C#/Unity API Development Training Workstation Setup Guide

DataBank IMX

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DataBank
A KYOCERA GROUP COMPANY

Setting Up Your Workstation for C# & Unity API Training

Performing development requires a few components to be installed on your workstation. For .NET (C#) development, you will need to have Visual Studio installed. If you want to set up your development environment similar to mine, the instructions below will walk you through the setup process. If you're following these steps, it is best to do them in the order presented.

Before following these setup steps, you should have completed the instructions in the file called Setting Up Your Workstation for Development Training.pdf

Table of Contents

Install Visual Studio

Microsoft Visual Studio is the industry standard IDE for .NET development. While there are alternative platforms, we will be using Visual studio throughout the training for both C# and later the Unity API.

One very important note:
If you are using the Community Edition of Visual Studio, you cannot develop, build, or deliver software to clients. Commercial use requires a licensed edition. If you believe you require a license for visual studio, discuss acquiring one with your leadership.

1. In your terminal, run one of the following commands:
   a. For most of you, you will not have a license assigned, so you will install the free "Community" edition.
      ```
      winget install Microsoft.VisualStudio.2022.Community
      ```
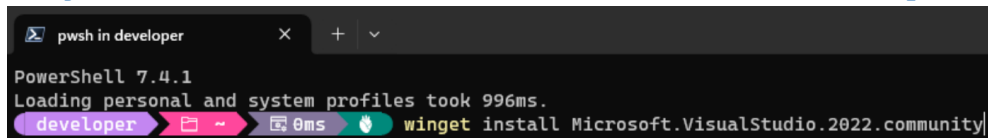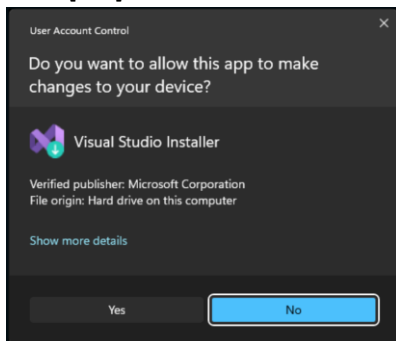

   b. If you are licensed for the "Professional" or "Enterprise" edition, install the one matching your license:
      ```
      winget install Microsoft.VisualStudio.2022.Professional
      ```
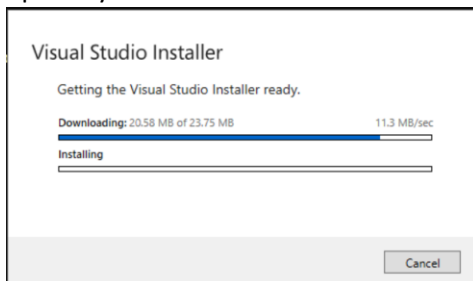   or
      ```
      winget install Microsoft.VisualStudio.2022.Enterprise
      ```
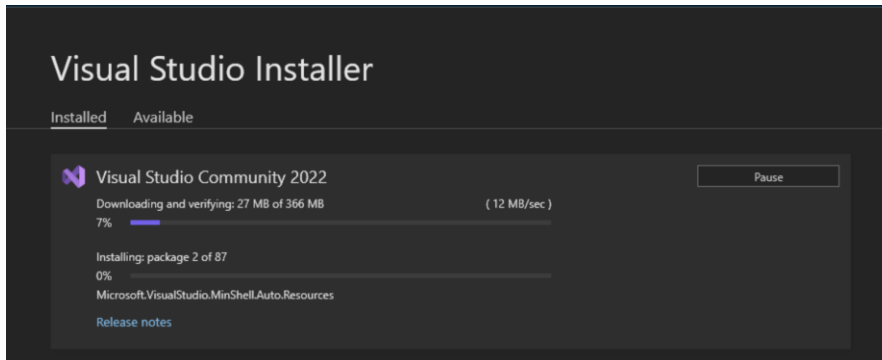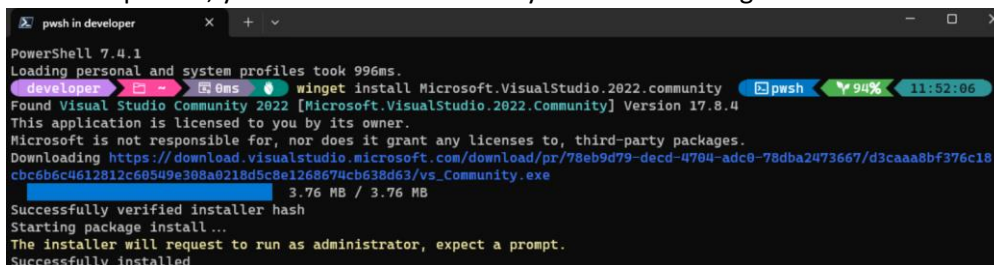
2. Click [Yes] on the UAC alert

