

OCTOBER 23, 2019

What's New in

# **Visual Studio 2019**

with Microsoft RD & MVP Mark Michaelis



## 4. .NET Core 3.0



Grant Erickson

## 1. Xamarin Forms & WPF



Kevin Bost

## 3. What's New in Visual Studio 2019



Mark Michaelis

## 2. Azure



Philip Spokas





## Meet Mark

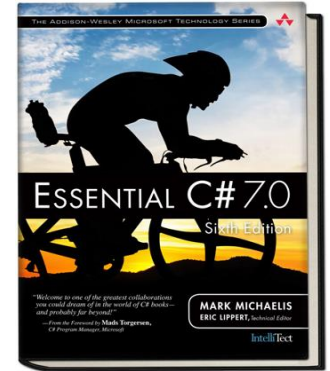


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@IntelliTect, fb.com/IntelliTect



# Refactoring Galore

The image is a collage of Visual Studio screenshots illustrating various refactoring and code quality features:

- Top Left:** A code snippet showing a variable assignment: `string fileName = args[0]?.Remove(0, 5);`. A lightbulb icon indicates a suggestion. A tooltip shows: `(local variable) string fileName`, `Unnecessary assignment of a value to 'fileName'`, and a link to `Show potential fixes (Alt+Enter or Ctrl+.)`.
- Top Center:** A 'Fix formatting' menu with options: `Fix formatting`, `Invert if`, `Wrapping`, and `Configure or Suppress issues`.
- Top Right:** A code snippet showing a conditional statement: `args[0]?.ToLower().StartsWith("file:") ?? false`. A tooltip shows: `if ( ... args[0]?.ToLower().StartsWith("file:") ?? false)`.
- Bottom Left:** A code snippet showing a variable assignment: `string fileName = args[0]?.Remove(0, 5);`. A lightbulb icon indicates a suggestion. A tooltip shows: `Use discard '_'`, `Configure or Suppress issues`, and `IDE0059 Unnecessary assignment of a value`.
- Bottom Center:** A 'Preview Changes' window showing a tree view of changes: `Changes`, `Listing04.37.NullConditionalOperator.cs`, and `if ( ... args[0]?.ToLower().StartsWith("file:") ?? false)`.
- Bottom Right:** A 'Preview Code Changes' window showing a code diff. The diff shows a change in a conditional statement: `if ( ... args[0]?.ToLower().StartsWith("file:") ?? false)`. The status bar at the bottom indicates `No issues found`, `Ln: 27 Ch: 1`, and `MIXED`. Buttons for `Apply` and `Cancel` are visible.

# Apply Styles/Format issues in Bulk

The screenshot shows an IDE interface with a code editor and a sidebar. The code editor contains the following C# code:

```
string fileName = args[0]?Remove(0, 5);
```

The sidebar on the left contains the following options:

- Fix formatting
- Generate method 'Program.Remove'
- Wrap every argument
- Unwrap and indent all arguments
- Configure or Suppress issues

The 'Fix formatting' option is selected, and a dropdown menu is open showing the following options:

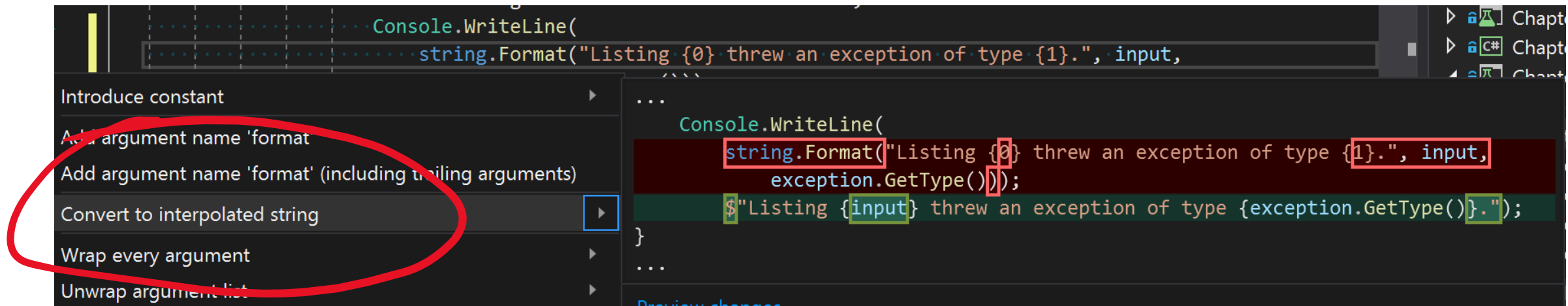
- IDE0055 Fix formatting
- ...
- args[0]?.ToLower().StartsWith("file:")??false)
- {
- string fileName = args[0]?Remove(0, 5);
- string fileName = args[0]?Remove(0, 5);
- // ...
- ...

The 'Preview changes' section at the bottom of the dropdown menu shows the following text:

Fix all occurrences in: [Document](#) | [Project](#) | [Solution](#)

A red circle is drawn around the 'Fix all occurrences in' section of the dropdown menu.

# Convert to Interpolated String

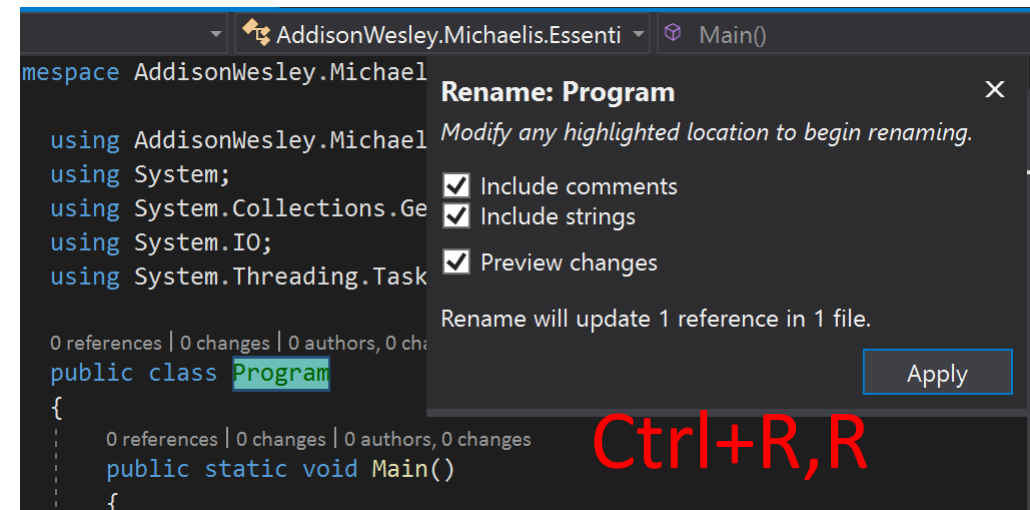


# csproj Level Renames

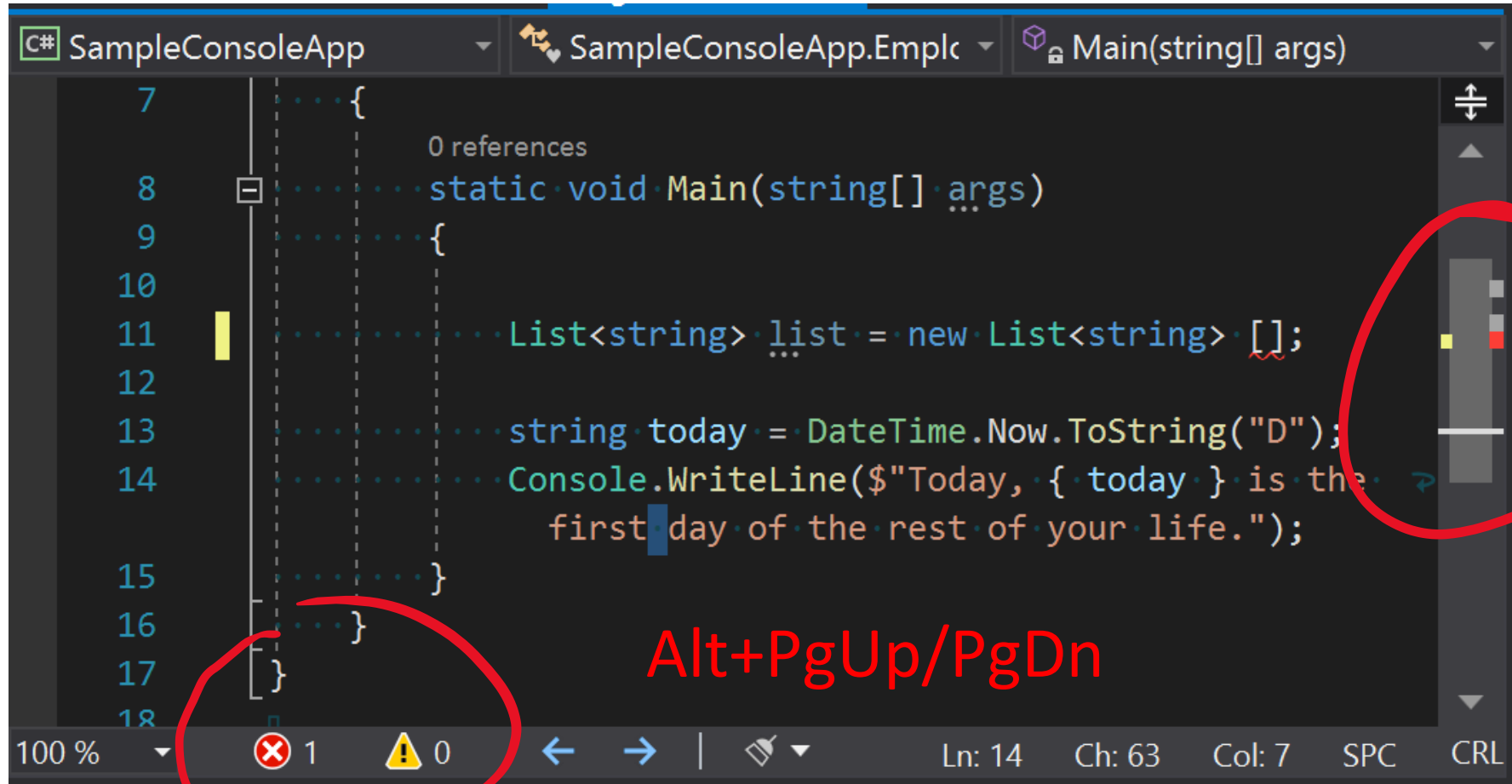
Project Rename Updates Binary and Namespace default

Renaming file when updating interface, enum, class (Ctrl+R,R)

