INF 272
Advanced Programming

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Faculty of Engineering, Built Environment and Information Technology
Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Session 02 - Getting started with Visual Studio and GitHub

In today's session

- Brief admin notes.
- Getting started with Visual Studio 2022
- The anatomy of a Visual Studio project
- Getting started with GitHub

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Brief Admin Notes

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Please take note.

.....Practical registration

- Practical registration will close on Friday 13:00PM on 21 February.
- Students SHOULD register for a practical session as there will be work to be completed in the practical sessions. **Walk-in's will not be accommodated.**

- Please note, **when a session is full, then it is full**. No exceptions will be made.
- Student may have to reorganise their timetable to fit everything it.
- A lecture timetable is not a matter of convenience.

- Practical session will start in the week of 24 February. If a student misses a practical session x2 times after each other without making the coordinator aware of it, then the student will be deregistered from the chosen session.
- Marking will only be done in the practical sessions. If the necessary work is not downloaded from GitHub during the session, then the work will not be marked.

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Getting started with Visual Studio 2022

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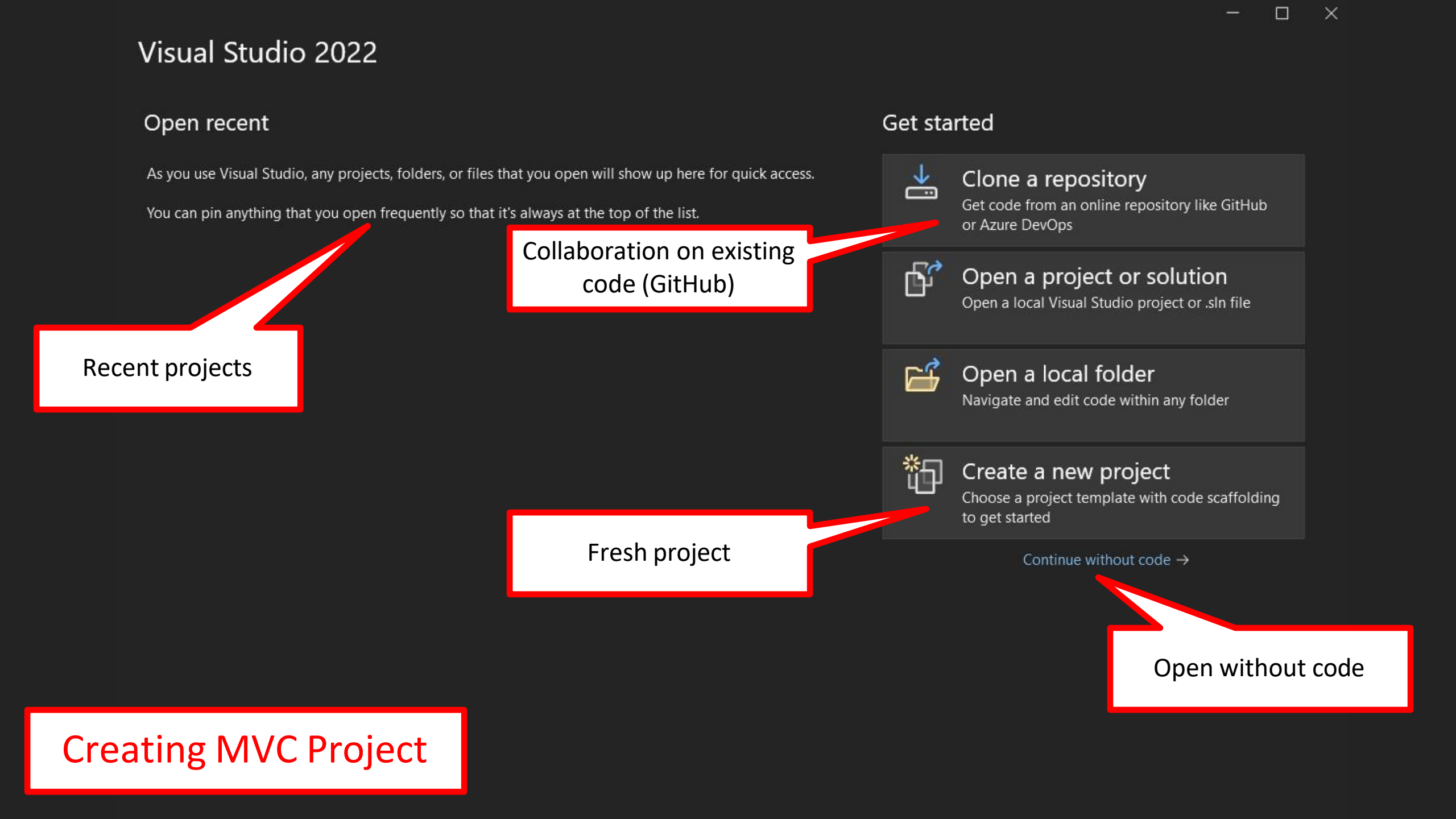
The following a very simplified very quick example. Read what is stated.

Students will make use of a lot more VS functionality than was used previously.

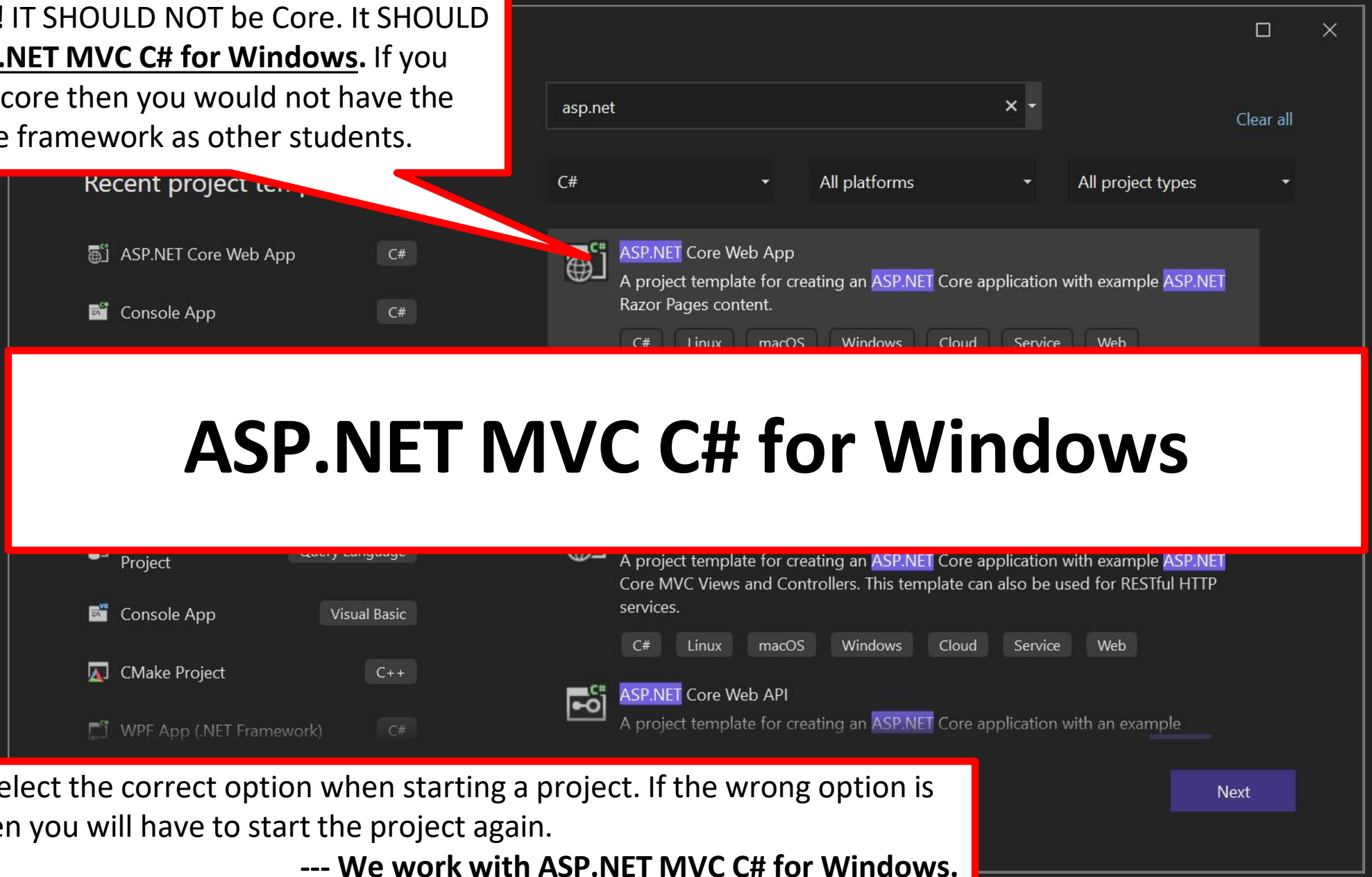
Visual Studio

Why VS2022 and not VS2019?

- More functionality
- Less resource intensive
- Additional learning support for users
- Can keep up with the .NET development roadmap
- To keep up with latest functionality and processes


Visual Studio 2022
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 a repository
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 →
Recent projects
Collaboration on existing code (GitHub)
Fresh project
Open without code
Creating MVC Project

Careful!!!! IT SHOULD NOT be Core. It SHOULD be **ASP.NET MVC C# for Windows.** If you choose core then you would not have the same framework as other students.



ASP.NET MVC C# for Windows

Carefully select the correct option when starting a project. If the wrong option is chosen then you will have to start the project again.

--- We work with ASP.NET MVC C# for Windows.

Create a new project

Recent project templates

A list of your recently accessed templates will be displayed here.

MVC

Clear all

C# | Windows | All project types

ASP.NET Core Web API

A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.

C# Linux macOS Windows Cloud Service Web WebAPI

ASP.NET Core Web App (Model-View-Controller)

A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

C# Linux macOS Windows Cloud Service Web

ASP.NET Web Application (.NET Framework)

Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.

