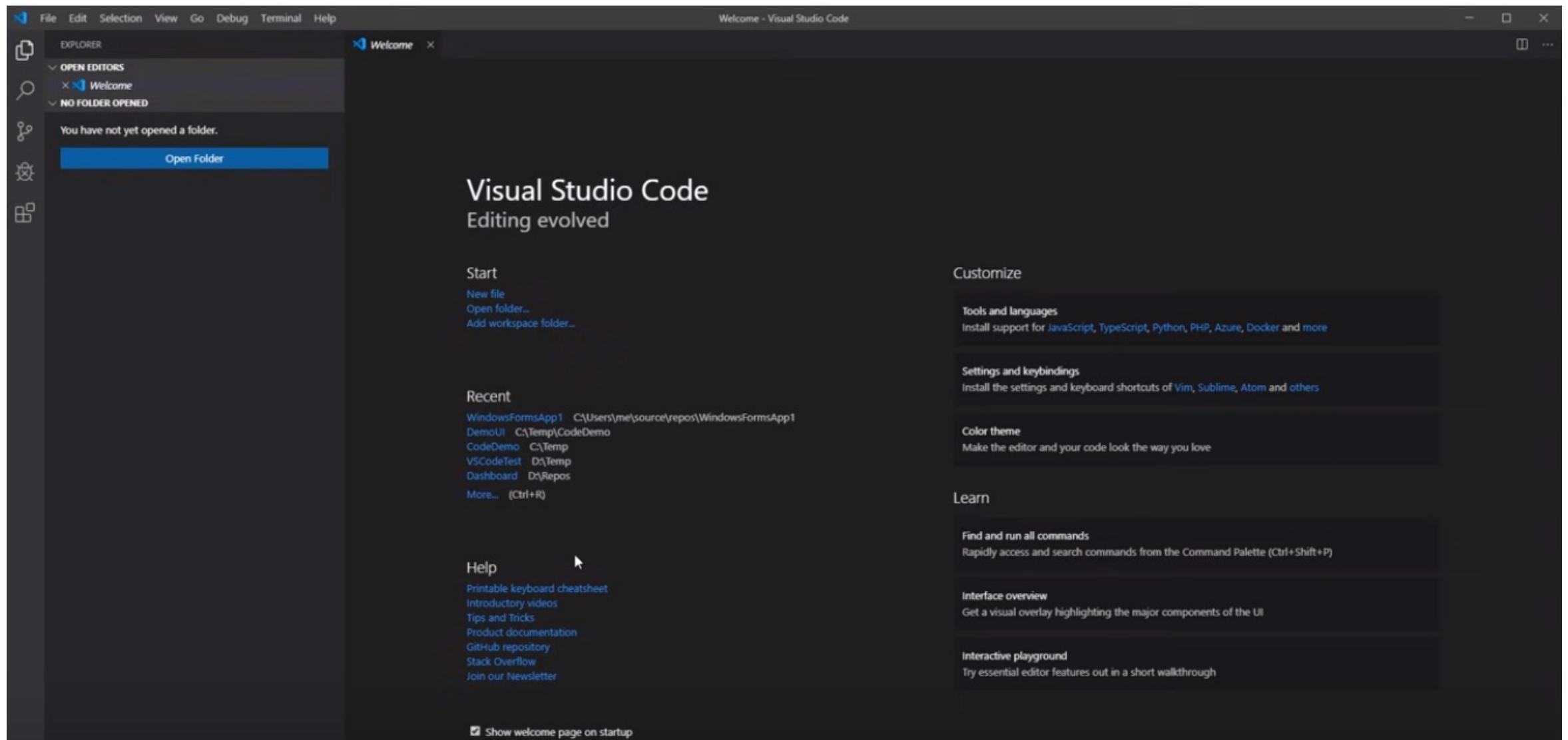
- **Smart completion (IntelliSense):** IntelliSense is a general term for a variety of code editing features, including code completion, parameter info, quick info, and member lists. Other names of IntelliSense features are "code completion," "content assist," and "code hinting." The below gif file shows a sample of the feature:



A screenshot of a code editor showing a code snippet and a completion dropdown. The code is:

```
1 const express = require('express')
2 const app = express()
3
4 app.
```

The cursor is at the end of the word 'app.' in line 4. A completion dropdown is open, listing several properties of the 'app' object. The top item in the list is '_router', which is highlighted in blue. To its right, the text '(property) Application._router: any' is displayed, followed by a small info icon. Below '_router', the other listed properties are: all, apply, arguments, bind, call, caller, checkout, configure, and copy. The background of the code editor is dark, and the completion dropdown has a light gray background with a dark border.