Introducing local variables after creating an initializer

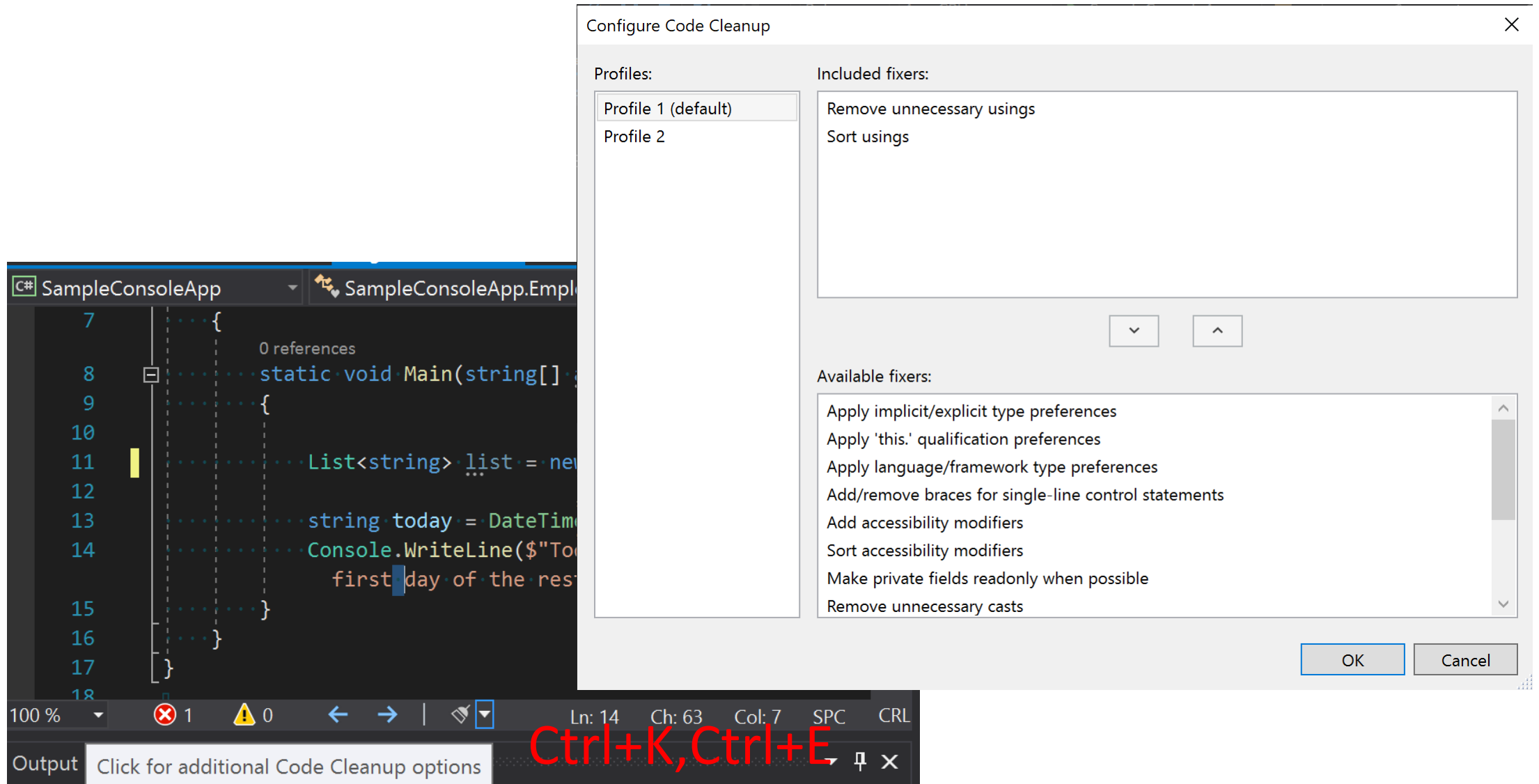


# Document Health Indicator

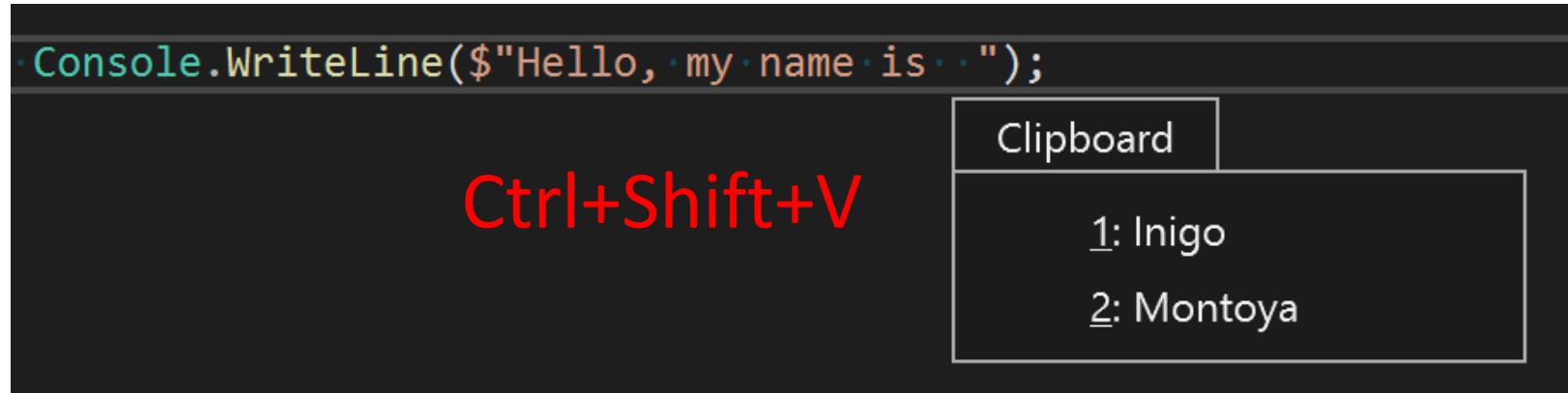




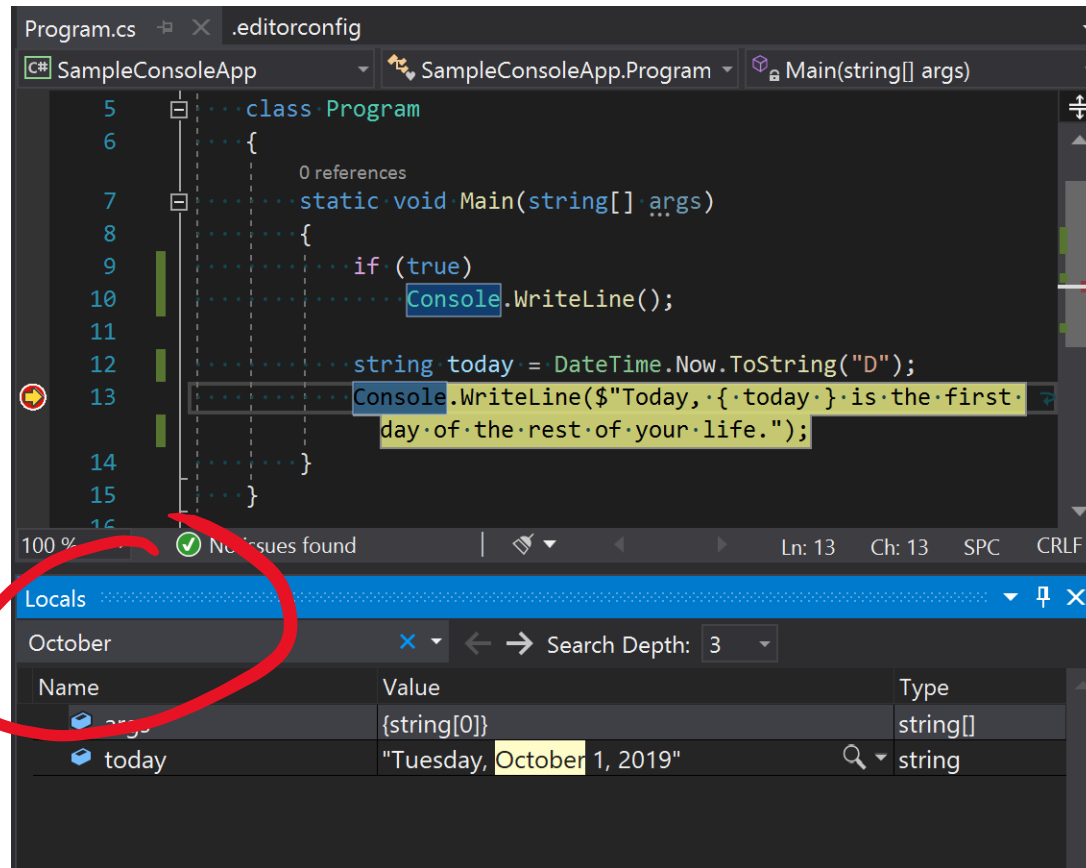
# Code Cleanup



# Clipboard Ring



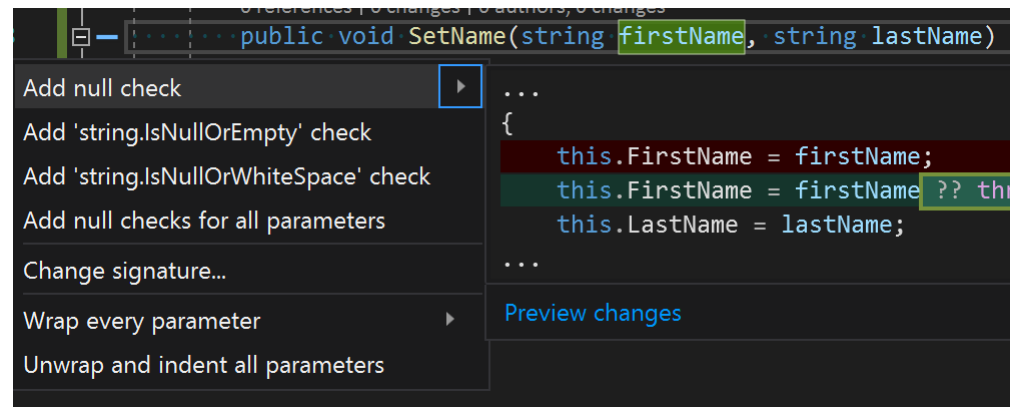
# Search Variable Values When Debugging



Work in:

- autos,
- locals, and
- watch window

# Add Parameter Null Checking



# Improved search

Settings

Commands

Install Options

The image shows two overlapping screenshots of the Visual Studio search interface. The top screenshot shows a search for 'tes expl' with results for 'Test Explorer' and 'Solution Explorer'. The bottom screenshot shows a search for 'android' with results for various Android-related components and tools. The search bar at the bottom of the bottom screenshot contains the text 'Search online for "android"'.