C# Windows Cloud Web

Other results based on your search

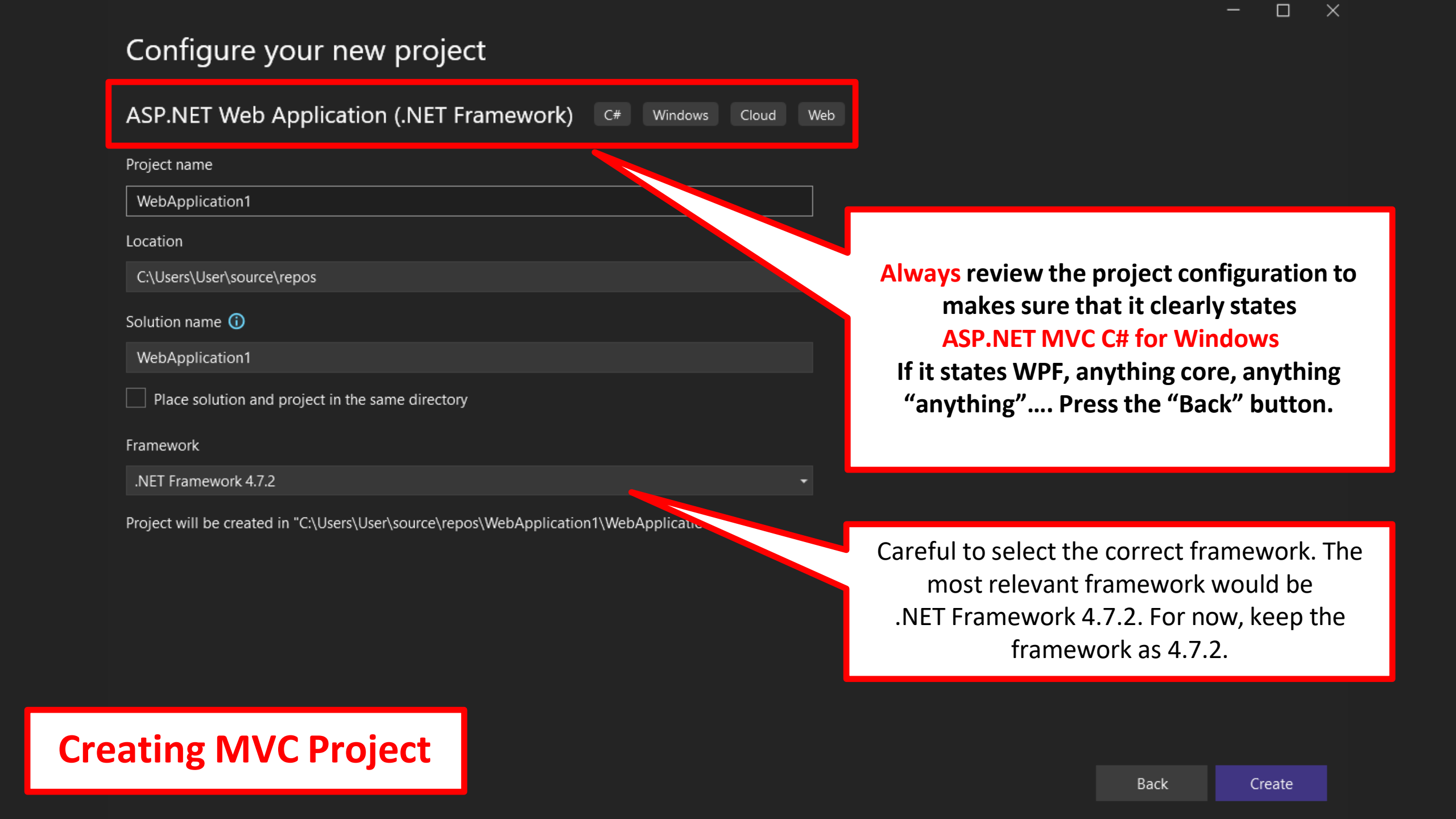
ASP.NET Web Application (.NET Framework)

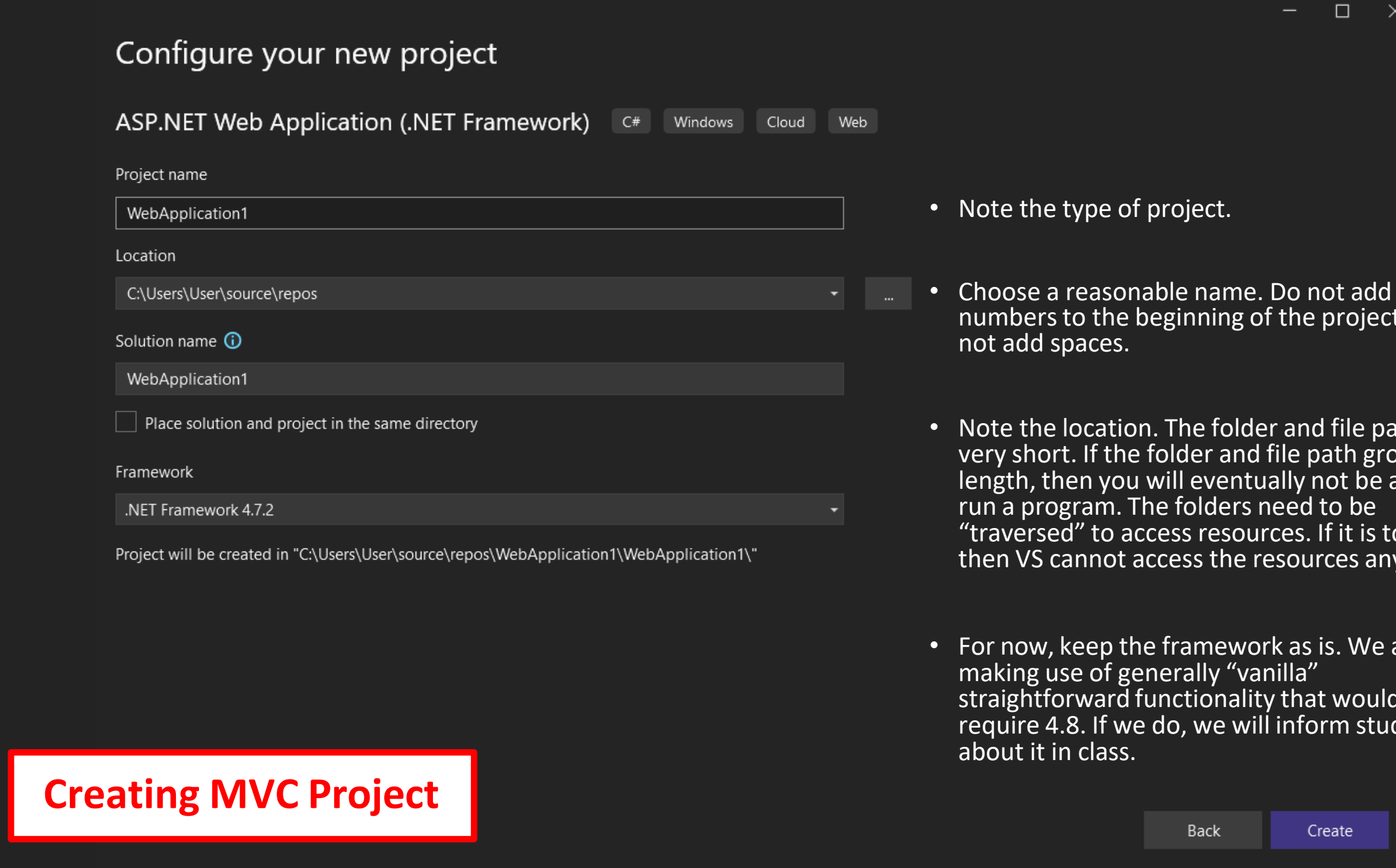
Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.

Visual Basic Windows Cloud Web

Back Next

Creating MVC Project


Configure your new project
ASP.NET Web Application (.NET Framework)
C#
Windows
Cloud
Web
Project name
WebApplication1
Location
C:\Users\User\source\repos
Solution name
WebApplication1
Place solution and project in the same directory
Framework
.NET Framework 4.7.2
Project will be created in "C:\Users\User\source\repos\WebApplication1\WebApplicati
Always review the project configuration to makes sure that it clearly states ASP.NET MVC C# for Windows
If it states WPF, anything core, anything "anything"…. Press the "Back" button.
Careful to select the correct framework. The most relevant framework would be .NET Framework 4.7.2. For now, keep the framework as 4.7.2.
Creating MVC Project
Back
Create



Creating MVC Project

- Note the type of project.
- Choose a reasonable name. Do not add numbers to the beginning of the project and do not add spaces.
- Note the location. The folder and file path is very short. If the folder and file path grows in length, then you will eventually not be able to run a program. The folders need to be "traversed" to access resources. If it is too long then VS cannot access the resources anymore.
- For now, keep the framework as is. We are making use of generally "vanilla" straightforward functionality that would not require 4.8. If we do, we will inform students about it in class.

Create a new ASP.NET Web Application

Empty

An empty project template for creating ASP.NET applications. This template does not have any content in it.

Web Forms

A project template for creating ASP.NET Web Forms applications. ASP.NET Web Forms lets you build dynamic websites using a familiar drag-and-drop, event-driven model. A design surface and hundreds of controls and components let you rapidly build sophisticated, powerful UI-driven sites with data access.

MVC

A project template for creating ASP.NET MVC applications. ASP.NET MVC allows you to build applications using the Model-View-Controller architecture. ASP.NET MVC includes many features that enable fast, test-driven development for creating applications that use the latest standards.

Web API

A project template for creating RESTful HTTP services that can reach a broad range of clients including browsers and mobile devices.

Single Page Application

A project template for creating rich client side JavaScript driven HTML5 applications using ASP.NET Web API. Single Page Applications provide a rich user experience which includes client-side interactions using HTML5, CSS3, and JavaScript.