EXTENSIONS



Search Extensions in Marketplace

RECOMMENDED

6

- GitLens — Git supercharged** 9.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio [Install](#)
- Git Project Manager** 1.7.1 ⚡ 648K ★ 4.5
Allows you to change easily between git projects.
Felipe Caputo [Install](#)
- Git History** 0.4.6 ⚡ 5.4M ★ 4.5
View git log, file history, compare branches or c...
Don Jeyamanne [Install](#)
- C#** 1.21.3 ⚡ 18.8M ★ 4
C# for Visual Studio Code (powered by OmniSh...
Microsoft [Install](#)
- Azure Dev Spaces** 1.0.120190904 ⚡ 219K ★ 5
Rapid Kubernetes development for teams
Microsoft [Install](#)
- Azure Repos** 1.149.2 ⚡ 2.1M ★ 2
Connect to Azure Repos and work with Git and T...
Microsoft [Install](#)

POPULAR

13567

- Python** 2019.8.34911 ⚡ 64M ★ 4.5
Linting, Debugging (multi-threaded, remote), Int...
Microsoft [Install](#)
- C/C++** 0.25.1 ⚡ 27.1M ★ 3.5
C/C++ IntelliSense, debugging, and code brows...
Microsoft [Install](#)
- GitLens — Git supercharged** 9.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio [Install](#)
- ESLint** 1.9.1 ⚡ 24.1M ★ 4.5
Integrates ESLint JavaScript into VS Code.
Dirk Baeumer [Install](#)
- Debugger for Chrome** 4.11.7 ⚡ 22.2M ★ 4
Debug your JavaScript code in the Chrome bro...
Microsoft [Install](#)
- Language Support for Java** 0.49.0 ⚡ 21.1M ★ 4.5
Java Linting, intellisense, formatting, refactoring,...
Red Hat [Install](#)

Show All Commands [Ctrl + Shift + P](#)Open File [Ctrl + O](#)Open Folder [Ctrl + K Ctrl + O](#)Open Recent [Ctrl + R](#)

File Edit Selection View Go Debug Terminal Help

Extension: Python - Visual Studio Code

EXTENSIONS

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View git log, file history, compare branches or c...
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- Azure Dev Spaces 1.0.120190904 ⚡ 219K ★ 5
Rapid Kubernetes development for teams
Microsoft [Install](#)
- Azure Repos 1.149.2 ⚡ 2.1M ★ 2
Connect to Azure Repos and work with Git and T...
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Linting, Debugging (multi-threaded, remote), Int...
Microsoft [Install](#)
- C/C++ 0.25.1 ⚡ 27.1M ★ 3.5
C/C++ IntelliSense, debugging, and code brows...
Microsoft [Install](#)
- GitLens — Git supercharged 8.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio [Install](#)
- ESLint 1.9.1 ⚡ 24.1M ★ 4.5
Integrates ESLint JavaScript into VS Code.
Dirk Baumer [Install](#)
- Debugger for Chrome 4.11.7 ⚡ 22.2M ★ 4
Debug your JavaScript code in the Chrome bro...
Microsoft [Install](#)
- Language Support for Java... 0.49.0 ⚡ 21.1M ★ 4.5
Java Linting, Intellisense, formatting, refactoring,...
Red Hat [Install](#)
- Vetur 0.22.3 ⚡ 20.3M ★ 4.5

Extension: Python X

Python ms-python.python

Microsoft | 64.087.219 | ★★★★★ | Repository | License

Link Publisher name: Microsoft (multi-threaded, remote), Intellisense, code formatting, refactoring, unit tests, snippets, and more.

Install

Details Contributions Changelog

Python extension for Visual Studio Code

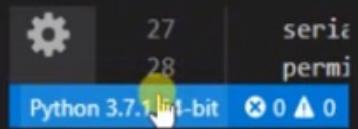
A Visual Studio Code extension with rich support for the Python language (for all actively supported versions of the language: 2.7, >=3.5), including features such as IntelliSense, linting, debugging, code navigation, code formatting, Jupyter notebook support, refactoring, variable explorer, test explorer, snippets, and more!

Quick start

- Step 1. Install a supported version of Python on your system (note: that the system install of Python on macOS is not supported).
- Step 2. Install the Python extension for Visual Studio Code.
- Step 3. Open or create a Python file and start coding!

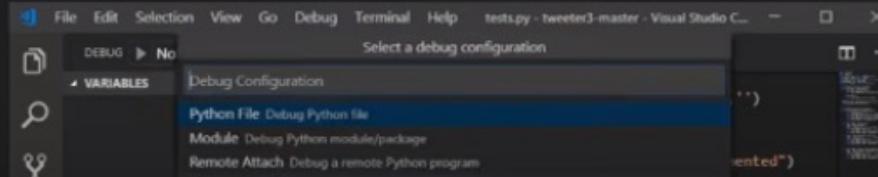
Set up your environment

- Select your Python interpreter by clicking on the status bar



27 28
series
permj
Python 3.7.1 64-bit 0 ▲ 0

- Configure the debugger through the Debug Activity Bar



File Edit Selection View Go Debug Terminal Help tests.py - tweeter3-master - Visual Studio C... DEBUG No Select a debug configuration

VARIABLES Debug Configuration

- Python File: Debug Python file
- Module: Debug Python module/package
- Remote Attach: Debug a remote Python program