**Search: tes expl**

- All** **Code** **Visual Studio**
- Test Explorer** (Ctrl+E, T)  
View > Test Explorer
- Solution Explorer** (Ctrl+W, S)  
View > Solution Explorer
- Server Explorer** (Ctrl+W, L)  
View > Server Explorer

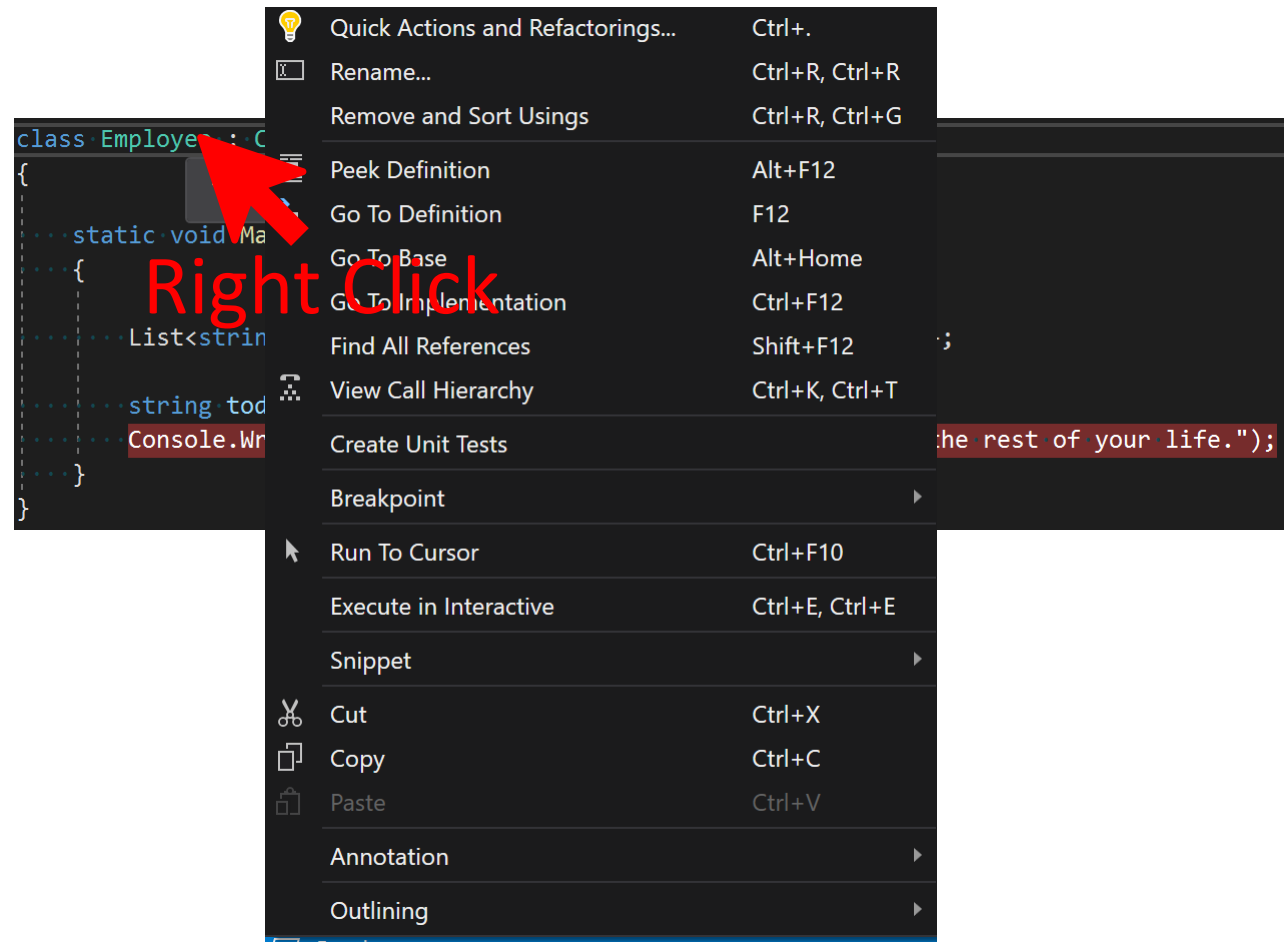
**Search: android**

- All** **Code** **Visual Studio**
- Install Android SDK setup (API level 25) (local install for Mobile Individual Component Google Android framework and test Android apps. For Android API level .....** (Ctrl+')
- Install Android SDK setup (API level 28) Individual Component Google Android framework and test Android apps. For Android API level .....** (Ctrl+R, T)
- Install Google Android Emulator (API Level 25) (local install) Individual Component ...for debugging Android-targeting code without ... device. For Android API level .....**
- Install Intel Hardware Accelerated Execution Manager (HAXM) (Individual Component ...the Google Android Emulator for Visual Studio Android SDK folder.**
- Install C++ Android development tools Individual Component The core tools needed for creating and developing Android applications inside...**
- Install Android IDE support for Unreal engine Individual Component ...Visual Studio Android components needed to build, deploy, and debug Unreal...**
- Class Library (.NET Standard) C#**  
A project for creating a class library that targets .NET Standard.

Search online for "tes expl"

Search online for "android"

# Navigation Between Constructs



# Solution Loading Performance Improvements

```
16  
17 ☐ args[0]?.ToLower().StartsWith("file:")??false)  
18 {  
19  
20     string fileName = args[0]?.Remove(0, 5);  
21     // ...  
22 }
```

Downloading IntelliSense index for nuget.org

Running low priority background processes

Evaluating (82 tasks in queue)

Updating Projects

Loading 1/2: Synchronizing projects with files on disk...