Authentication

None

Add folders & core references

- [ ] Web Forms
- [x] MVC
- [ ] Web API

Advanced

- [x] Configure for HTTPS
- [ ] Docker support

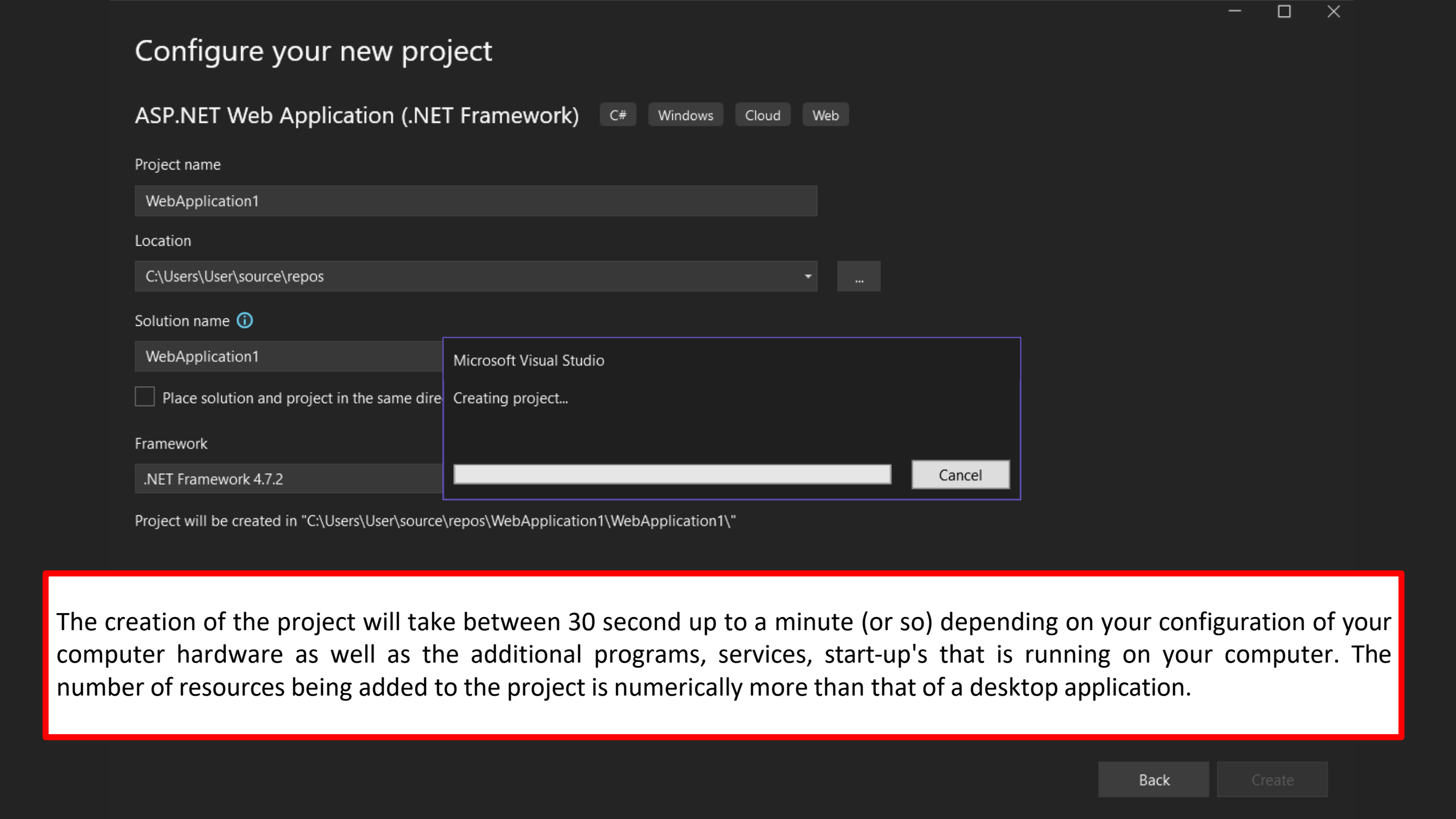
(Requires Docker Desktop)

- [ ] Also create a project for unit tests

WebApplication1.Tests

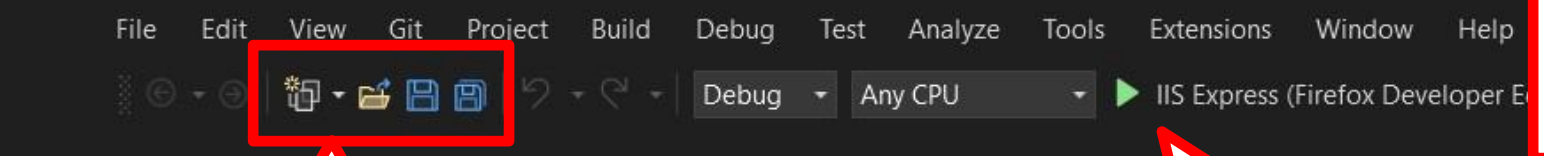
Back Create

Creating MVC Project



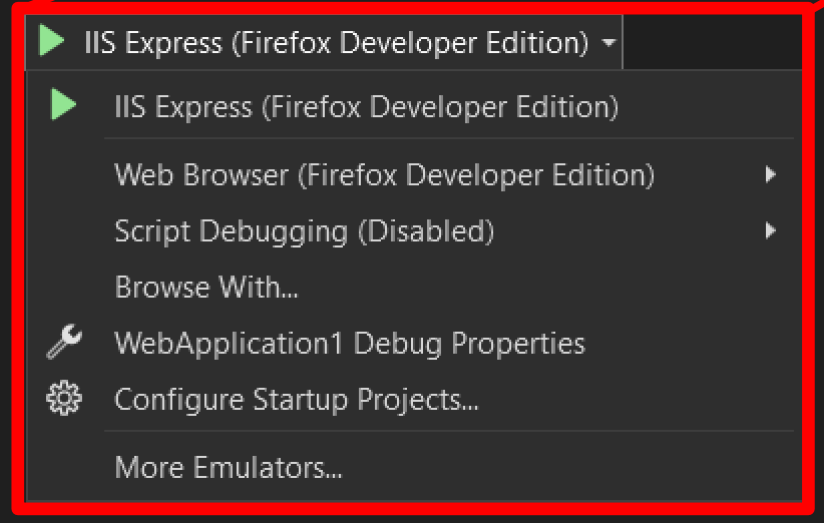
The creation of the project will take between 30 second up to a minute (or so) depending on your configuration of your computer hardware as well as the additional programs, services, start-up's that is running on your computer. The number of resources being added to the project is numerically more than that of a desktop application.

Visual Studio Integrated Development Environment



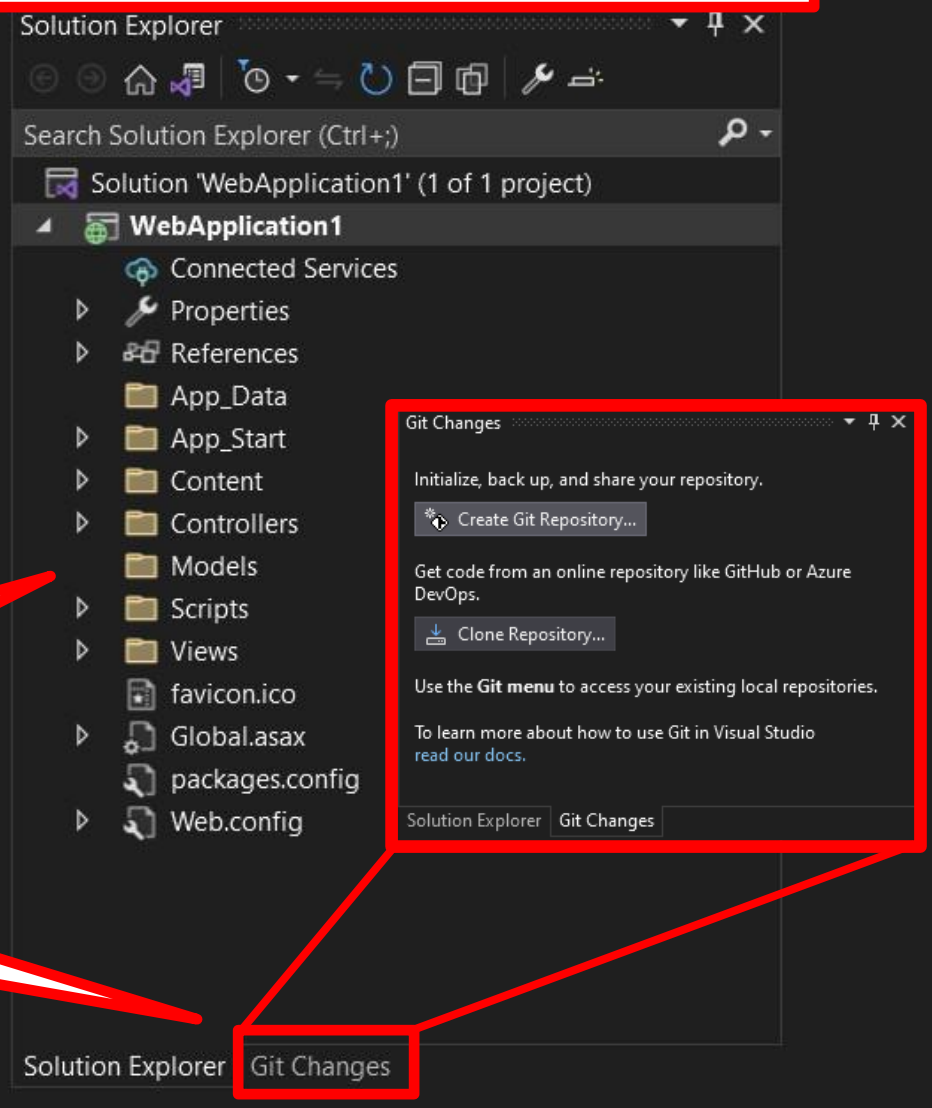
New Project, Open, Save, Save All

Run Code
In this case Firefox.



Application Components

Collaboration on code projects with GitHub



VS IDE

File Edit 1 View Git 2 Project 3 Build 4 Debug Test Analyze Tools 5 Extensions Window Help

Debug | Any CPU | IIS Express (Firefox Developer Edition)

1 View

Code	F7
Open	
Open With...	
Solution Explorer	Ctrl+Alt+L
Git Changes	Ctrl+0, Ctrl+G
Git Repository	Ctrl+0, Ctrl+R
Team Explorer	Ctrl+\, Ctrl+M
Server Explorer	Ctrl+Alt+S
SQL Server Object Explorer	Ctrl+\, Ctrl+S
Test Explorer	Ctrl+E, T
Bookmark Window	Ctrl+K, Ctrl+W
Call Hierarchy	Ctrl+Alt+K
Class View	Ctrl+Shift+C
Code Definition Window	Ctrl+\, D
Object Browser	Ctrl+Alt+J
Error List	Ctrl+\, E
Output	Ctrl+Alt+O
Task List	Ctrl+\, T
Toolbox	Ctrl+Alt+X
Notifications	Ctrl+\, Ctrl+N
Terminal	Ctrl+`
Other Windows	▸
Toolbars	▸
Full Screen	Shift+Alt+Enter
All Windows	Shift+Alt+M
Navigate Backward	Ctrl+-
Navigate Forward	Ctrl+Shift+-
Next Task	
Previous Task	
Properties Window	F4
Property Pages	Shift+F4
Refresh	

2 Project

Overview	
Add Class...	
Add New Item...	Ctrl+Shift+A
Add Existing Item...	Shift+Alt+A
Add Application Insights Telemetry...	
Configure Application Insights...	
New Folder	
Add ASP.NET Folder	▸
Show All Files	
Unload Project	
Add Reference...	
Add Service Reference...	
Connected Services	▸
Add Analyzer...	
Configure Startup Projects...	
Set as Startup Project	
Export Template...	
Manage NuGet Packages...	
Manage Client-Side Libraries...	
WebApplication1 Properties	
Convert to Web Application	

3 Build

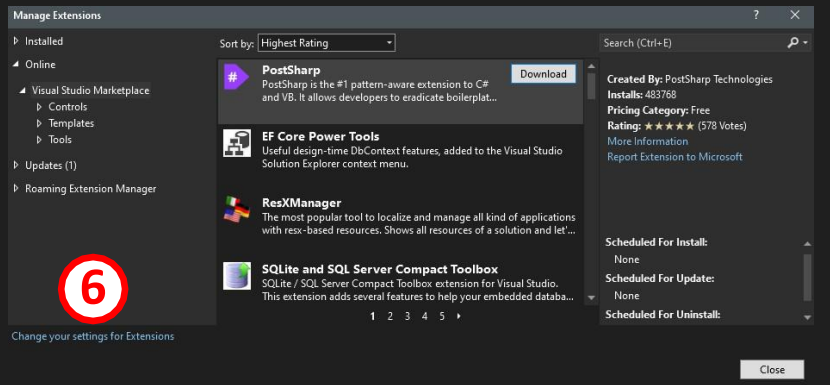
Build Solution	Ctrl+Shift+B
Rebuild Solution	
Clean Solution	
Run Code Analysis on Solution	Alt+F11
Build WebApplication1	Ctrl+B
Rebuild WebApplication1	
Clean WebApplication1	
Publish WebApplication1	
Run Code Analysis on WebApplication1	
Batch Build...	
Configuration Manager...	