File Edit Selection View Go Debug Terminal Help

Extension: C/C++ - Visual Studio Code

EXTENSIONS

Search Extensions in Marketplace

RECOMMENDED

- C/C++** ms-vscode.cpptools Preview
Microsoft | ⚡ 27,188,040 | ★★★★☆ | Repository | License
C/C++ IntelliSense, debugging, and code browsing.
[Install](#)
- GitLens — Git supercharged** 9.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio
[Install](#)
- Git Project Manager** 1.7.1 ⚡ 64.8K ★ 4.5
Allows you to change easily between git projects.
Felipe Caputo
[Install](#)
- Git History** 0.4.6 ⚡ 5.4M ★ 4.5
View git log, file history, compare branches or c...
Don Jayamanne
[Install](#)
- C#** 1.21.3 ⚡ 18.8M ★ 4
C# for Visual Studio Code (powered by OmniSh...
Microsoft
[Install](#)
- Azure Dev Spaces** 1.0.120190904 ⚡ 219K ★ 5
Rapid Kubernetes development for teams
Microsoft
[Install](#)
- Azure Repos** 1.149.2 ⚡ 2.1M ★ 2
Connect to Azure Repos and work with Git and T...
Microsoft
[Install](#)

POPULAR

- Python** 2019.9.34911 ⚡ 64M ★ 4.5
Linting, Debugging (multi-threaded, remote), Int...
Microsoft
[Install](#)
- C/C++** 0.25.1 ⚡ 27.1M ★ 3.5
C/C++ IntelliSense, debugging, and code brows...
Microsoft
[Install](#)
- GitLens — Git supercharged** 9.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio
[Install](#)
- ESLint** 1.9.1 ⚡ 24.1M ★ 4.5
Integrates ESLint JavaScript into VS Code.
Dirk Baeumer
[Install](#)
- Debugger for Chrome** 4.11.7 ⚡ 22.2M ★ 4
Debug your JavaScript code in the Chrome bro...
Microsoft
[Install](#)
- Language Support for Java** 0.49.0 ⚡ 21.1M ★ 4.5
Java Linting, Intellisense, formatting, refactoring,...
Red Hat
[Install](#)
- Vetur** 0.22.3 ⚡ 20.3M ★ 4.5
Vue tooling for VS Code
[Install](#)

C/C++ for Visual Studio Code

[Repository](#) | [Issues](#) | [Documentation](#) | [Code Samples](#) | [Offline Installers](#)

Live Share enabled

This preview release of the C/C++ extension adds language support for C/C++ to Visual Studio Code, including features such as IntelliSense and debugging.

Overview and getting started

- [C/C++ extension overview](#)
- [Get Started with C++ and Windows Subsystem for Linux \(WSL\)](#)
- [Get Started with C++ and Mingw-w64](#)
- [Get Started with C++ and Clang/LLVM on macOS](#)
- [Get Started with C++ and Microsoft C++ compiler \(MSVC\)](#)

Quick links

Rated by 322 users

- [IntelliSense configuration](#)
- [Enhanced colorization](#)
- [Debugging](#)
- [Debug configuration](#)
- [Enable logging for IntelliSense or debugging](#)

Questions and feedback

FAQs

Check out the FAQs before filing a question.

File Edit Selection View Go Debug Terminal Help

Extension: C# - Visual Studio Code

EXTENSIONS

Search Extensions in Marketplace

RECOMMENDED

- GitLens — Git supercharged 9.9.3 ⚡ 26.8M ★ 5
Supercharge the Git capabilities built into Visual...
Eric Amodio [Install](#)
- Git Project Manager 1.7.3 ⚡ 648K ★ 4.5
Allows you to change easily between git projects.
Felipe Caputo [Install](#)
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Red Hat [Install](#)
- Vetur 0.22.3 ⚡ 20.3M ★ 4.5
Vue tooling for VS Code

C# ms-vscode.csharp

Microsoft | ⚡ 18,804,993 | ★ ★ ★ ★ ★ | Repository | License

C# for Visual Studio Code (powered by OmniSharp).

This extension is recommended based on the files you recently opened. [Ignore Recommendation](#)

[Install](#)

Details Contributions Changelog

C# for Visual Studio Code (powered by OmniSharp)

Master Release

build passing build passing

wallaby.js configured

Welcome to the C# extension for Visual Studio Code! This extension provides the following features inside VS Code:

- Lightweight development tools for .NET Core.
- Great C# editing support, including Syntax Highlighting, IntelliSense, Go to Definition, Find All References, etc.
- Debugging support for .NET Core (CoreCLR). NOTE: Mono debugging is not supported. Desktop CLR debugging has [limited support](#).
- Support for project.json and csproj projects on Windows, macOS and Linux.

The C# extension is powered by [OmniSharp](#).