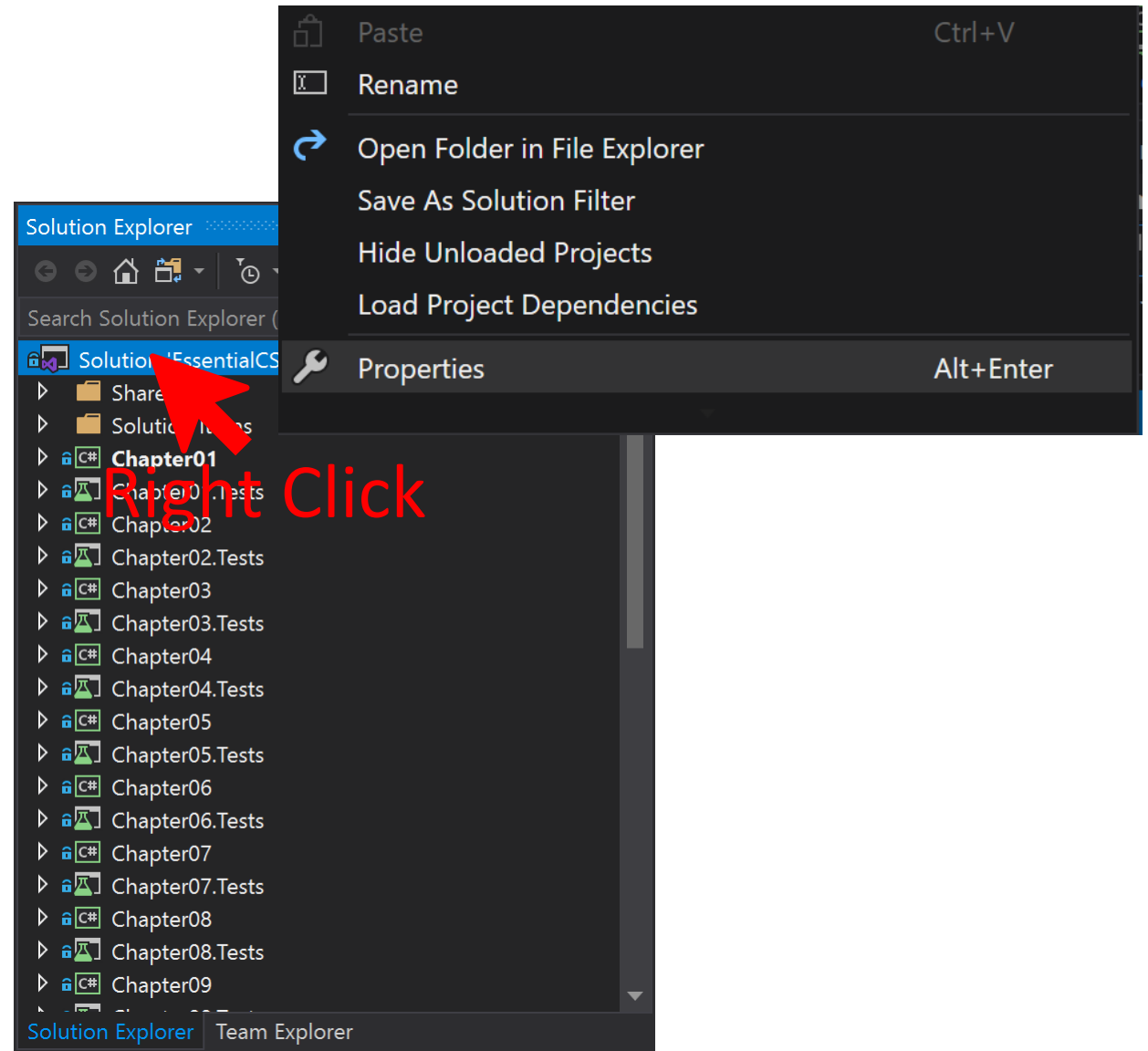
☐ Ready

# Solution Filters

Load solutions with projects unloaded

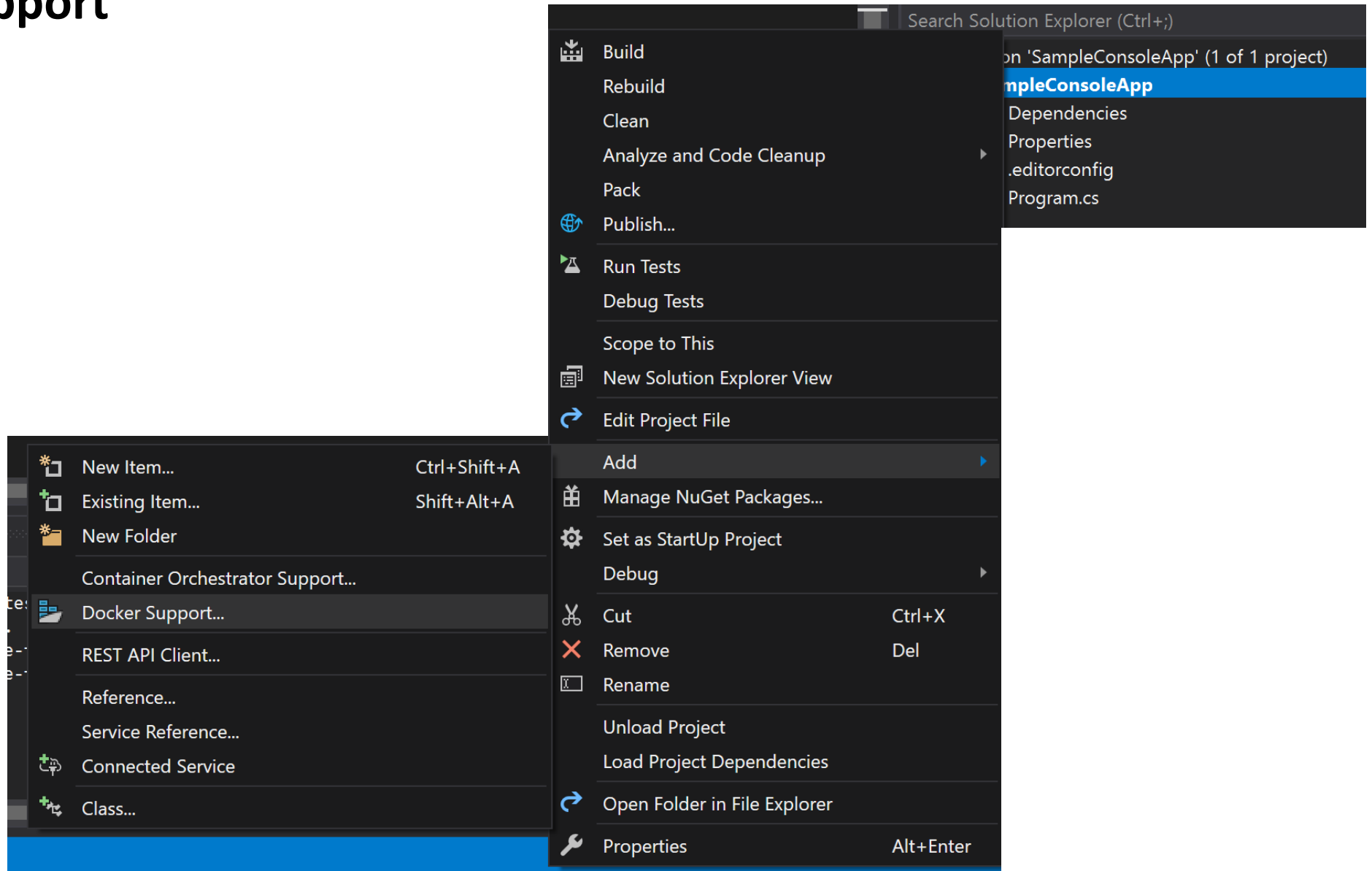
Load project dependencies

Save solution filters (slfn) – a JSON file

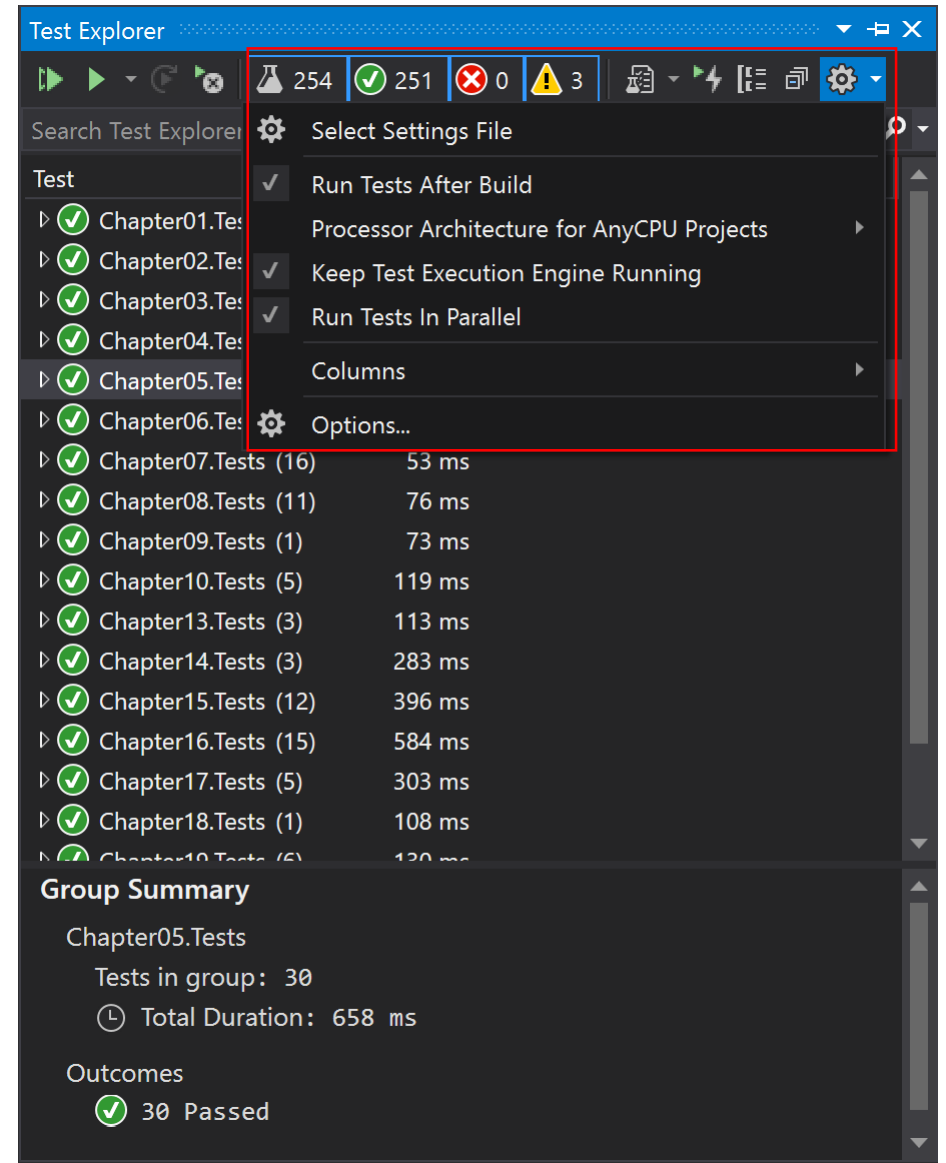
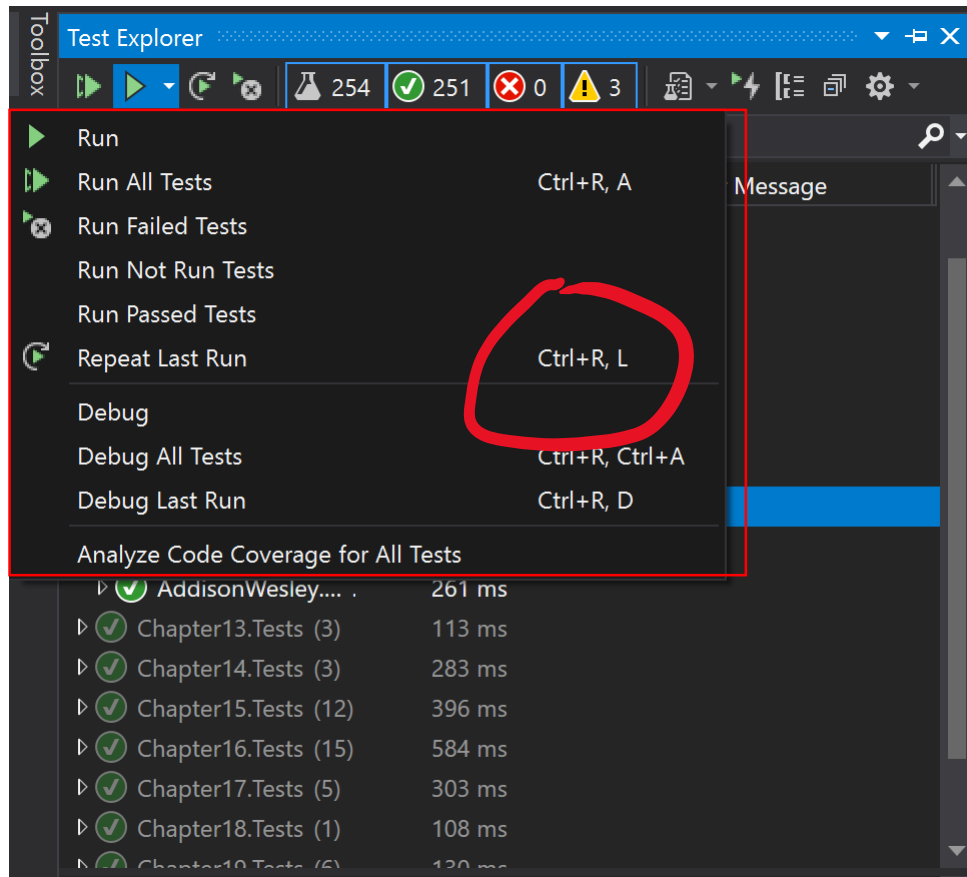