4 Debug

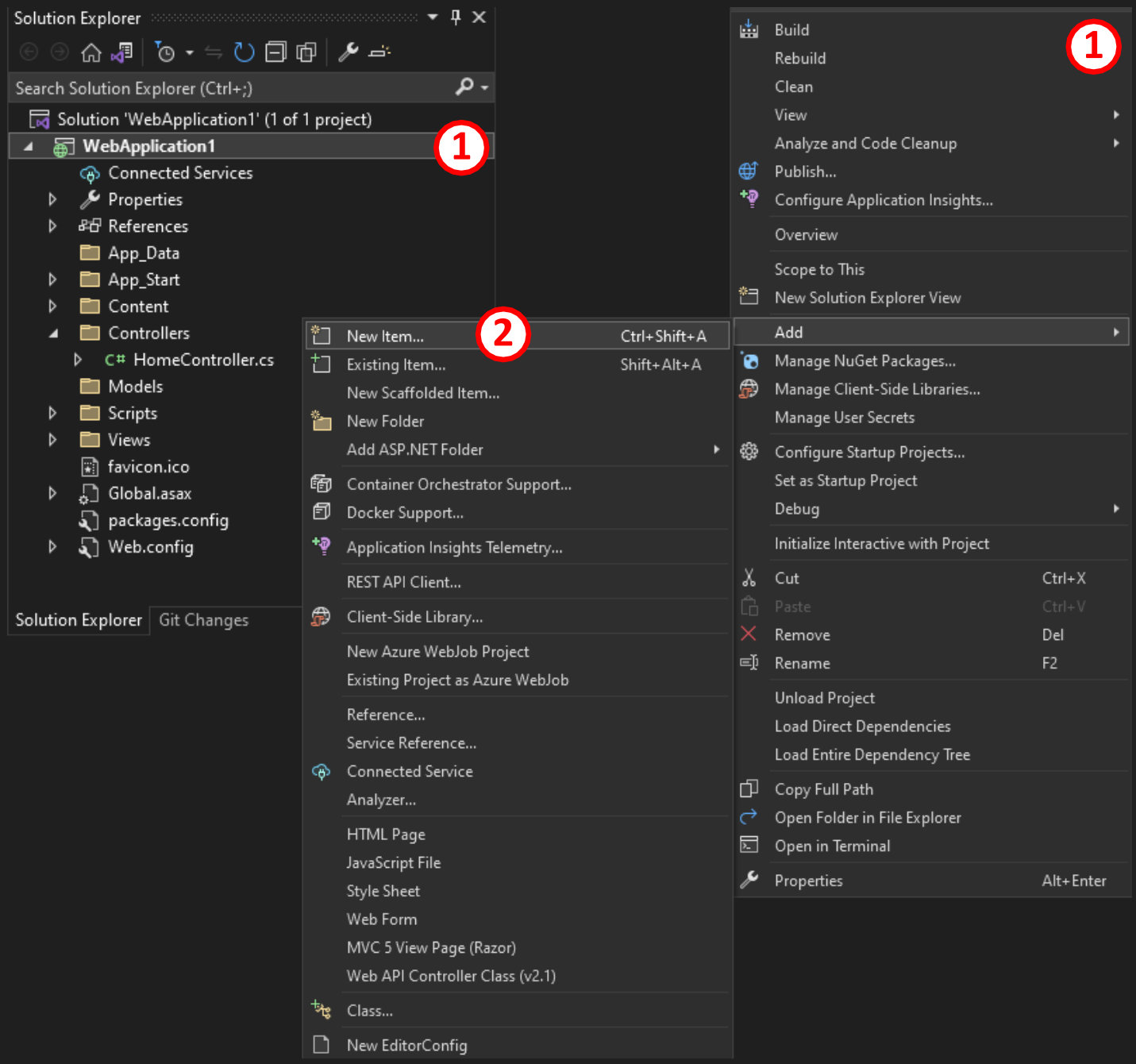
Windows	▸
Start Debugging	F5
Start Without Debugging	Ctrl+F5
Apply Code Changes	Alt+F10
Performance Profiler...	Alt+F2
Relaunch Performance Profiler	
Attach to Process...	Ctrl+Alt+P
Other Debug Targets	▸
Step Into	F11
Step Over	F10
Toggle Breakpoint	F9
New Breakpoint	▸
Delete All Breakpoints	Ctrl+Shift+F9
Options...	
WebApplication1 Debug Properties	

5 Extensions

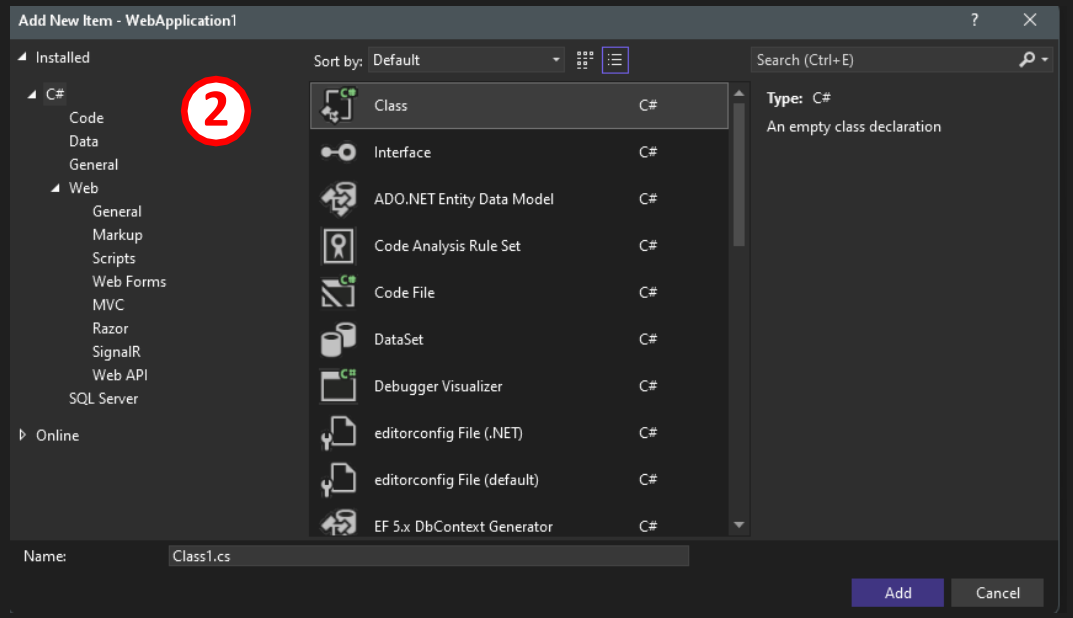
Manage Extensions	6
Customize Menu...	

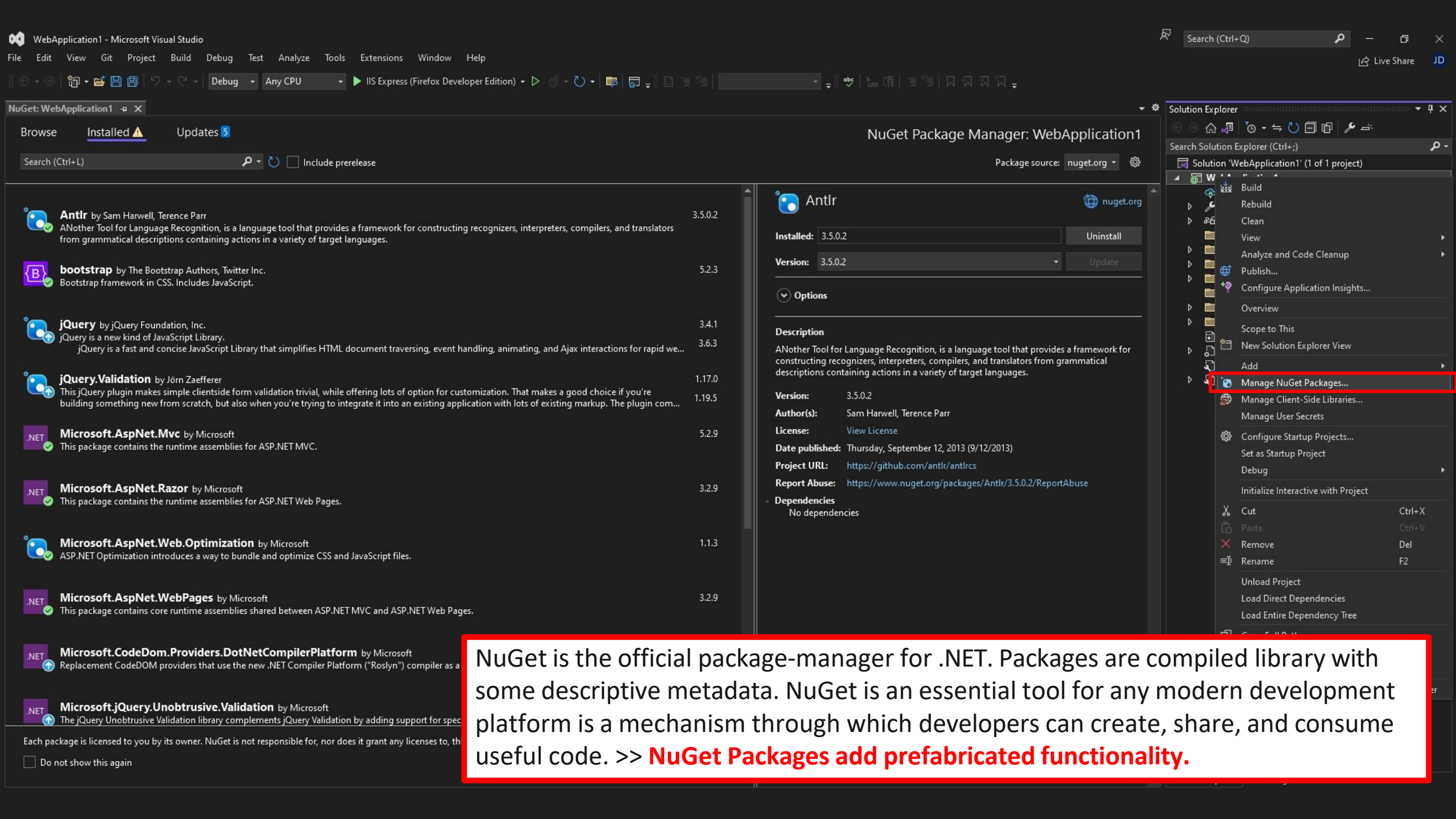


VS IDE



You will need to add several additional components to the your projects. This can be done by right clicking on the Solution.