Get Started Writing C# in VS Code

- [Documentation](#)
- [Video Tutorial compiling with .NET Core](#)

What's new in 1.21.3

- Added support for CheckForOverflowUnderflow in csproj files
- Improved support for .NET Core 3

What's new in 1.21.2

- Added a `omnisharp.enableEditorConfigSupport` setting to enable support for `.editorconfig`.
- Modified the auto generated tasks in `tasks.json` to generate full paths and disable summary to fix the problem of no source links in the problems panel.

File Edit Selection View Go Debug Terminal Help

EXTENSIONS: MARKETPLACE

Extension: Visual Studio IntelliCode

Extension: Visual Studio IntelliCode - Visual Studio Code

Visual Studio IntelliCode visualstudioexpsteam.vscodeintlicode

Microsoft | 7,566,981 | ★★★★★ | Repository | License

AI-assisted development

Install

Visual Studio IntelliCode 1.1.9

AI-assisted development

Microsoft

HTML Language Features 1.0.4

HTML Language Features

Simon Siefke

VSCodium Essentials 1.2.0

Turn VSCode into a supercharged IDE.

jabacchetta

Install

Details Contributions Changelog

Visual Studio IntelliCode

The [Visual Studio IntelliCode](#) extension provides AI-assisted development features for Python, TypeScript/JavaScript and Java developers in Visual Studio Code, with insights based on understanding your code context combined with machine learning.

You'll need Visual Studio Code October 2018 Release 1.29.1 or later to use this extension. For each supported language, please refer to the "Getting Started" section below to understand any other pre-requisites you'll need to install and configure to get IntelliCode completions.

For C#, C++, TypeScript/JavaScript, and XAML support in the Visual Studio IDE, check out the [IntelliCode extension](#) on the Visual Studio Marketplace.