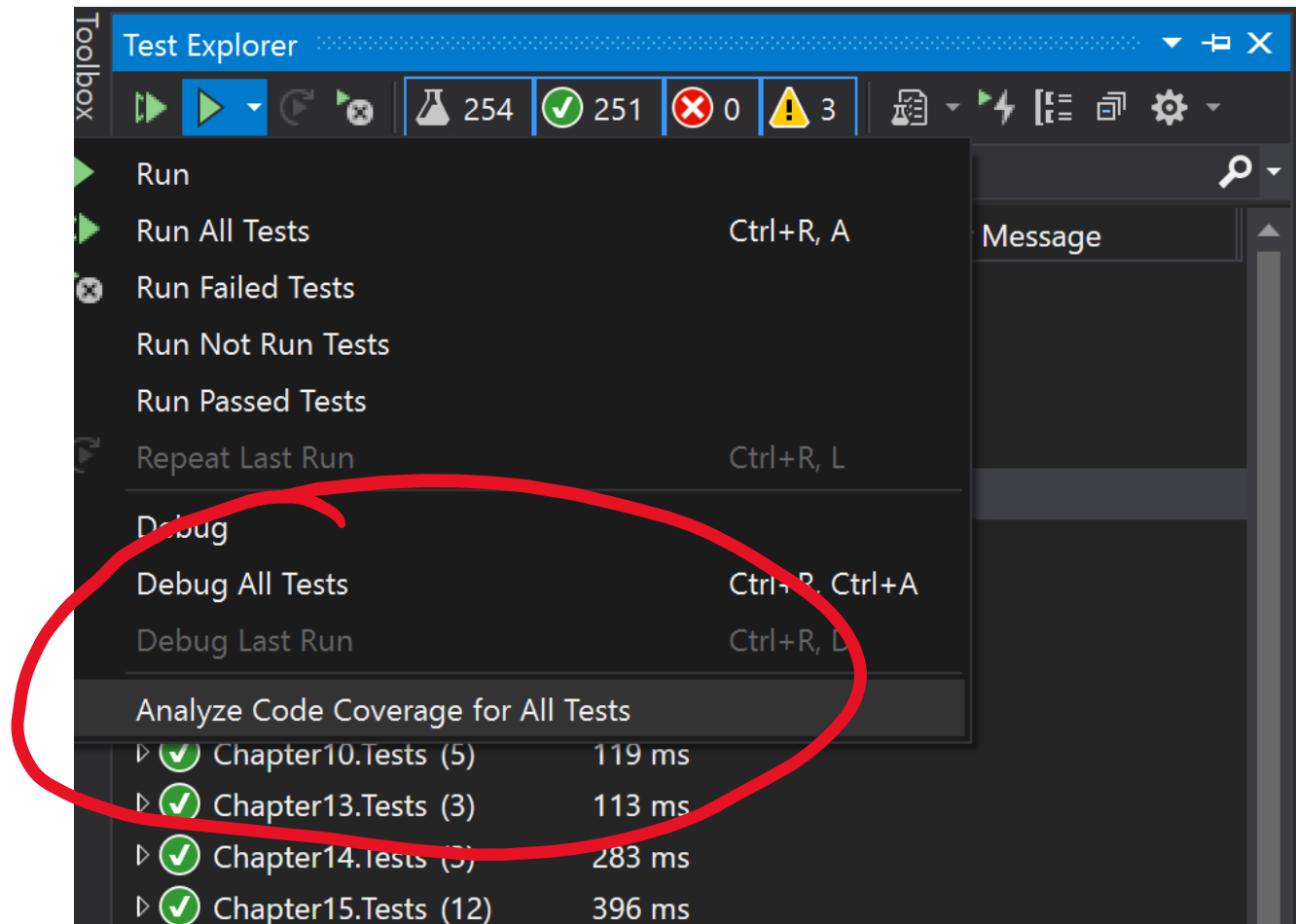
# Add Docker Support



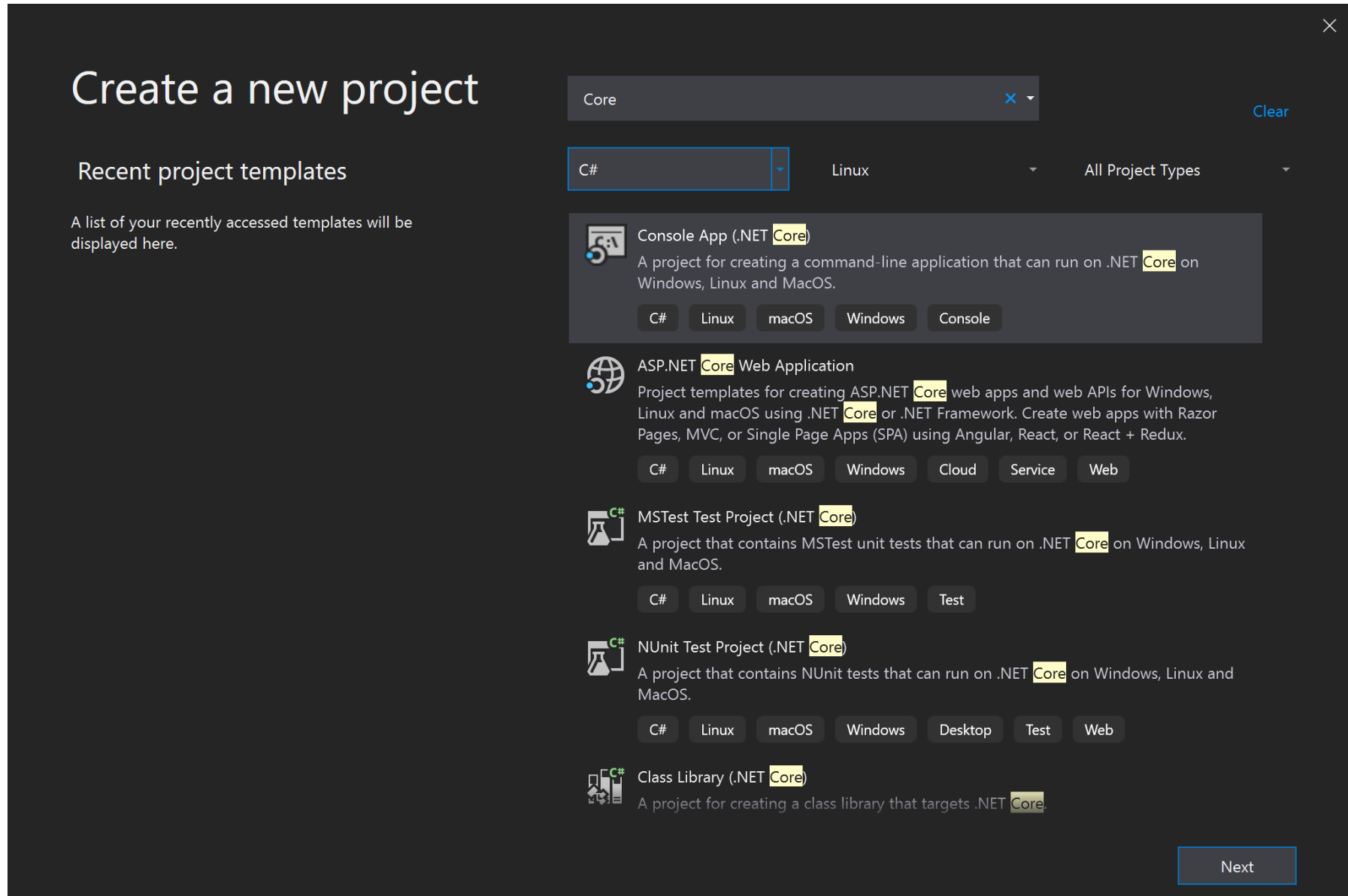
# New and Improved Test Explorer



# Code Coverage for .NET Core Unit Testing



# New Project Dialog



# Visual Studio 2019

## Open recent

As you use Visual Studio, any projects, folders, or files that you open will show up here for quick access.

You can pin anything that you open frequently so that it's always at the top of the list.

## Get started



### Clone or check out code

Get code from an online repository like GitHub or Azure DevOps



### Open a project or solution

Open a local Visual Studio project or .sln file



### Open a local folder

Navigate and edit code within any folder



### Create a new project

Choose a project template with code scaffolding to get started

[Continue without code →](#)

# Code Analysis

SampleConsoleApp.ruleset    NuGet: SampleConsoleApp    Sample

Group by: Analyzer ID

ID	Name
<input type="checkbox"/> Managed Binary Analysis	
<input type="checkbox"/> Microsoft.CodeAnalysis.Ana...	
<input checked="" type="checkbox"/> Microsoft.CodeAnalysis.CSh...	
<input checked="" type="checkbox"/> Microsoft.CodeAnalysis.CSh...	
<input checked="" type="checkbox"/> RS1002	Missing kind argument when registering
<input checked="" type="checkbox"/> RS1003	Unsupported SymbolKind argument wh
<input checked="" type="checkbox"/> RS1005	ReportDiagnostic invoked with an unsup
<input checked="" type="checkbox"/> RS1006	Invalid type argument for DiagnosticAna
<input checked="" type="checkbox"/> RS1008	Avoid storing per-compilation data into
<input checked="" type="checkbox"/> RS1012	Start action has no registered actions.
<input checked="" type="checkbox"/> RS1013	Start action has no registered non-end a
<input checked="" type="checkbox"/> RS1014	Do not ignore values returned by metho
<input checked="" type="checkbox"/> RS1022	Do not use types from Workspaces asse
<input checked="" type="checkbox"/> RS1023	Upgrade MSBuildWorkspace
<input checked="" type="checkbox"/> Microsoft.CodeAnalysis.CSh...	
<input checked="" type="checkbox"/> Microsoft.CodeAnalysis.Feat...	

Solution Explorer

Search Solution Explorer (Ctrl+;)

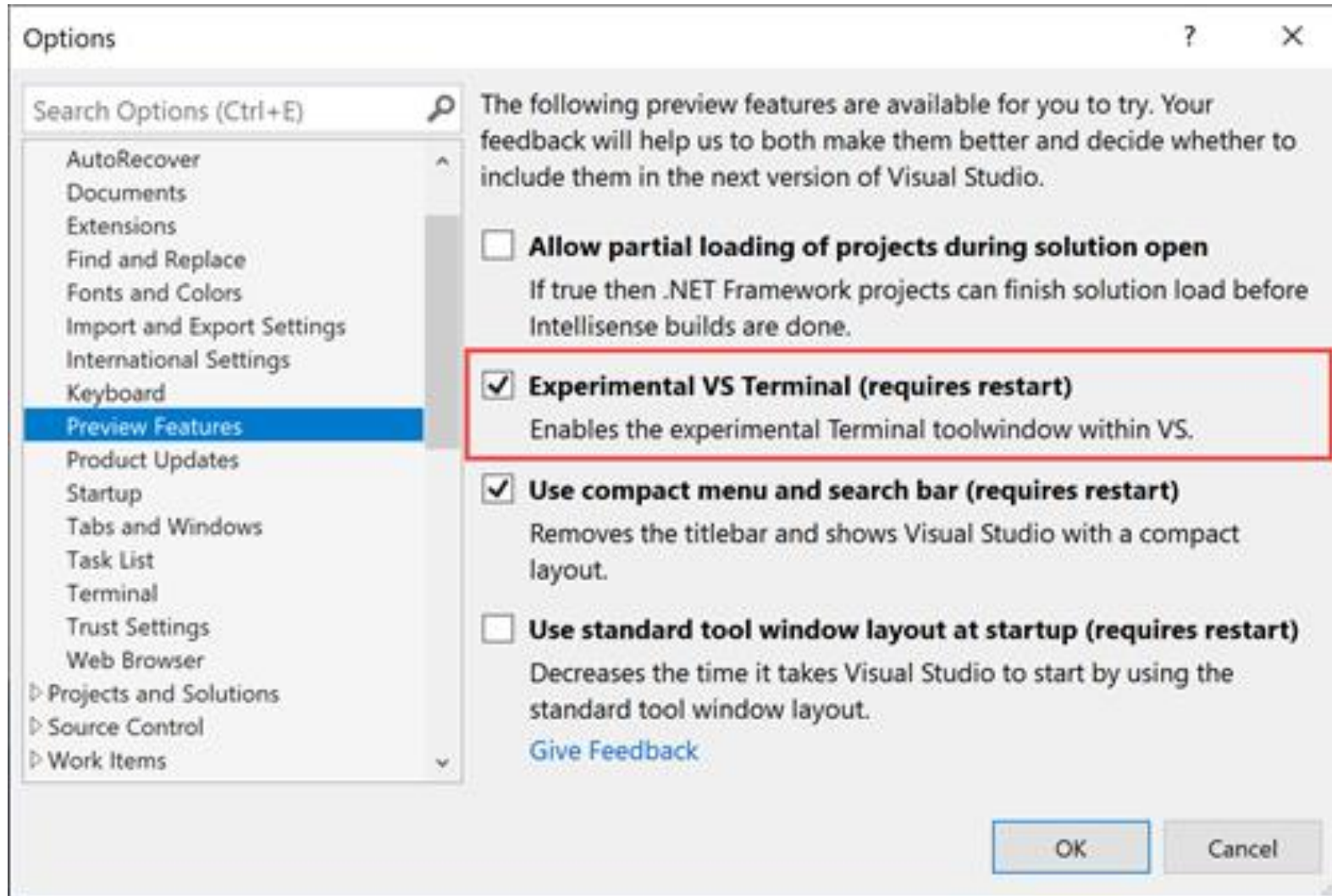
Solution 'SampleConsoleApp' (1 of 1 project)