NuGet is the official package-manager for .NET. Packages are compiled library with some descriptive metadata. NuGet is an essential tool for any modern development platform is a mechanism through which developers can create, share, and consume useful code. >> **NuGet Packages add prefabricated functionality.**

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The anatomy of a Visual Studio project

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Comparing the files in a Visual Studio Project versus the files in the repository on your computer's drive.

Please note…

- Students have to upload project files to they’re GitHub repository as they progress.
- The GitHub repository link will then be shared on ClickUP as the necessary upload.
- To ensure that all relevant files are committed in GitHub, a student needs to understand the basic anatomy of a Visual Studio Project.

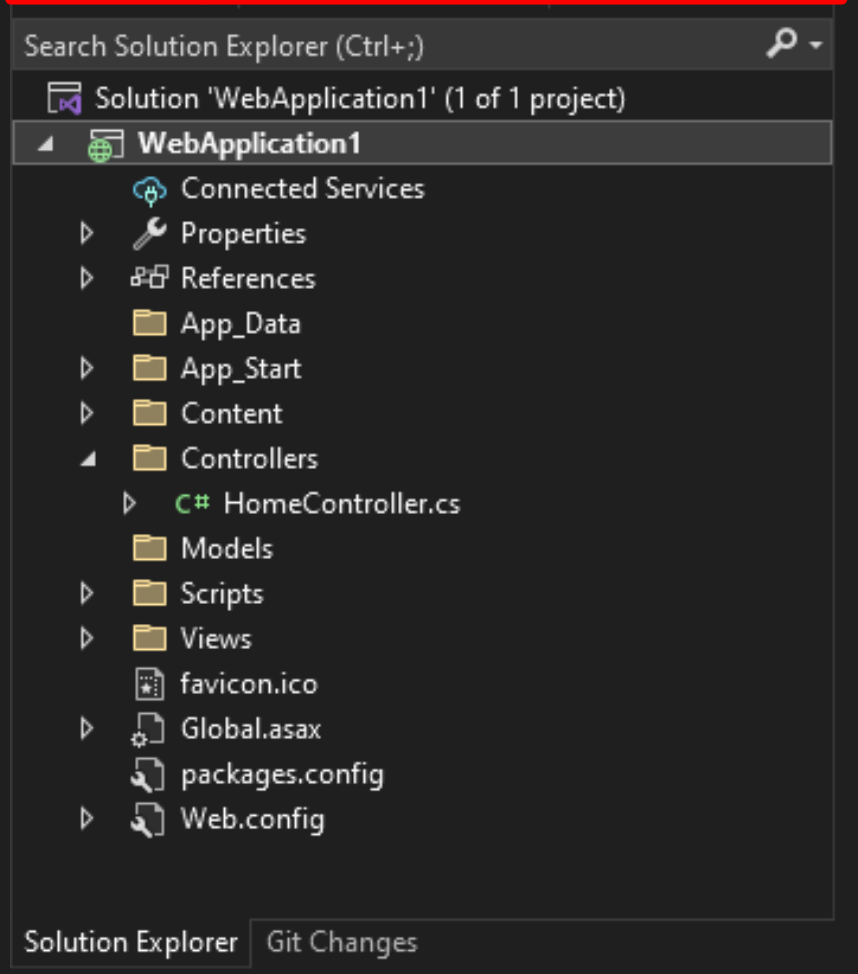
- There is a common mistake that students consider the *.sln file as the complete program. This is not and never will be true. The *.sln is a VS project reference that allows VS to identify the location of the project file (*.proj) that combines all the program resources. Do not make this mistake.

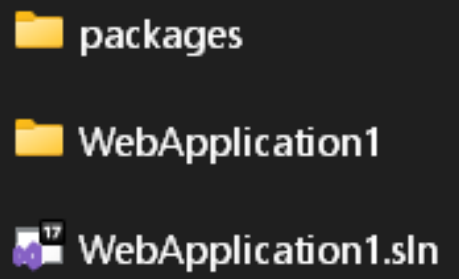
.sln → Solution

.proj → Project

Solution Explorer.

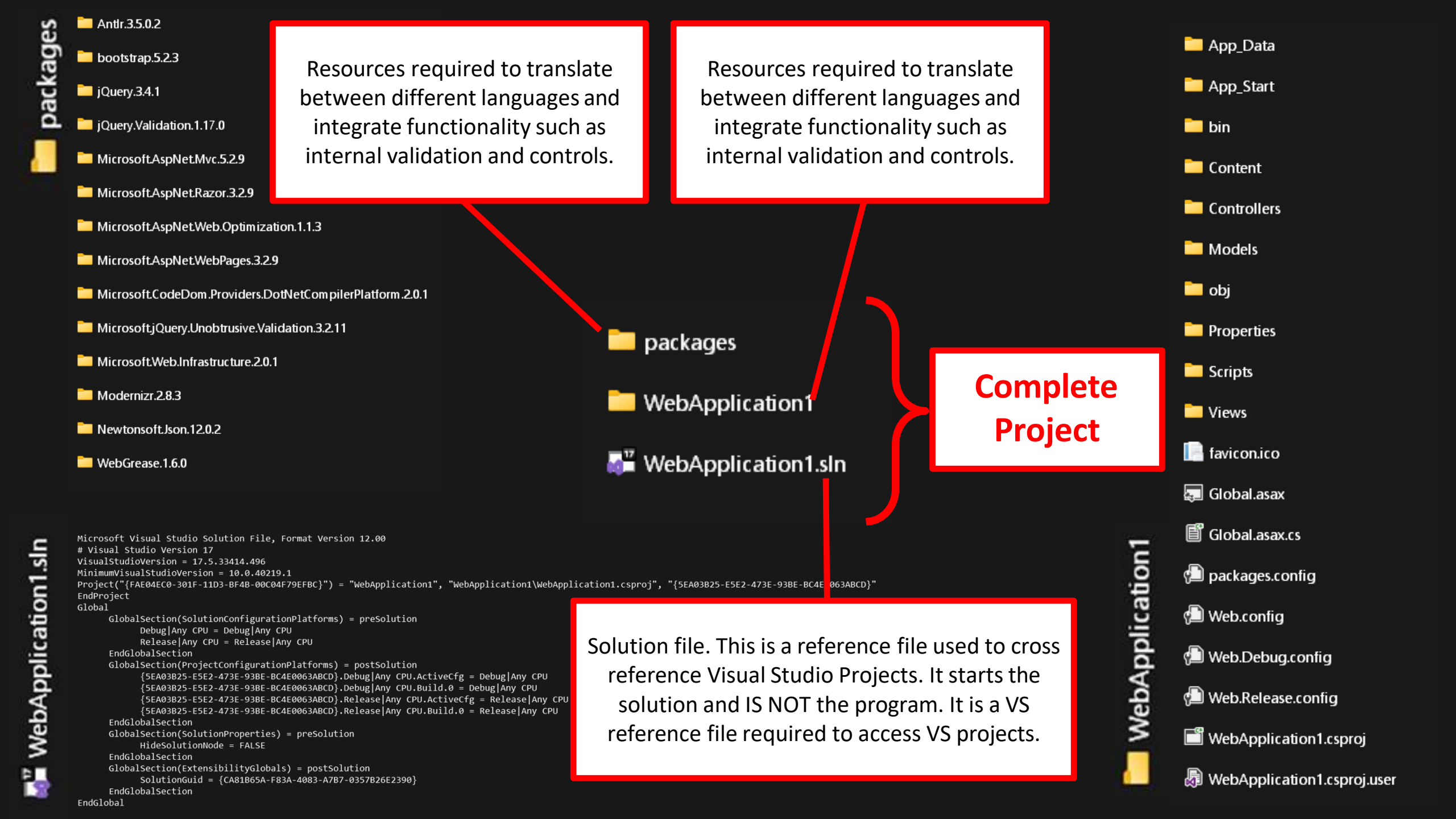
…. Inside Visual Studio





Project in repository.
File Explorer on drive.