About IntelliCode

This extension provides AI-assisted IntelliSense by showing recommended completion items for your code context at the top of the completions list. The example below shows this in action for Python code.

```
loss = tf.reduce_sum(tf.square(linear_model - y))  
optimizer = tf.train.GradientDescentOptimizer(0.01)  
  
train = optimizer.minimize(loss)  
init =
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Integrity Check succeeded.

File Edit Selection View Go Debug Terminal Help

Extension: Live Share - Visual Studio Code

EXTENSIONS: MARKETPLACE

live share

Live Share 1.0.826 Microsoft | 12.8M ⚡ 5 Real-time collaborative development from the comfort of your favorite tools. [Install](#)

Live Share Chat 0.22.1 Arjun Attam | 914K ⚡ 4 Chat in your VS Live Share session, and with you... [Install](#)

Live Share Audio 0.1.66 Microsoft | 789K ⚡ 5 Adds audio calling capabilities to Visual Studio L... [Install](#)

Live Share Extension Pack 0.3.3 Microsoft | 482K ⚡ 4.5 Collection of extensions that enable real-time co... [Install](#)

Live Server 5.6.1 Ritwick Dey | 5.6M ⚡ 4.5 Launch a development local Server with live relo... [Install](#)

Share 0.4.4 lyuboraykov | 2K Collaborative editing in vscode [Install](#)

Live Share Whiteboard 0.0.9 Jonathan Carter | 11K ⚡ 5 Adds a real-time collaborative whiteboard to Vis... [Install](#)

Live Share MDNS 0.0.11 lherman-cs | 1K ⚡ 5 Easily Live Share Session Link Without Going Ou... [Install](#)

Live Share Pomodoro 0.1.0 Jonathan Carter | 659 ⚡ 5 Adds a collaborative pomodoro timer to Visual ... [Install](#)

Test Explorer Live Share 1.0.5 Holger Benl | 2K ⚡ 5 Use the Test Explorer in your Visual Studio Live S... [Install](#)

Live Share Spaces 0.0.2 Live Share Contrib | 13 Discover, share, and receive real-time assistance... [Install](#)

Live Sass Compiler 3.0.0 Ritwick Dey | 429K ⚡ 4.5 Compile Sass or Scss to CSS at realtime with live... [Install](#)

Live HTML Previewer 0.3.0 Harshdeep Gupta | 351K ⚡ 2.5 Edit and preview HTML documents in VS Code [Install](#)

Live Share ms-vsliveshare.vsliveshare Microsoft | 12,897,813 ⚡ 5 ★★★★★ Repository License Real-time collaborative development from the comfort of your favorite tools. [Install](#)

Details Contributions Changelog

Microsoft Visual Studio Live Share

Visual Studio Live Share enables you to collaboratively edit and debug with others in real time, regardless what [programming languages](#) you're using or app types you're building. It allows you to instantly (and [securely](#)) share your current project, and then as needed, share [debugging sessions](#), [terminal instances](#), [localhost web apps](#), [voice calls](#), and more! Developers that join your sessions receive all of their editor context from your environment (e.g. language services, debugging), which ensures they can start productively collaborating immediately, without needing to clone any repos or install any SDKs.

Additionally, unlike traditional pair programming, Visual Studio Live Share allows developers to work together, while retaining their personal editor preferences (e.g. theme, keybindings), as well as having their own cursor. This allows you to seamlessly transition between [following one another](#), and being able to [explore ideas/tasks](#) on your own. In practice, this ability to work together [and independently](#) provides a collaboration experience that is potentially more natural for many [common use cases](#).

Installation

1. If needed, install [Visual Studio Code](#) for Windows (7+), macOS (Sierra+), or Linux ([details](#)).
2. Download and install the [Visual Studio Live Share extension](#) for Visual Studio Code.