- + C# SampleConsoleApp
  - Dependencies
    - Analyzers
      - Microsoft.CodeAnalysis.Analyzers
      - Microsoft.CodeAnalysis.CSharp.Analyzers
        - ⚠ RS1002: Missing kind argument when
        - ⚠ RS1003: Unsupported SymbolKind argu
        - ⚠ RS1005: ReportDiagnostic invoked with
        - ⚠ RS1006: Invalid type argument for Diag
        - ⚠ RS1008: Avoid storing per-compilation
        - ⚠ RS1012: Start action has no registered
        - ⚠ RS1013: Start action has no registered
        - ⚠ RS1014: Do not ignore values returned
        - ⚠ RS1022: Do not use types from Worksp
        - ⚠ RS1023: Upgrade MSBuildWorkspace
    - Frameworks
    - Packages
    - bin

Multiple

Multiple

# Visual Studio Terminal



# **.NET Core Updates**

Support for Nullable

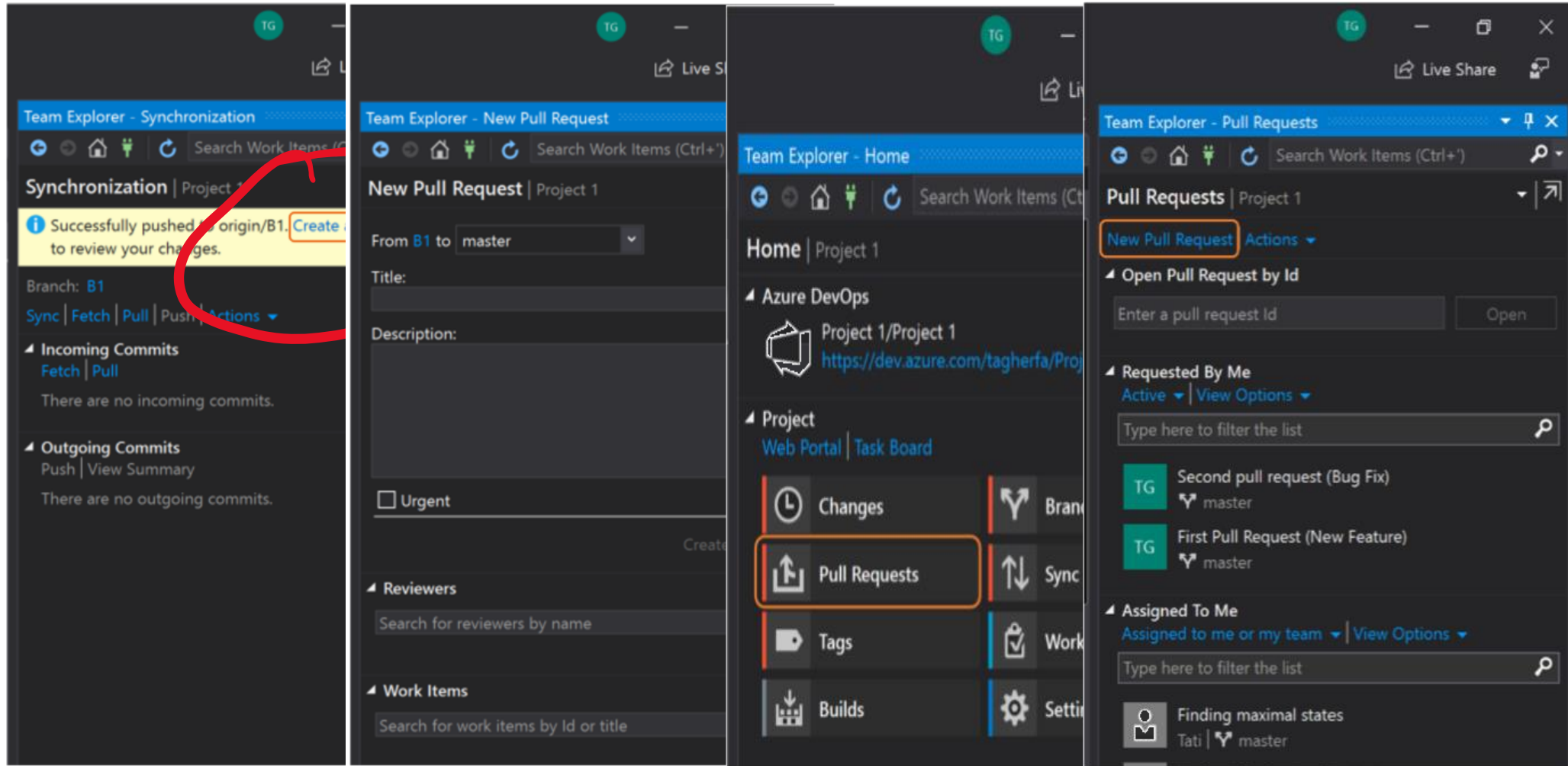
.NET Core 3.0

.NET Framework 4.8

F# 4.7



# Pull Request: GitHub/Azure DevOps Integration



Creating a pull request right after a push

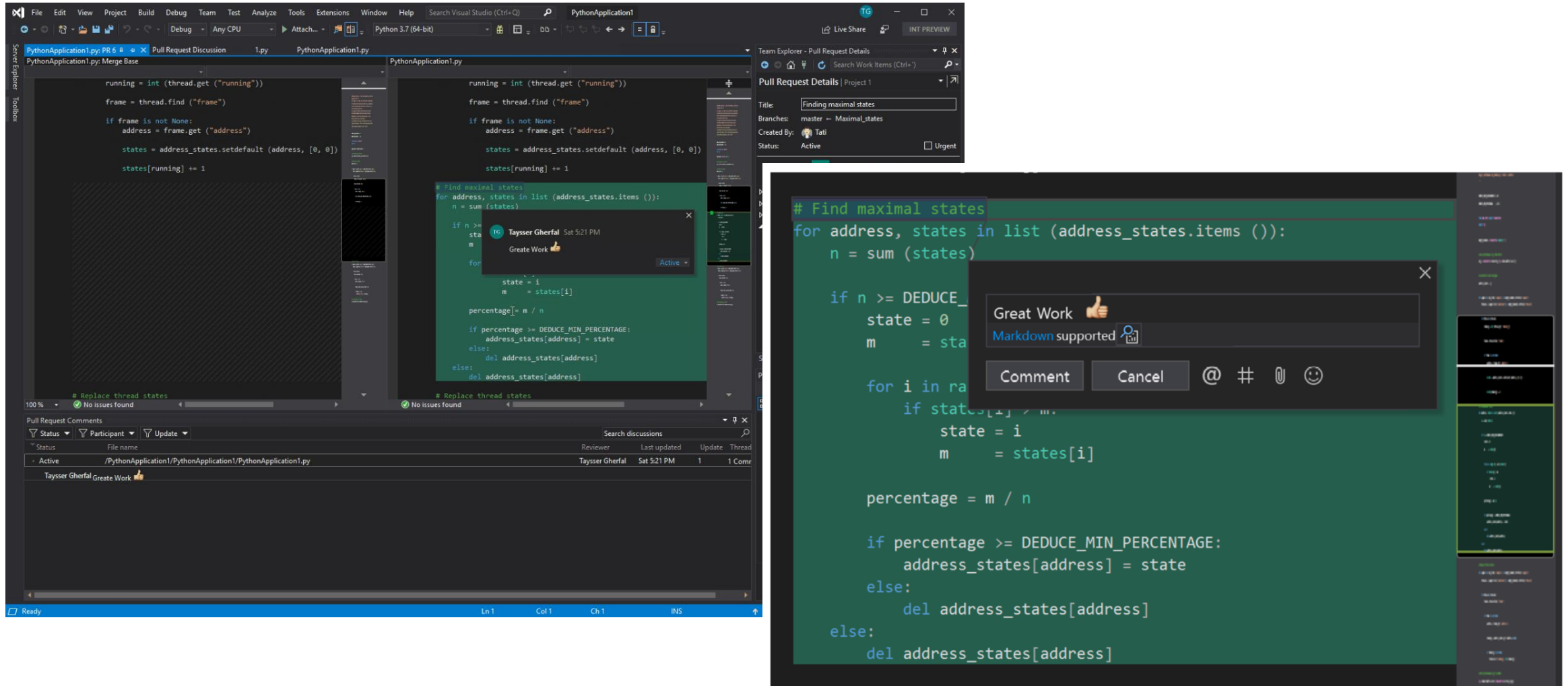
New pull request form

Team Explorer's home page

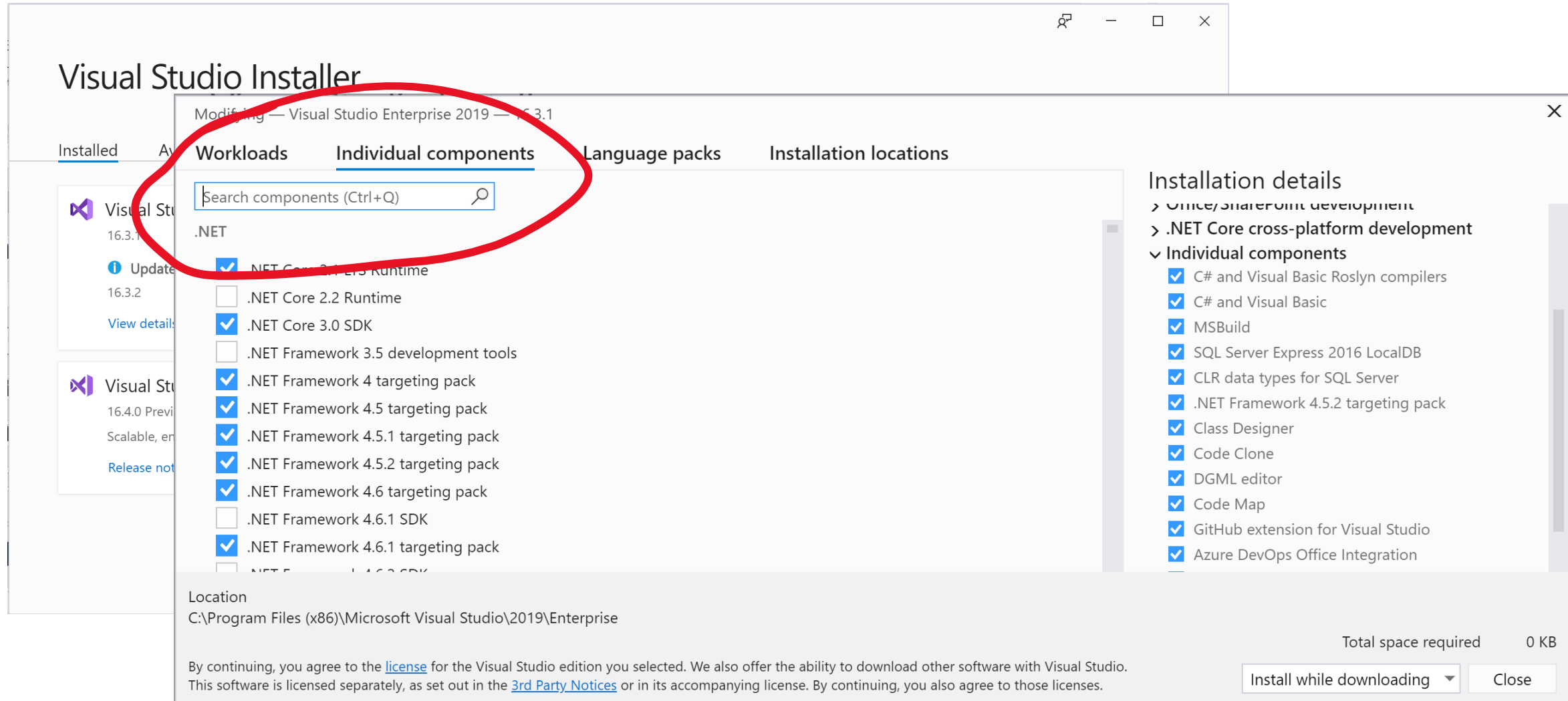
Pull requests page

<https://devblogs.microsoft.com/visualstudio/code-reviews-using-the-visual-studio-pull-requests-extension/>

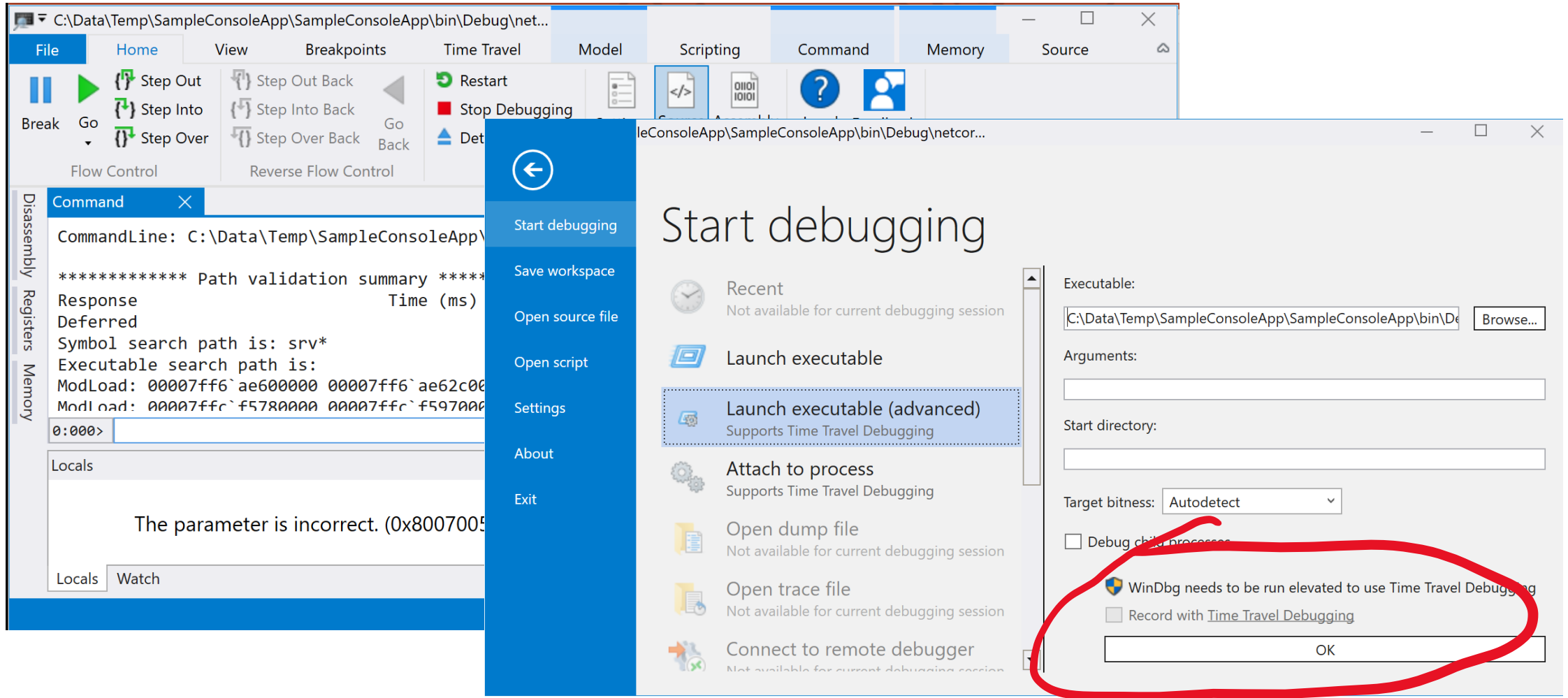