3. First, the Visual Studio Installer will be installed. This component can be used later to modify or update your installation.
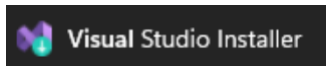
4. This installer will then install Visual Studio 2022

5. After completion, you will see a "successfully installed" message in the terminal
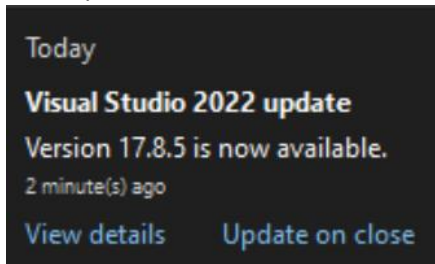

We now need to add some development components to the installation.

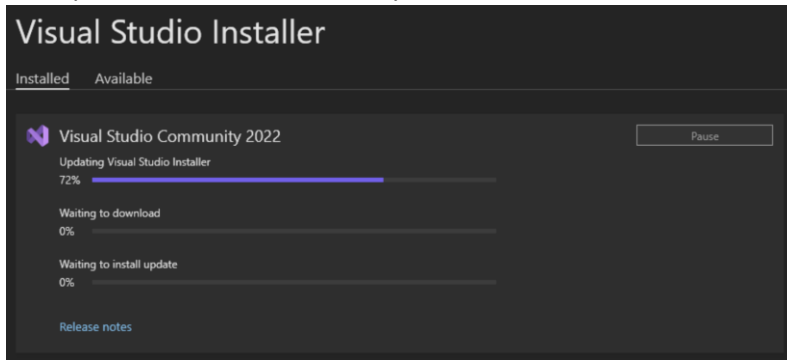6. Click on the start button. Then search for and run the "Visual Studio Installer"

7. You may see an alert like the one below, indicating that an updated version is available. If you do, we'll update the installation first. If not, you can skip to step 10
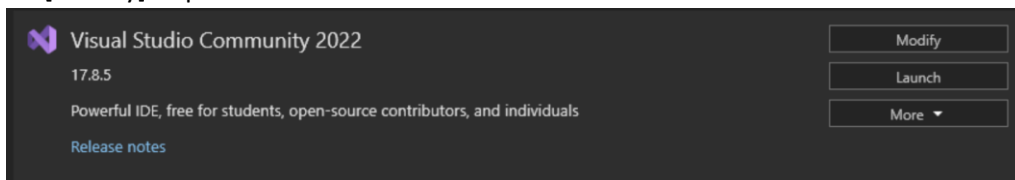

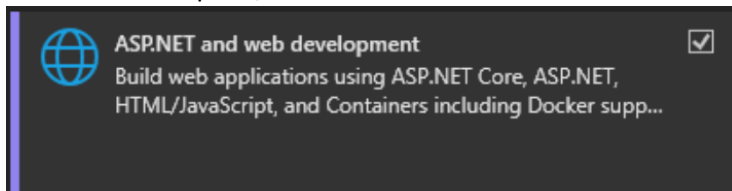8. Click the [Update] button and respond "Yes" to the UAC alert
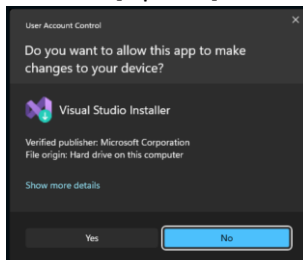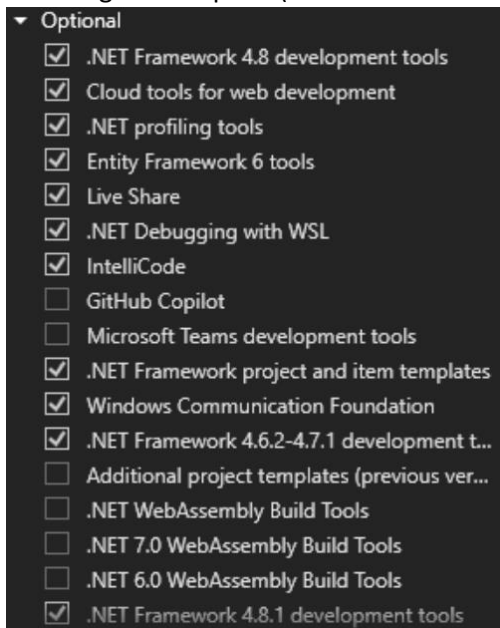
9. The update will run automatically