 - If you're interested in integrated voice calling as well, then you can install the [VS Live Share Extension Pack](#), which includes both the Live Share and Live Share Audio extensions.
3. Wait for the extension to finish downloading and then reload VS Code when prompted.
4. Wait for Visual Studio Live Share to finish installing dependencies ([you'll see progress updates in the status bar](#)).
5. Once complete, you'll see `Live Share` appear in your status bar. You can now begin collaborating with others immediately! Check out the [quickstart](#) below for information on how to get started.

 [Live Share](#)

Linux users: You may see a notification about installing [missing libraries](#):

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Integrity Check succeeded.

 Filter by title[.NET documentation](#)[› Get started](#)[› Overview](#)[› What's new in .NET](#)[› Tools and diagnostics](#)[Overview](#)[› .NET SDK](#)[› .NET CLI](#)[Overview](#)[dotnet](#)[› dotnet add/list/remove package](#)

.NET CLI overview

09/15/2021 • 2 minutes to read •  +12

This article applies to: ✓ .NET Core 2.1 SDK and later versions

The .NET command-line interface (CLI) is a cross-platform toolchain for developing, building, running, and publishing .NET applications.

The .NET CLI is included with the [.NET SDK](#). To learn how to install the .NET SDK, see [Install .NET Core](#).

CLI commands

The following commands are installed by default:

Basic commands

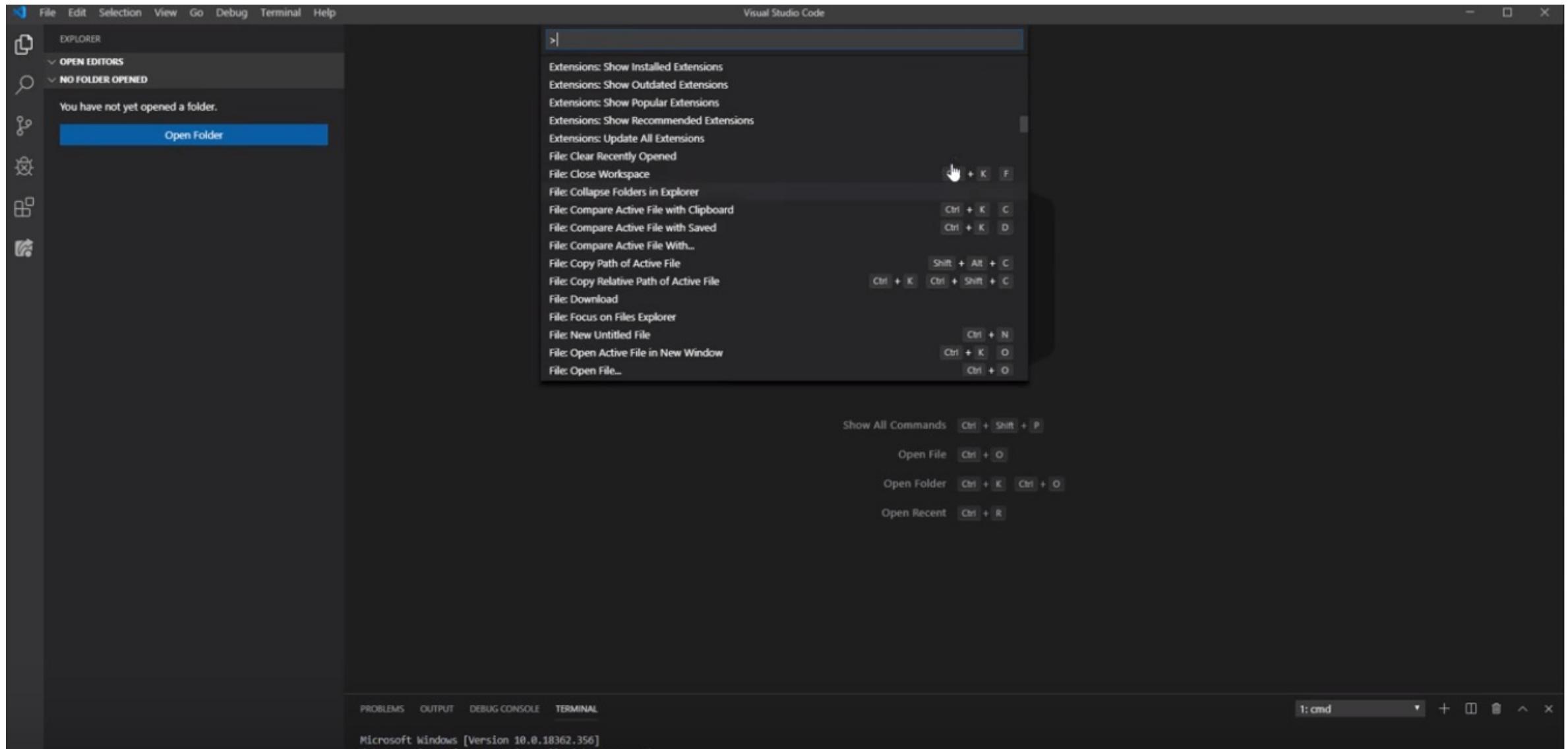
- [new](#)
- [restore](#)
- [build](#)
- [publish](#)
- [run](#)
- [test](#)
- [vstest](#)
- [pack](#)
- [migrate](#)
- [clean](#)
- [sln](#)
- [help](#)
- [store](#)

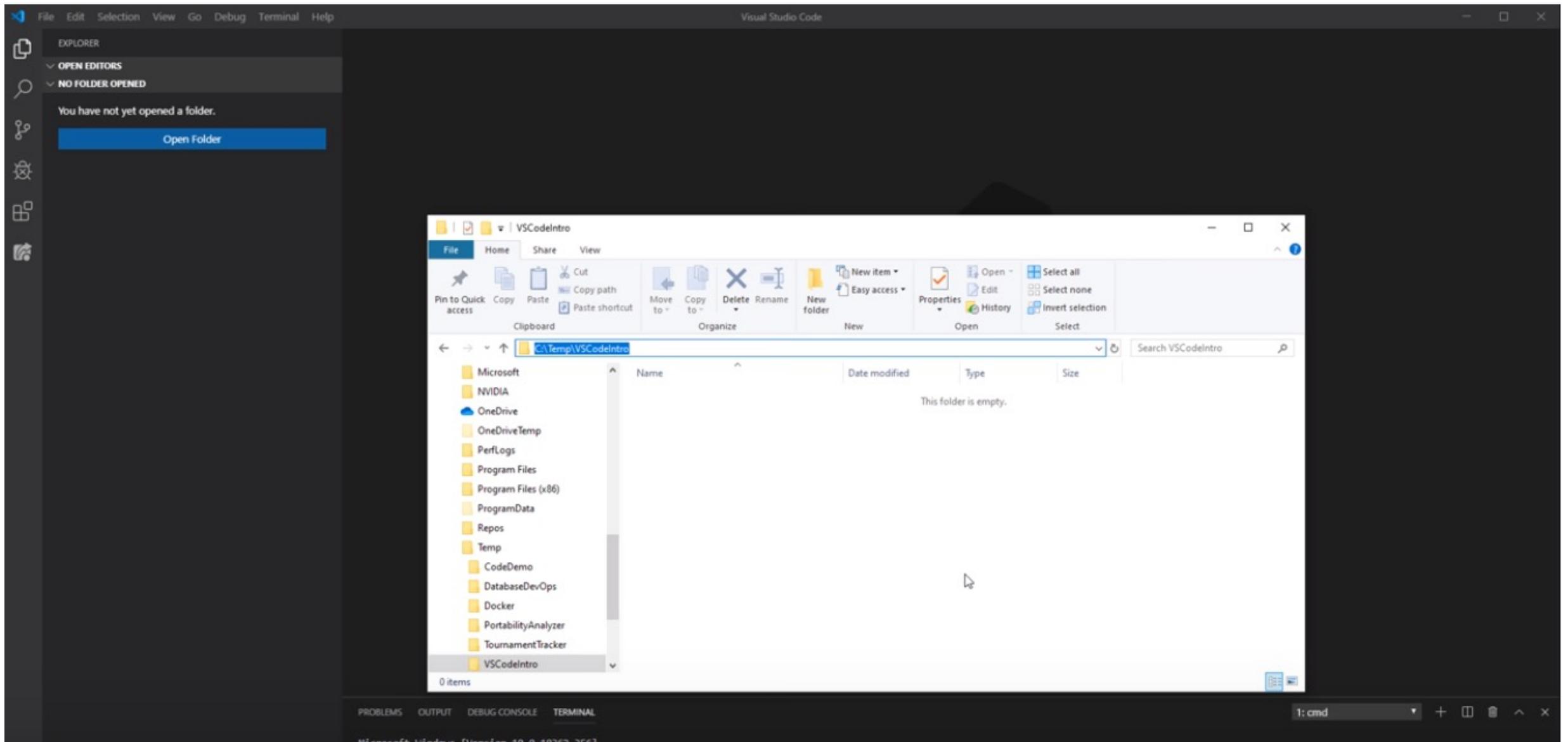
Project modification commands

- [add package](#)
- [add reference](#)
- [remove package](#)
- [remove reference](#)
- [list reference](#)

Advanced commands

- [nuget delete](#)
- [nuget locals](#)
- [nuget push](#)
- [msbuild](#)
- [dotnet install script](#)

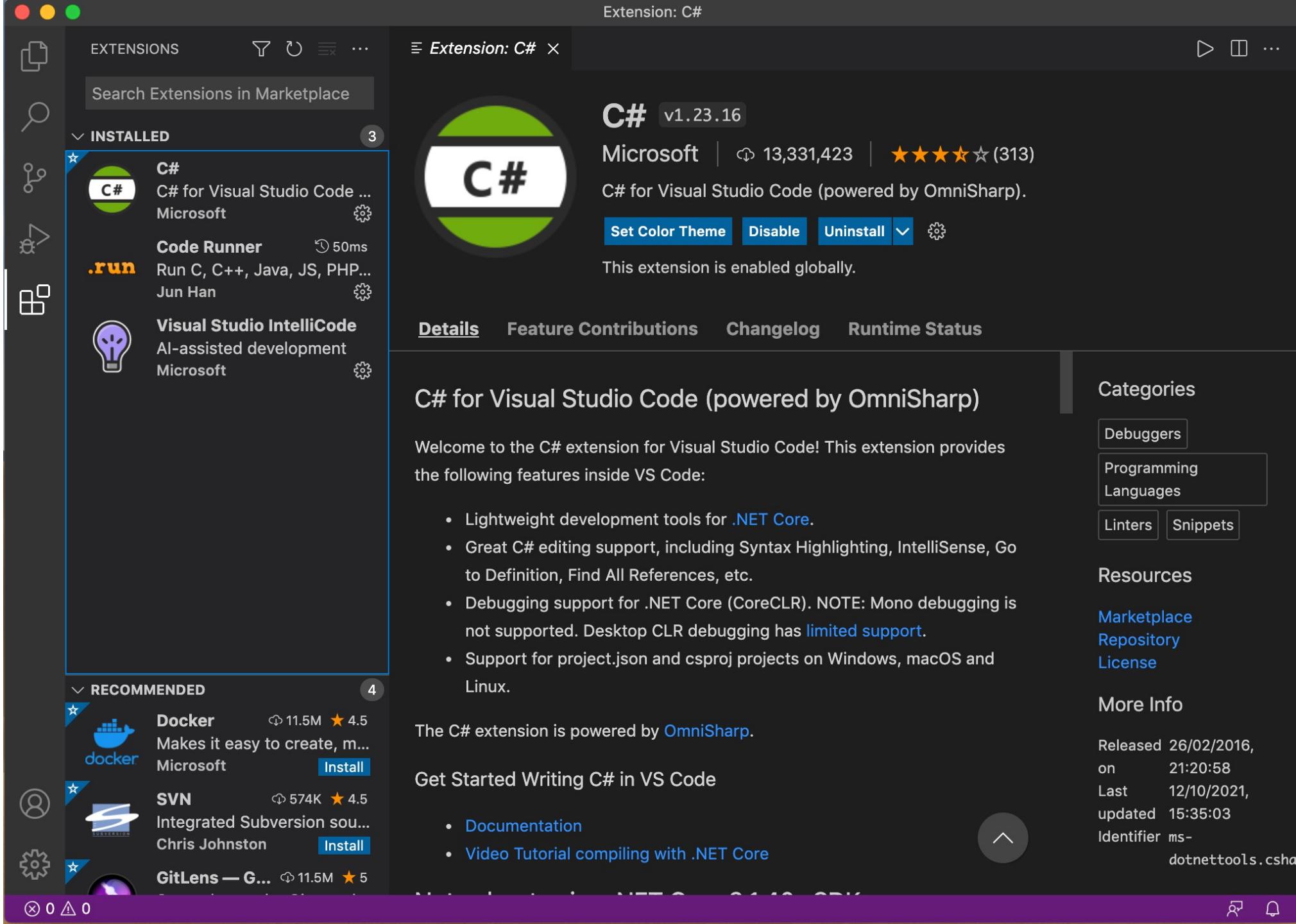




C:\Windows\System32\cmd.exe

Microsoft Windows [Version 10.0.18362.356]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Temp\VSCodeIntro>



EXTENSIONS: MARK... ⌂ ⌄ ⌁ ...

code runn

- Code Runner** ⏱ 37ms
.run Run C, C++, Java, JS, PHP... Jun Han
- JavaScript (...** ⏱ 6.6M ★ 5 Code snippets for JavaScript... charalampos karyp... [Install](#)
- Prettier - ...** ⏱ 16.3M ★ 3.5 Code formatter using prettier... Prettier [Install](#)
- EditorConf...** ⏱ 4.2M ★ 4.5 EditorConfig Support for VS... EditorConfig [Install](#)
- Code Spell ...** ⏱ 3.4M ★ 4.5 Spelling checker for source... Street Side Software [Install](#)
- Chinese (Si...** ⏱ 12.5M ★ 5 中文(简体) Microsoft [Install](#)
- Japanese L...** ⏱ 3.1M ★ 4.5 日本語 Microsoft [Install](#)

PROBLEMS 1 OUTPUT TERMINAL DEBUG CONSOLE

cd "/Users/saqibali/Documents/git/csharp/code/Helloworld/" && dotnet run Program.cs

C# Program.cs U Extension: Code Runner Settings

run in terminal

User Workspace

23 Settings Found Turn on Settings Sync

processes. When set to editor, terminals in the editor area will be marked as dirty when they have child processes. Note that child process detection may not work well for shells like Git Bash which don't run their processes as child processes of the shell.

editor

⚙️ **Code-runner: Run In Terminal** Whether to run code in Integrated Terminal.

Code-runner: Terminal Root
For Windows system, replaces the Windows style drive letter in the command with a Unix style root when using a custom shell as the terminal, like Bash or Cgywin.
Example: Setting this to '/mnt/' will replace 'C:\path' with '/mnt/c/path'

+ ⌄ ⌁ X

bash

Code

settings.json

EXTENSIONS ⌂ ⌂ ⌂ ...

Extension: C# Settings {} settings.json 2 ●

Users > saqibali > Library > Application Support > Code > User > {} settings.json > ...