# Pull Request: Review Pull Requests



# Installer... side-by-side, search,

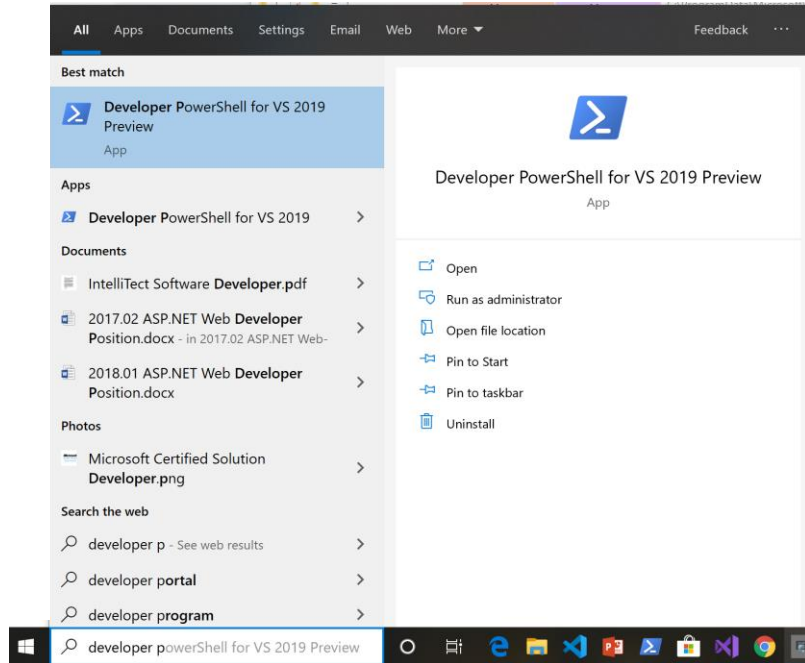


# Time Travel Debugging (TTD)



<https://docs.microsoft.com/en-us/windows-hardware/drivers/debugger/debugging-using-windbg-preview>

# Developer PowerShell



```
Developer PowerShell for VS 2019 Preview
PS C:\Users\mark\source\repos> h

Id CommandLine
--
1 &{Import-Module "C:\Program Files (x86)\Microsoft Visual Studio\2019\Pre
view\Common7\Tools\Microsoft.VisualStudio.DevShell

PS C:\Users\mark\source\repos> get-module

ModuleType Version Name ExportedCommands
-----
Manifest 3.1.0.0 Microsoft.PowerShell.Utility {Add-Member, Ad...
Binary 16.0.0.0 Microsoft.VisualStudio.DevShell {Enter-VsDevShe...
Script 2.0.0 PSReadline {Get-PSReadLine...

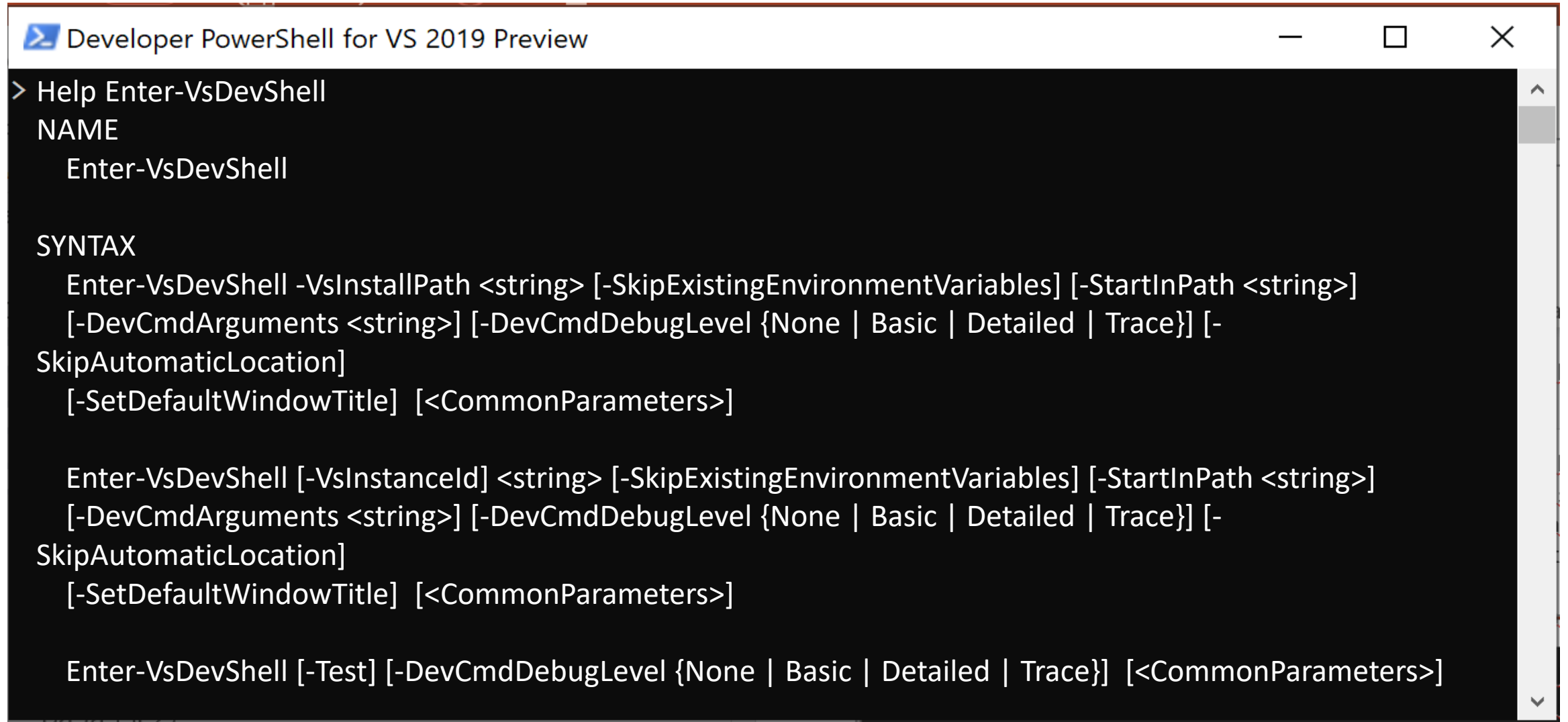
PS C:\Users\mark\source\repos> get-command -module Microsoft.VisualStudio.Dev
Shell

CommandType Name Version
-----
Cmdlet Enter-VsDevShell 16.0.0.0
Cmdlet Send-VsDevShellTelemetry 16.0.0.0

PS C:\Users\mark\source\repos>
```

```
C:\Windows\SysWOW64\WindowsPowerShell\v1.0\powershell.exe -NoExit -Command
"& { Import-Module
.\Common7\Tools\vsdevshell\Microsoft.VisualStudio.DevShell.dll; Enter-
VsDevShell -InstanceId ba5a33e2}"
```