10. After the update (or immediately, if no update was available), you will see the below options. Click on [Modify] to proceed.
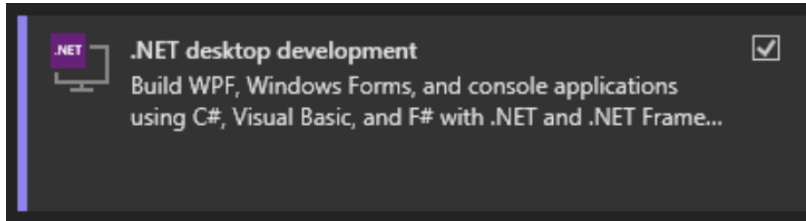

11. In the left-hand pane, check the box on the "ASP.NET and web development" function group.

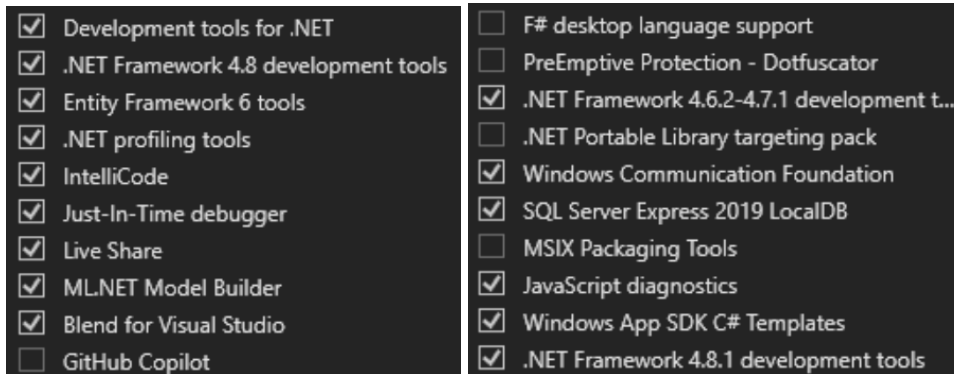12. In the right-hand pane (Installation Details), make sure all of the below options are checked:
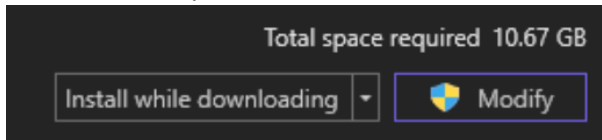
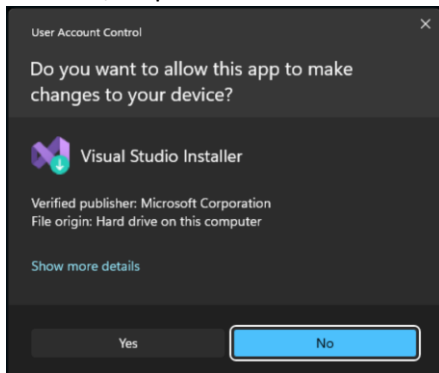13. Back in the left-hand pane, check the box for ".NET desktop development"

14. In the right-hand pane (Installation Details), make sure all of the below options are checked:
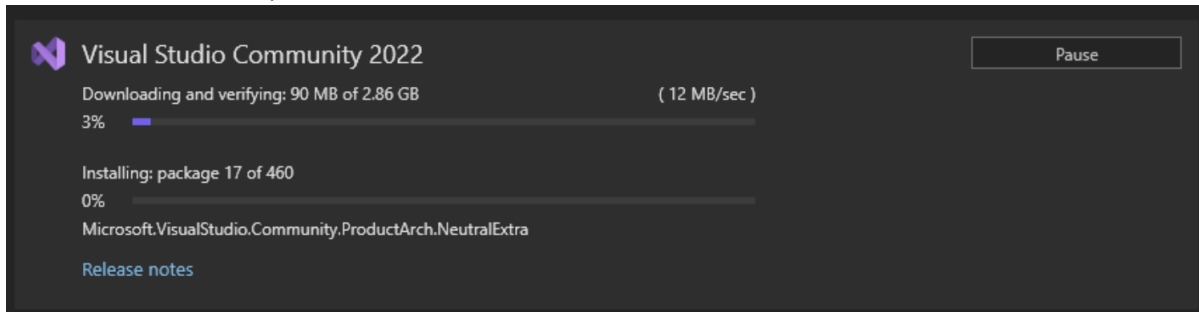