…. on your computer


packages
Antlr.3.5.0.2
bootstrap.5.2.3
jQuery.3.4.1
jQuery.Validation.1.17.0
Microsoft.AspNet.Mvc.5.2.9
Microsoft.AspNet.Razor.3.2.9
Microsoft.AspNet.Web.Optimization.1.1.3
Microsoft.AspNet.WebPages.3.2.9
Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1
Microsoft.jQuery.Unobtrusive.Validation.3.2.11
Microsoft.Web.Infrastructure.2.0.1
Modernizr.2.8.3
Newtonsoft.Json.12.0.2
WebGrease.1.6.0
Resources required to translate between different languages and integrate functionality such as internal validation and controls.
Resources required to translate between different languages and integrate functionality such as internal validation and controls.
packages
WebApplication1
WebApplication1.sln
Complete Project
App_Data
App_Start
bin
Content
Controllers
Models
obj
Properties
Scripts
Views
favicon.ico
Global.asax
Global.asax.cs
packages.config
Web.config
Web.Debug.config
Web.Release.config
WebApplication1.csproj
WebApplication1.csproj.user
WebApplication1
WebApplication1.sln
Microsoft Visual Studio Solution File, Format Version 12.00
# Visual Studio Version 17
VisualStudioVersion = 17.5.33414.496
MinimumVisualStudioVersion = 10.0.40219.1
Project("{FAE04EC0-301F-11D3-BF4B-00C04F79EFBC}") = "WebApplication1", "WebApplication1\WebApplication1.csproj", "{5EA03B25-E5E2-473E-93BE-BC4E 063ABCD}"
EndProject
Global
GlobalSection(SolutionConfigurationPlatforms) = preSolution
Debug|Any CPU = Debug|Any CPU
Release|Any CPU = Release|Any CPU
EndGlobalSection
GlobalSection(ProjectConfigurationPlatforms) = postSolution
{5EA03B25-E5E2-473E-93BE-BC4E0063ABCD}.Debug|Any CPU.ActiveCfg = Debug|Any CPU
{5EA03B25-E5E2-473E-93BE-BC4E0063ABCD}.Debug|Any CPU.Build.0 = Debug|Any CPU
{5EA03B25-E5E2-473E-93BE-BC4E0063ABCD}.Release|Any CPU.ActiveCfg = Release|Any CPU
{5EA03B25-E5E2-473E-93BE-BC4E0063ABCD}.Release|Any CPU.Build.0 = Release|Any CPU
EndGlobalSection
GlobalSection(SolutionProperties) = preSolution
HideSolutionNode = FALSE
EndGlobalSection
GlobalSection(ExtensibilityGlobals) = postSolution
SolutionGuid = {CA81B65A-F83A-4083-A7B7-0357B26E2390}
EndGlobalSection
EndGlobal
Solution file. This is a reference file used to cross reference Visual Studio Projects. It starts the solution and IS NOT the program. It is a VS reference file required to access VS projects.
WebApplication1.sln

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Open a project from a GitHub repo

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Visual Studio GitHub resource page:

- https://github.com/github
- https://visualstudio.microsoft.com/vs/github/
- https://learn.microsoft.com/en-us/visualstudio/ide/work-with-github-accounts?view=vs-2022

Visual Studio and GitHub better together

Use GitHub and Visual Studio to bring your source control and CI/CD workflows closer to your code. GitHub support is now built into Visual Studio.

Download Visual Studio

Sign up for Git Learning Series ›

"I use the new Git integration a lot. It is a simple and clean Git experience!"
– a GitHub user

Product Solutions Open Source Pricing

Search /

Sign in Sign up

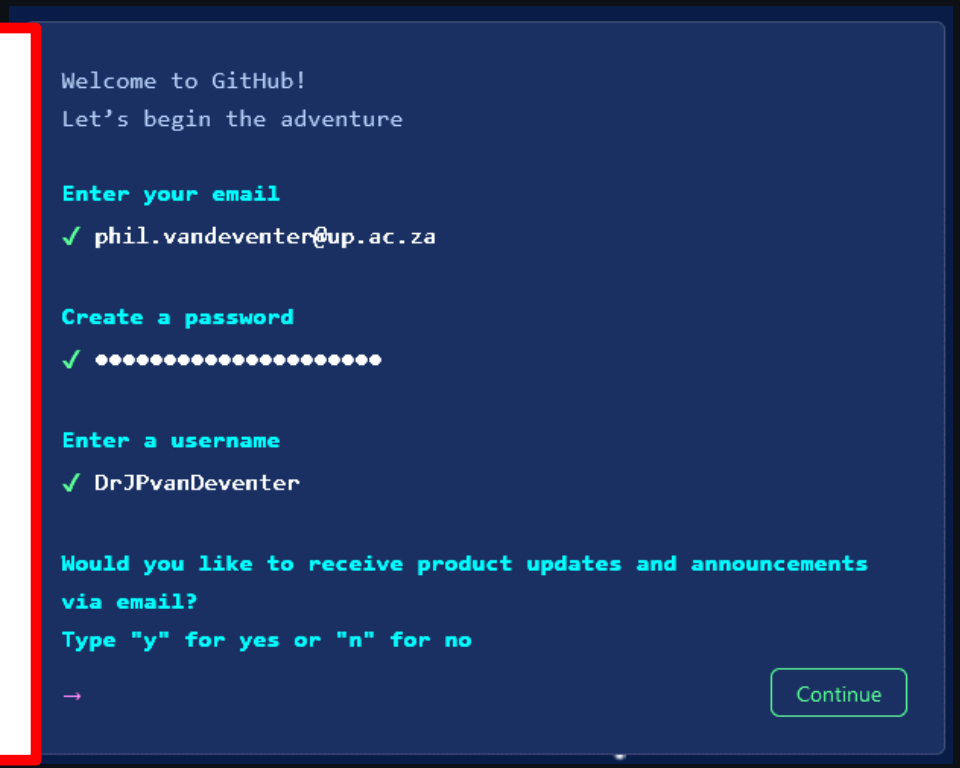
GitHub

How people build software.

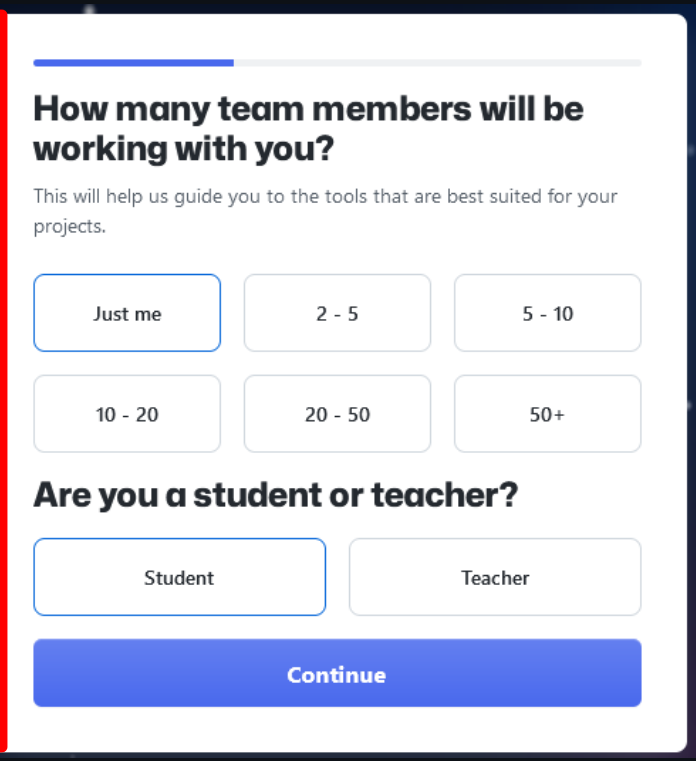
17.8k followers San Francisco, CA https://github.com/about Verified

Overview Repositories 456 Projects 1 Packages People 272

Create account



Student Settings

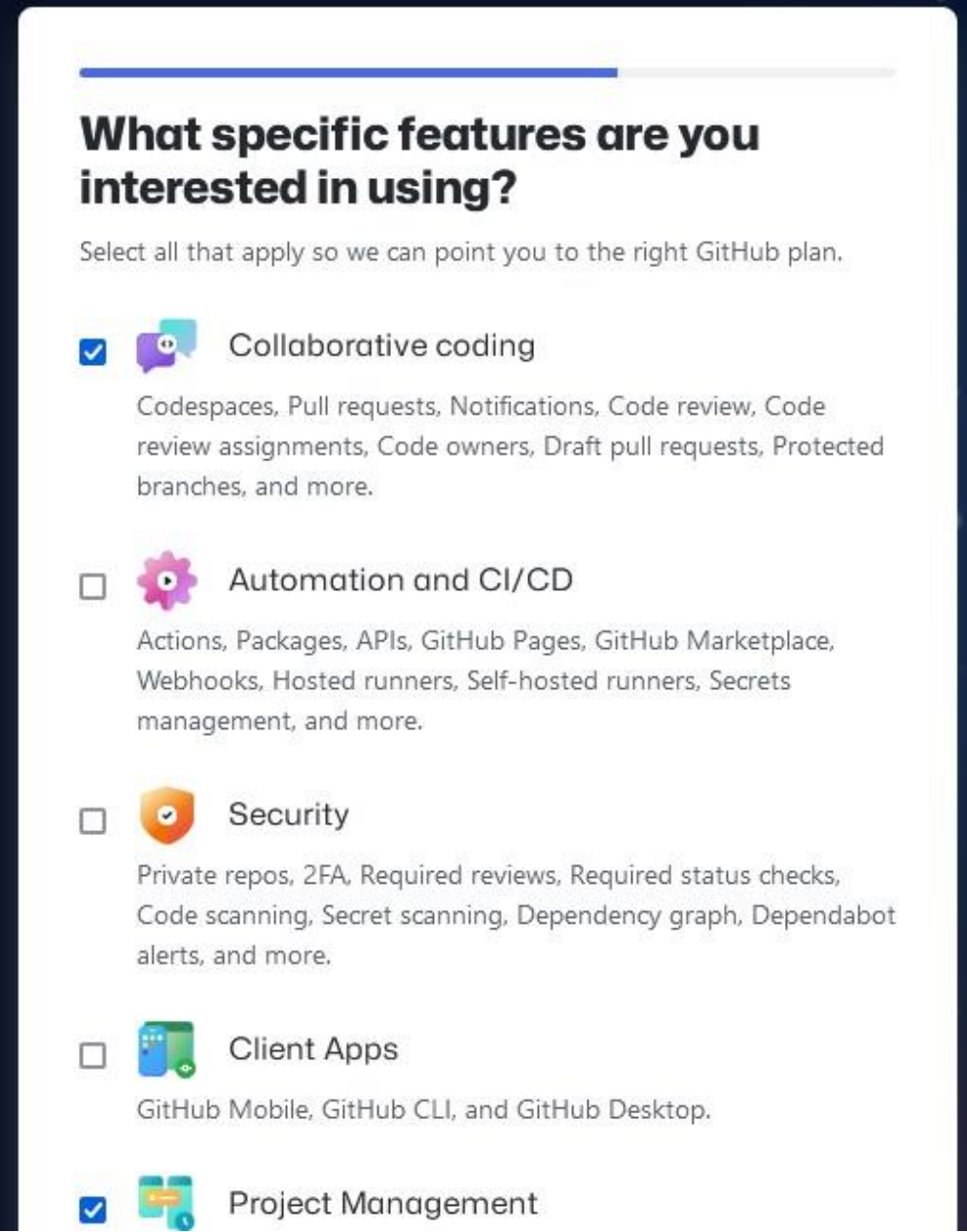


The tools you need to build what you want.

Soup to nuts, GitHub has it all.

Choose all relevant options and then click “Continue”.

After going to the next page, select the Free Option…etc, etc, etc. You can skip the personalisation is you choose to do so. But rather go through the personalisation options.



Search or jump to... /

Pull requests Issues Codespaces Marketplace Explore

Create your first project

Ready to start building? Create a repository for a new idea or bring over an existing repository to keep contributing to it.