```
1 {  
2   "editor.suggestSelection": "first",  
3   "vsintellicode.modify.editor.suggestSelection": "automaticallyOverrodeDef  
4   "code-runner.runInTerminal": true  
5   code  
6     ↗ code-runner.clearPreviousOutput  
7     ↗ code-runner.customCommand  
8     ↗ code-runner.cwd  
9     ↗ code-runner.defaultLanguage  
10    ↗ code-runner.enableAppInsights  
11    ↗ code-runner.executorMap  
12    ↗ code-runner.executorMapByFileExtension  
13    ↗ code-runner.executorMapByGlob  
14    ↗ code-runner.fileDirectoryAsCwd  
15    ↗ code-runner.ignoreSelection  
16    ↗ code-runner.languageIdToFileExtensionMap  
17    ↗ code-runner.preserveFocus
```

Search Extensions in Marketplace

INSTALLED 3

- C#** C# for Visual Studio Code ... Microsoft
- Code Runner** 50ms Run C, C++, Java, JS, PHP... Jun Han
- .run** Run C, C++, Java, JS, PHP... Jun Han
- Visual Studio IntelliCode** AI-assisted development Microsoft

RECOMMENDED 4

- Docker** 11.5M ★ 4.5 Makes it easy to create, m... Microsoft **Install**
- SVN** 574K ★ 4.5 Integrated Subversion sou... Chris Johnston **Install**
- GitLens — G...** 11.5M ★ 5

LN 5, COL 9 SPACES: 4 UTF-8 LF JSON WITH COMMENTS ⌂ ⌂ ⌂

EXTENSIONS ⌂ ⌂ ⌂ ... Extension: C# Settings {} settings.json 2 ● ⌂ ⌂ ⌂ ...

Search Extensions in Marketplace

INSTALLED 3

- C#** C# for Visual Studio Code ... Microsoft
- Code Runner** ⚡ 50ms .run Run C, C++, Java, JS, PHP... Jun Han
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- SVN** ⚡ 574K ★ 4.5 Integrated Subversion sou... Chris Johnston **Install**
- GitLens — G...** ⚡ 11.5M ★ 5