15. Click on "Modify"

16. As usual, respond "Yes" to the UAC warning:

Note: You can install any additional components you want, but the listed ones are sufficient for everything covered in the training course.

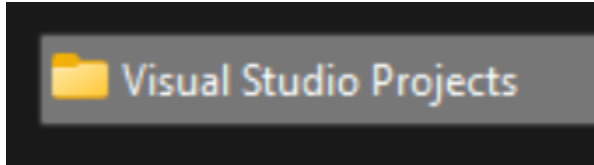17. The Visual Studio components will now install.

18. After completion, close out of the Visual Studio installer and proceed to the next section.

Prep Your File System

As part of the next section, we will be creating a sample project. We'll need somewhere to place it.

1. On your PC, create a folder called "Visual Studio Projects" (I created this on the C: root)

Set Up Visual Studio

Visual Studio is highly configurable, and we will not be addressing the majority of the options here. However, there are several that will make the experience easier in training, so we will handle them now.
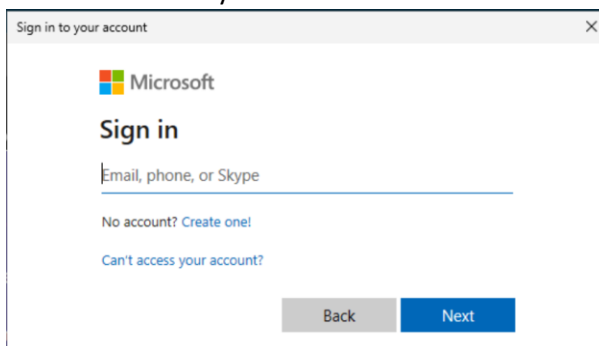
1. Launch Visual Studio

2. You will be prompted to log in with your Microsoft account. Click on "Sign In"
   Note: Do not skip this step, as we need to set up with a Microsoft account for a later step
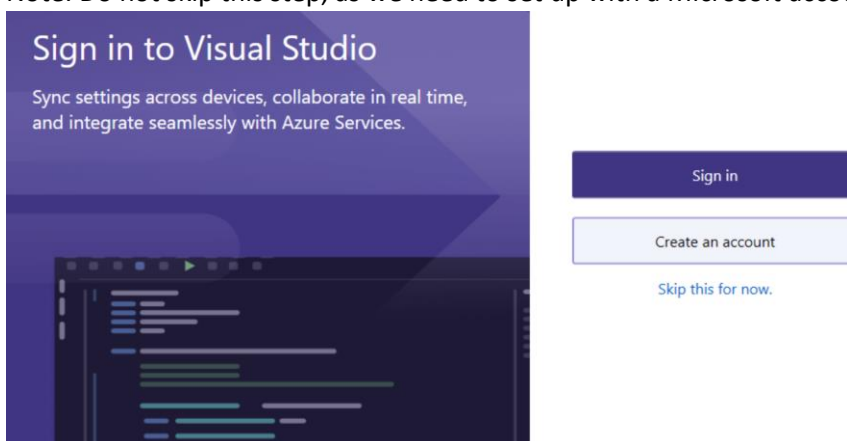
3. On the "Sign in" dialogs, enter the email and password for your Microsoft Account
    You should already have an MS account associated with your DataBank email address.