Create repository Import repository

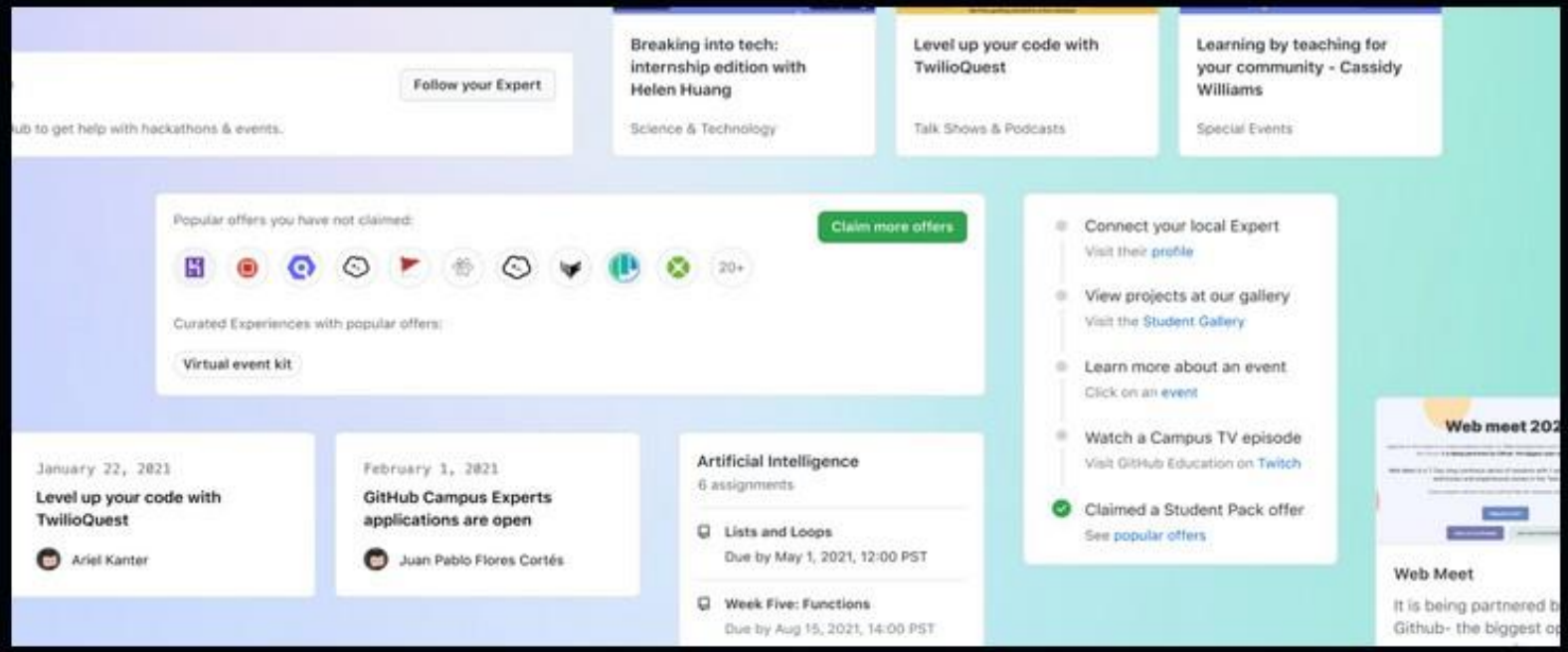
Recent activity

When you take actions across GitHub, we'll provide links to that activity here.

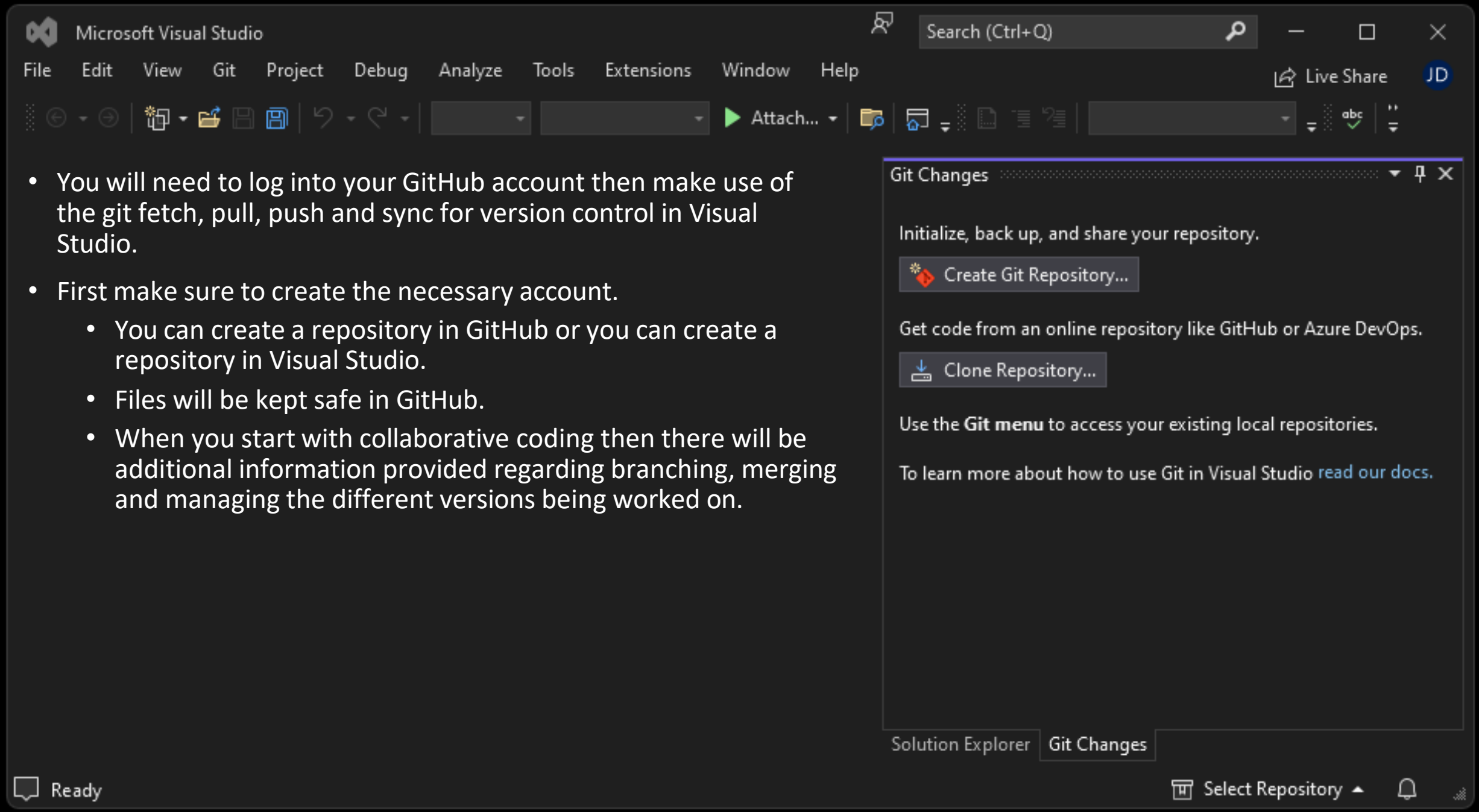
You can create a new repository for each project, practical and / or assignments. We will share a project link with you that you need to accept, but you still have to upload the repository URL to ClickUP for record keeping purposes.

Join GitHub Global Campus!

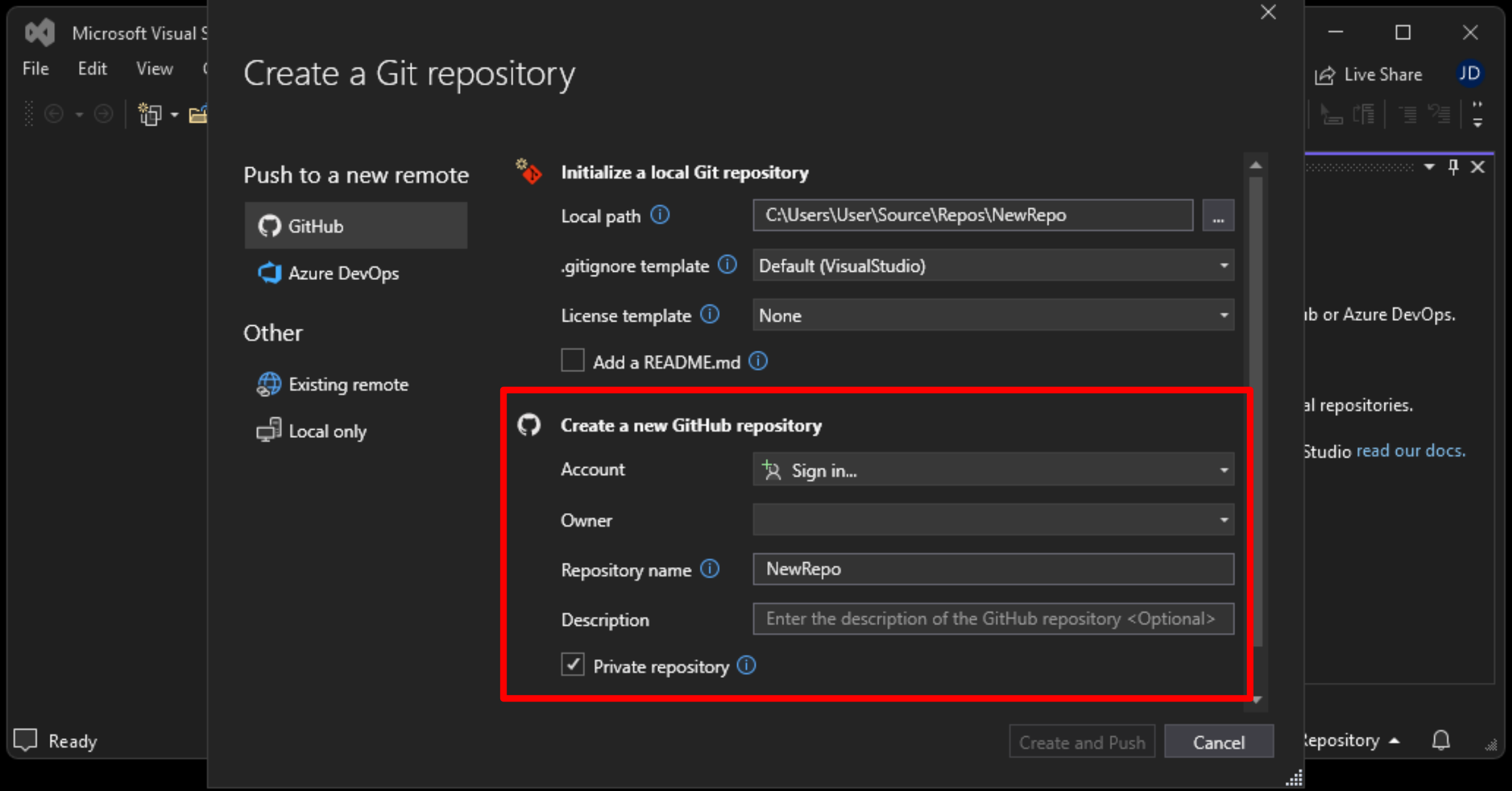
Prepare for a career in tech by joining GitHub Global Campus. Global Campus will help you get the practical industry knowledge you need by giving you access to industry tools, events, learning resources and a growing student community.