# Enter-VsDevShell



```
> Help Enter-VsDevShell
NAME
    Enter-VsDevShell

SYNTAX
    Enter-VsDevShell -VsInstallPath <string> [-SkipExistingEnvironmentVariables] [-StartInPath <string>]
    [-DevCmdArguments <string>] [-DevCmdDebugLevel {None | Basic | Detailed | Trace}] [-
SkipAutomaticLocation]
    [-SetDefaultWindowTitle] [<CommonParameters>]

    Enter-VsDevShell [-VsInstanceId] <string> [-SkipExistingEnvironmentVariables] [-StartInPath <string>]
    [-DevCmdArguments <string>] [-DevCmdDebugLevel {None | Basic | Detailed | Trace}] [-
SkipAutomaticLocation]
    [-SetDefaultWindowTitle] [<CommonParameters>]

    Enter-VsDevShell [-Test] [-DevCmdDebugLevel {None | Basic | Detailed | Trace}] [<CommonParameters>]
```



# Visual Studio Enterprise



# Live Unit Testing

The screenshot displays the 'Live Unit Testing' window. At the top, a toolbar shows icons for running tests, with counts: 254 (flask icon), 251 (green checkmark), 0 (red X), and 3 (yellow warning triangle). Below the toolbar is a table of test results.

Test	Duration	Traits	Err...
▶ ✓ Chapter01.Tests (17)	65 ms		
▶ ✓ Chapter02.Tests (26)	83 ms		
▶ ✓ Chapter03.Tests (7)	59 ms		
▶ ✓ Chapter04.Tests (57)	104 ms		
▶ ✓ Chapter05.Tests (30)	458 ms		
▶ ✓ Chapter06.Tests (30)	143 ms		
▶ ✓ Chapter07.Tests (16)	94 ms		
▶ ✓ Chapter08.Tests (11)	92 ms		
▶ ✓ Chapter09.Tests (1)	67 ms		
▶ ✓ Chapter10.Tests (5)	117 ms		
▶ ✓ Chapter13.Tests (3)	76 ms		
▶ ✓ Chapter14.Tests (3)	95 ms		
▶ ✓ Chapter15.Tests (12)	231 ms		
▶ ✓ Chapter16.Tests (15)	212 ms		
▶ ✓ Chapter17.Tests (5)	99 ms		
▶ ✓ Chapter18.Tests (1)	34 ms		

On the right side, the 'Group Summary' for 'Chapter02.Tests' is shown:

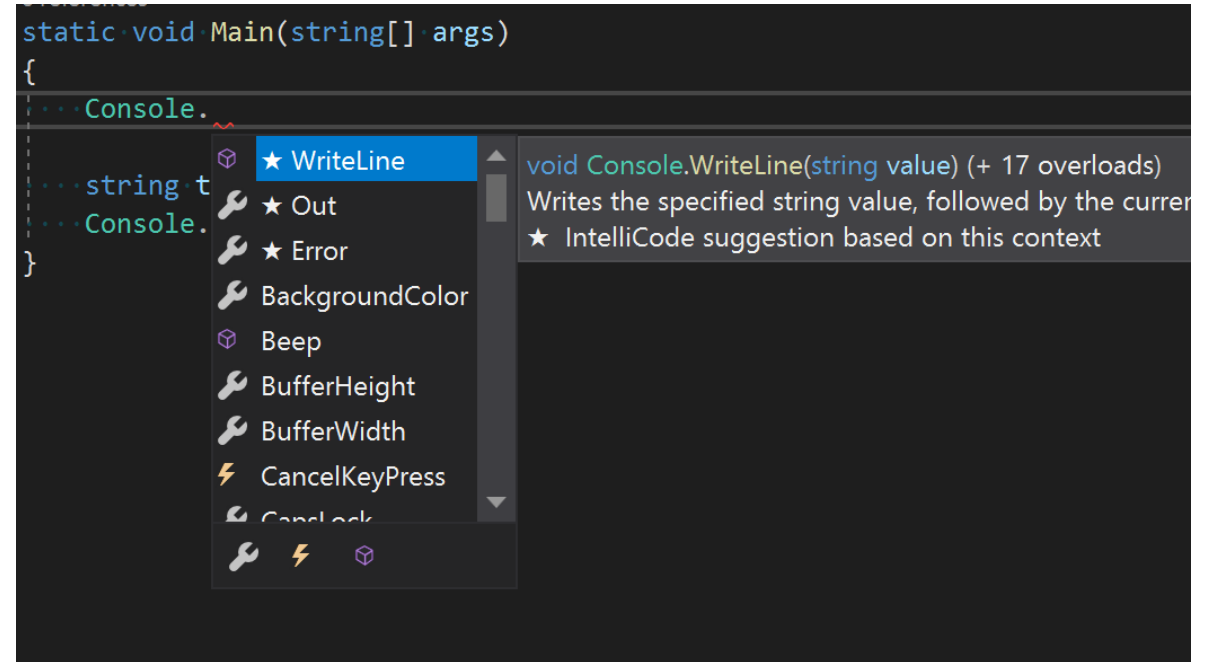
- Chapter02.Tests
- Tests in group: 26
- ⌚ Total Duration: 83 ms
- Outcomes
  - ✓ 25 Passed
  - ⚠ 1 Skipped



# IntelliCode

Get AI-assisted recommendations

Based on code scans of Github and your own local code base to create a machine learning model.



# IntelliCode

Recommendations for your types, based on your code (Preview -C#)

Argument Completion (Preview)

Inferring code style and formatting conventions (Preview)

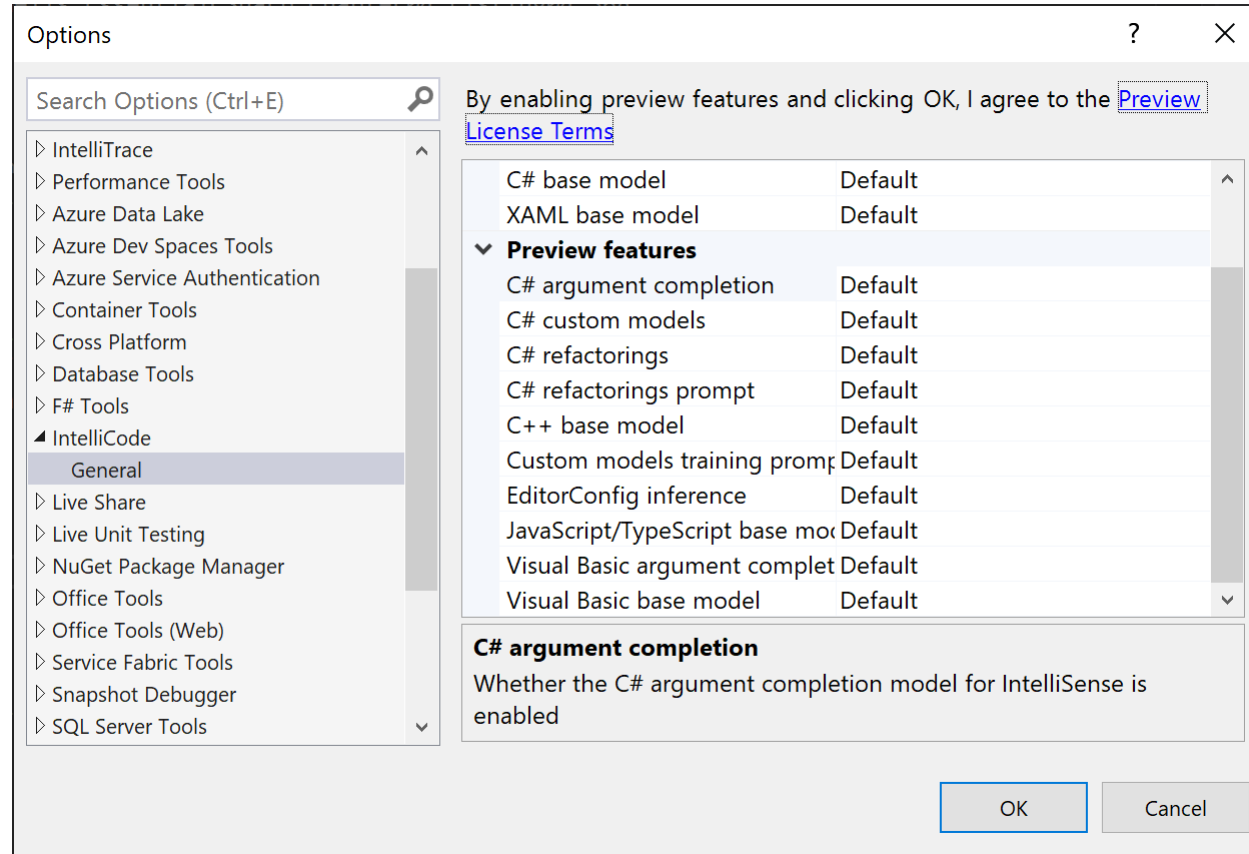
Deliver context-aware code completions

Guide developers to adhere to the patterns and styles of their team

Find difficult-to-catch code issues

Focus code reviews by drawing attention to areas that really matter

# IntelliCode Configuration





## Meet Mark



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