4. Once you have successfully logged in, you will be prompted to select a color theme. I use the default "Dark" theme, but you can configure yours however you like.
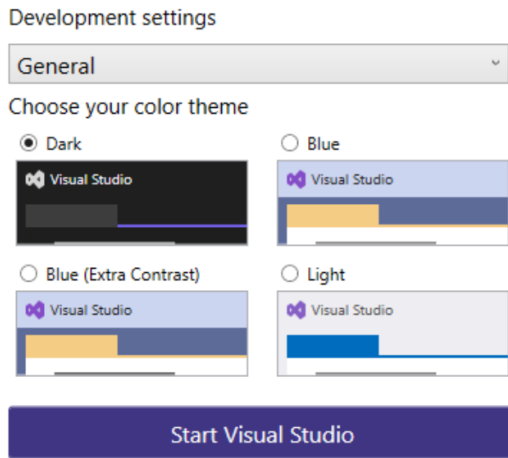
Once you select your theme, click on [Start Visual Studio] and continue to the next section
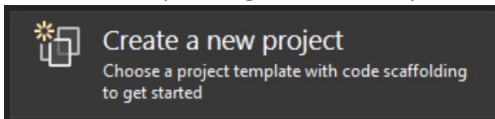
Create a Sample Application

Now we need to make sure everything installed properly by creating a sample application in Visual Studio.
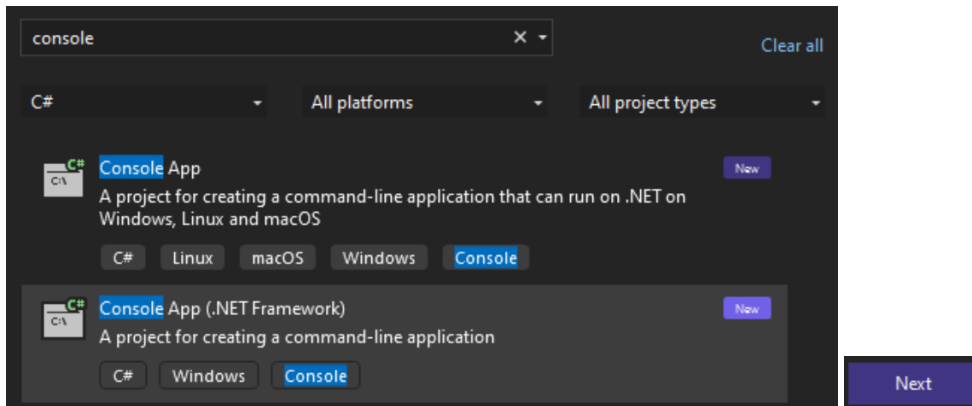
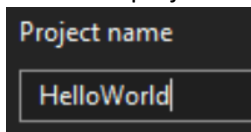1. If it's not already running, launch Visual Studio

2. On the startup dialog, select the option to "Create a new project"
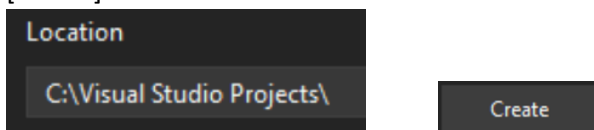
3. Search for "console" and select the option for "Console App (.NET Framework)"
   Then click "Next"

4. Name the project "HelloWorld"

5. Modify the location to point to the "Visual Studio Projects" folder you created previously, then click [Create]

6. Add the following code in the Program.cs file that gets created for you (don't worry about understanding it for now):

```
using system;
namespace HelloWorld
{
    internal class Program
    {
        static void main(string[] args)
        {
            Console.WriteLine("Hello World!");
            _ = Console.ReadLine();
        }
    }
}
```

```
Program.cs  ⚐ ✕
C# HelloWorld
        using System;

        namespace HelloWorld
        {
            0 references
            internal class Program
            {
                0 references
                static void Main(string[] args)
                {
                    Console.WriteLine("Hello World!");
                    _ = Console.ReadLine();
                }
            }
        }
```
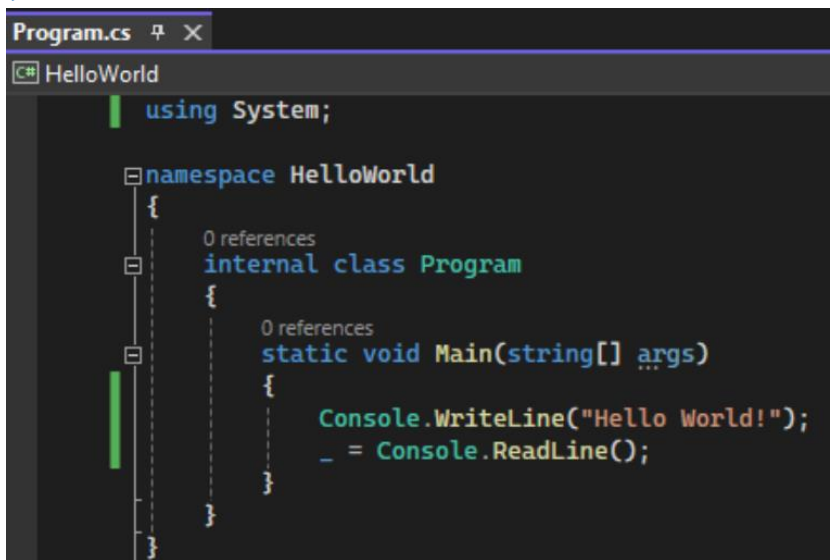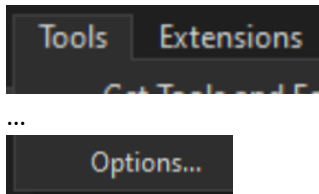
7. At the top of the screen, click the "Start" button to run the program.