```
5 "code-runner.executorMap": [
6   "javascript": "node",
7   "java": "cd $dir && javac $fileName && java $fileNameWithoutExt",
8   "c": "cd $dir && gcc $fileName -o $fileNameWithoutExt && $dir$fileNameWithoutExt",
9   "cpp": "cd $dir && g++ $fileName -o $fileNameWithoutExt && $dir$fileNameWithoutExt",
10  "objective-c": "cd $dir && gcc -framework Cocoa $fileName -o $fileNameWithoutExt",
11  "php": "php",
12  "python": "python -u",
13  "perl": "perl",
14  "perl6": "perl6",
15  "ruby": "ruby",
16  "go": "go run",
17  "lua": "lua",
18  "groovy": "groovy",
19  "powershell": "powershell -ExecutionPolicy ByPass -File",
20  "bat": "cmd /c",
21  "shellscrip": "bash",
22  "fsharp": "fsi",
23  "csharp": "cd $dir && dotnet run $fileName",
24  "vbscript": "cscript //Nologo",
25  "typescript": "ts-node",
26  "coffeescript": "coffee",
27  "scala": "scala",
28  "swift": "swift",
29  "julia": "julia",
30  "crystal": "crystal",
31  "ocaml": "ocaml",
32  "r": "Rscript",
33  "applescript": "osascript",
34  "clojure": "lein exec",
35  "haxe": "haxe --cwd $dirWithoutTrailingSlash --run $fileNameWithoutExt",
36  "rust": "cd $dir && rustc $fileName && $dir$fileNameWithoutExt",
37  "racket": "racket",
38  "scheme": "csi -script",
39  "ahk": "autohotkey" ]
```

Ln 23, Col 51 Spaces: 4 UTF-8 LF JSON with Comments