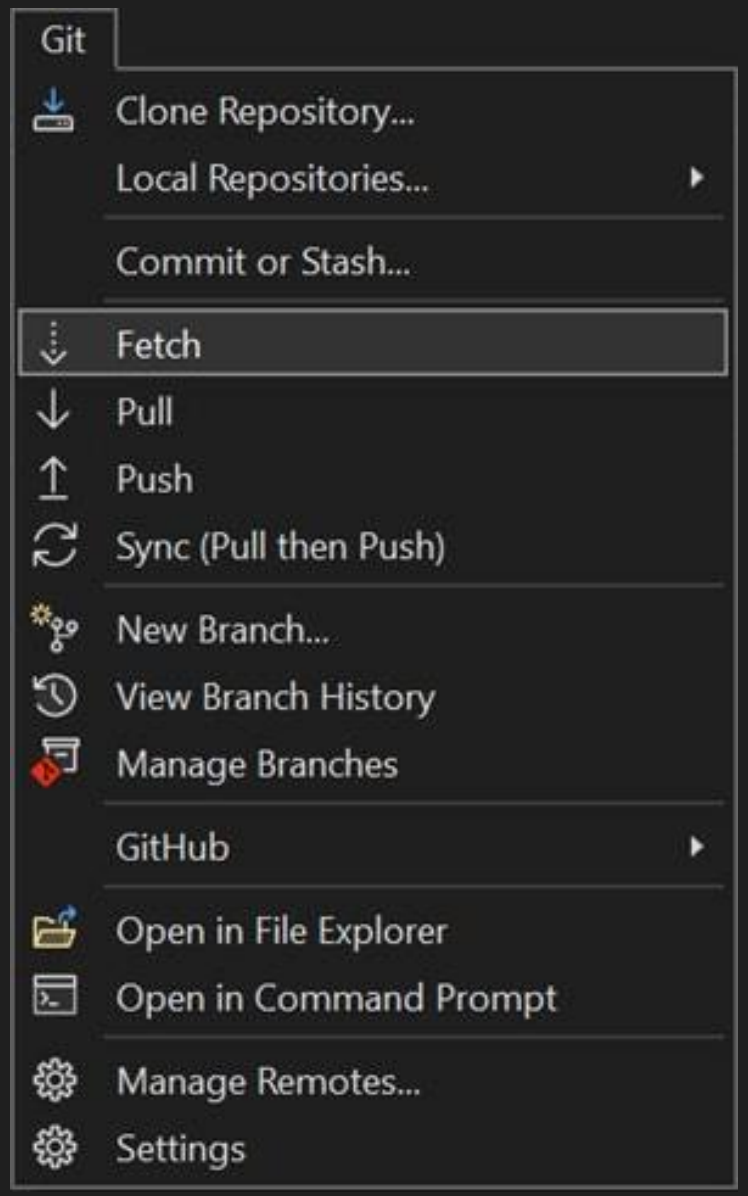


Join Global Campus



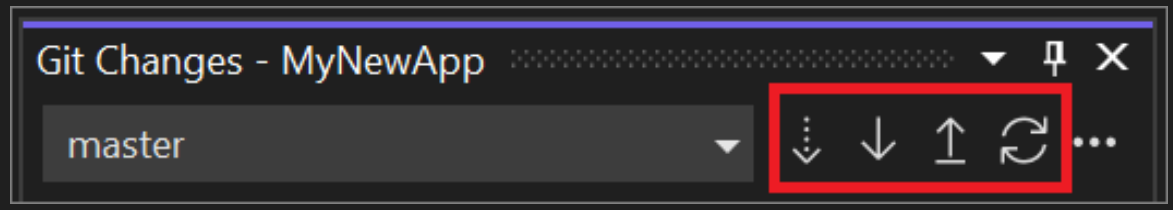
- You will need to log into your GitHub account then make use of the git fetch, pull, push and sync for version control in Visual Studio.
- First make sure to create the necessary account.
  - You can create a repository in GitHub or you can create a repository in Visual Studio.
  - Files will be kept safe in GitHub.
  - When you start with collaborative coding then there will be additional information provided regarding branching, merging and managing the different versions being worked on.

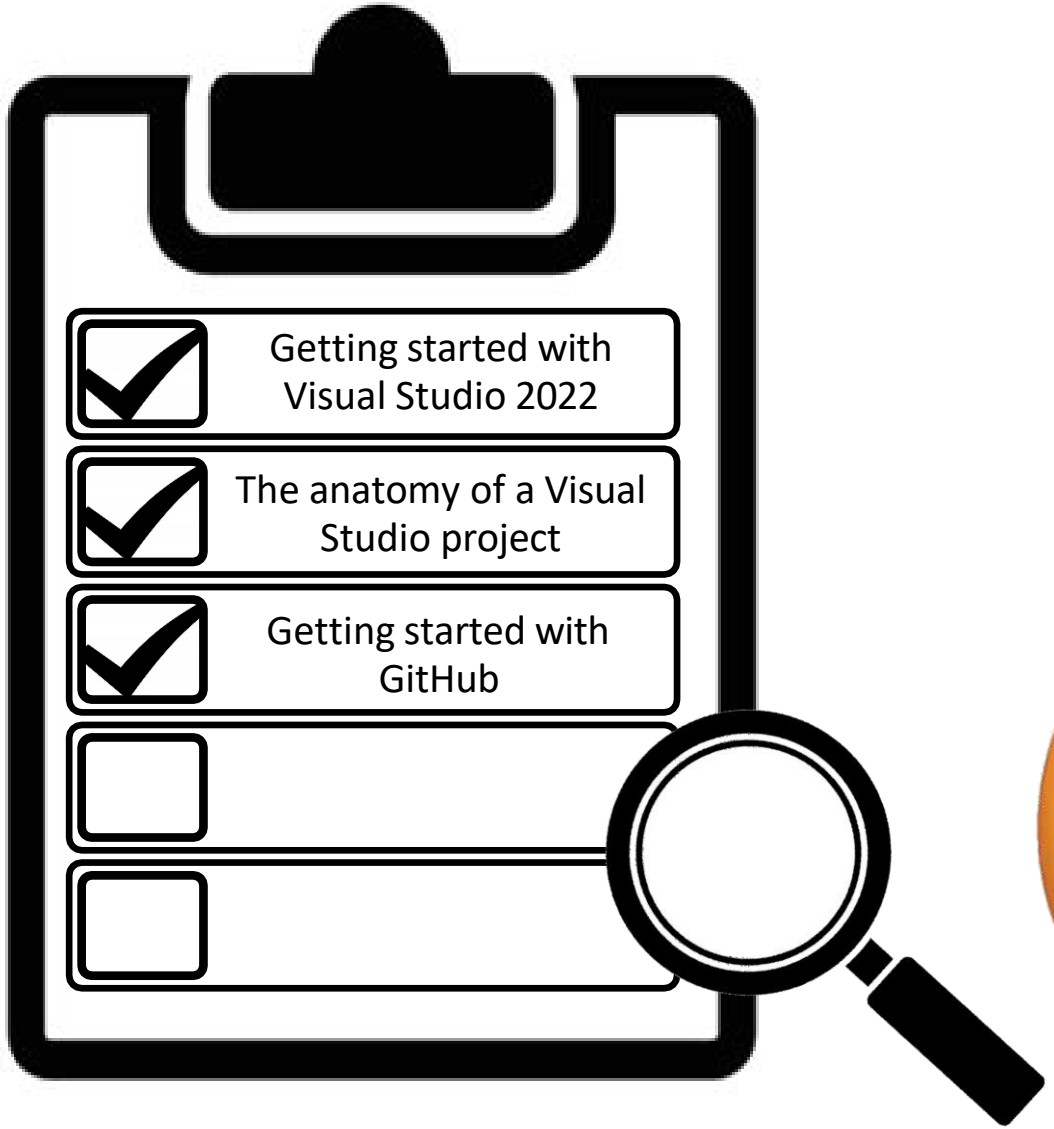

Microsoft Visual S
File
Edit
View
Live Share
JD
Create a Git repository
Push to a new remote
GitHub
Azure DevOps
Other
Existing remote
Local only
Initialize a local Git repository
Local path
C:\Users\User\Source\Repos\NewRepo
...
.gitignore template
Default (VisualStudio)
License template
None
Add a README.md
Create a new GitHub repository
Account
Sign in...
Owner
Repository name
NewRepo
Description
Enter the description of the GitHub repository <Optional>
Private repository
Create and Push
Cancel
b or Azure DevOps.
l repositories.
Studio read our docs.
Ready
Repository

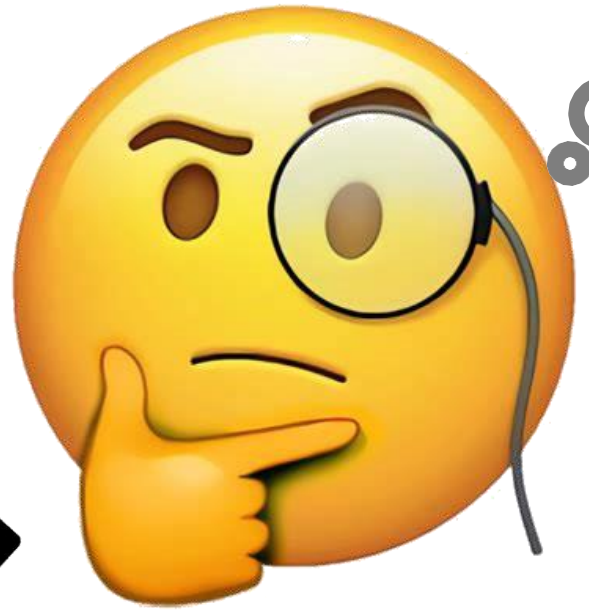


Visual Studio helps you keep your local branch synchronized with your remote branch through download (fetch and pull) and upload (push) operations. You can fetch, pull, and sync in Visual Studio 2022 by using the **Git** menu.

You can also use the button controls in the **Git Changes** window to perform these operations, too.







So what did we cover today?

Until next time.