    ▶ Start ▾
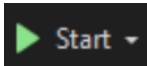
8. You should see the following in a new terminal window:

```
C:\Visual Studio Projects\Hell   ✕      +   ∨

Hello World!
```
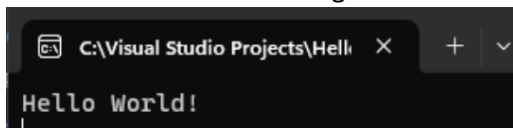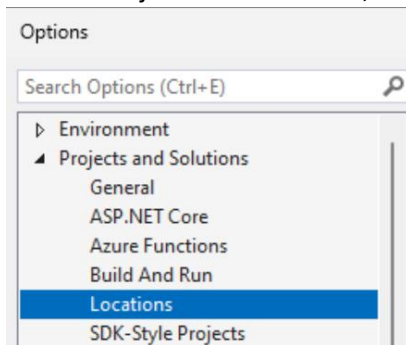
Customize Visual Studio

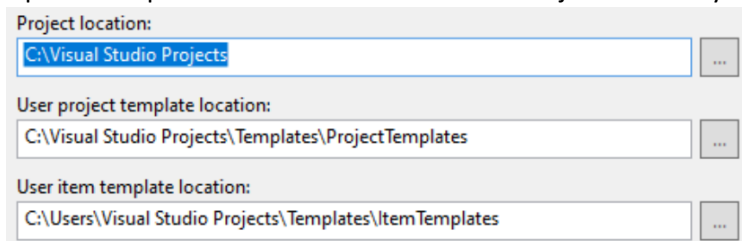There are a few optional convenience settings I recommend in Visual Studio.
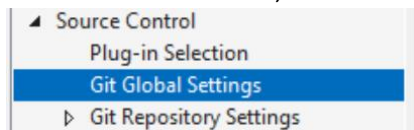
1. In Visual Studio, click on TOOLS > OPTIONS

…

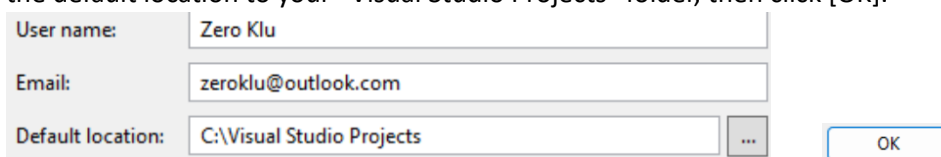2. Under "Projects and Solutions," select "Locations"

3. Update the paths to use the "Visual Studio Projects" folder you created earlier in the process.

4. Under "Source Control," select "Git Global Settings

5. Enter the username and email address you use for Git (these may already be filled in), and change the default location to your "Visual Studio Projects" folder, then click [OK].

Clone the Developer Training Repository

You'll need to clone a copy of the training repository to work with.

I have two different locations where this repository is stored.

- Bitbucket: https://bitbucket.org/databankimx/developertraining
- GitHub: https://github.com/ZeroKlu/developer-training

1. For access to either repository, email smclean@databankimx.com to request access.
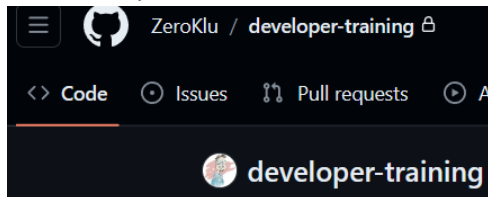
   Be sure to indicate whether you need access to Bitbucket or GitHub and provide the username you use on the selected source control system.

2. In a browser, navigate to the repository you selected and make sure you have access.

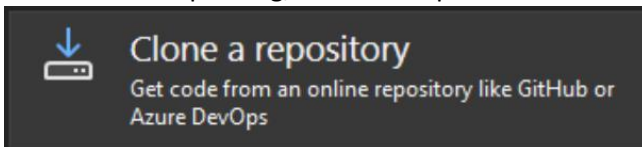   a. In Bitbucket, you should see this:
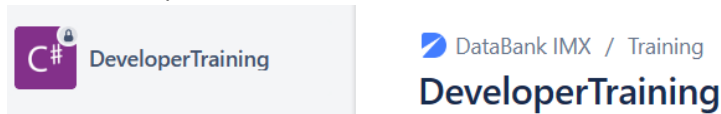
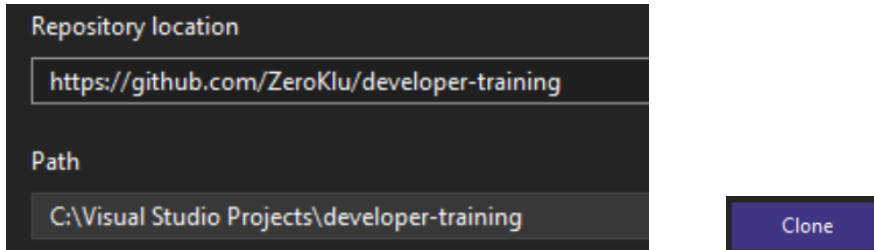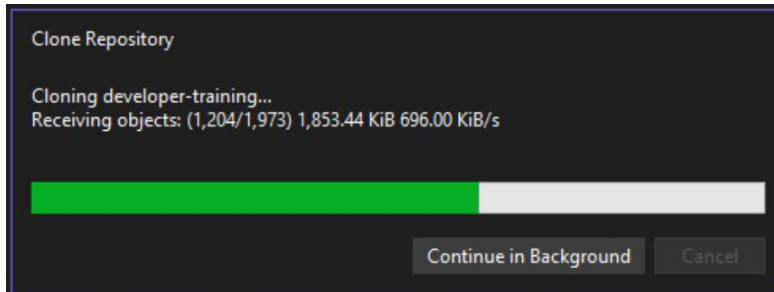   b. In GitHub, you should see this:

3. Launch Visual Studio

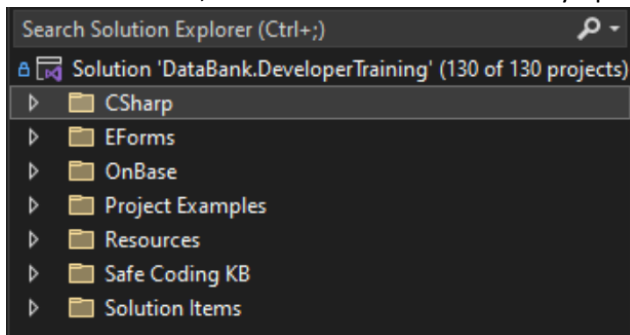4. From the startup dialog, select the option to "Clone a repository"

5. Paste in the URL to the repository you want to clone, verify that the "Path" target is your Visual Studio Projects folder, and click "Clone."

Repository location

https://github.com/ZeroKlu/developer-training

Path

C:\Visual Studio Projects\developer-training

Clone

6. The repository will be closed to your local machine.

Clone Repository

Cloning developer-training...
Receiving objects: (1,204/1,973) 1,853.44 KiB 696.00 KiB/s

Continue in Background   Cancel

7. After it is cloned, the solution will automatically open in Visual Studio.

Search Solution Explorer (Ctrl+;)

🔺🔲 Solution 'DataBank.DeveloperTraining' (130 of 130 projects)
▷　📁 CSharp
▷　📁 EForms
▷　📁 OnBase
▷　📁 Project Examples
▷　📁 Resources
▷　📁 Safe Coding KB
▷　📁 Solution Items

Install SQL Server

We will be building some application that interact with databases. Since the database backup file I have provided is from SQL Server, we'll need to install that. Because you set up Visual Studio with a Microsoft account, you will now have access to download and install it.
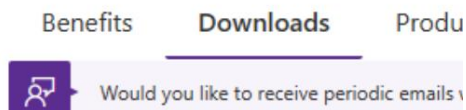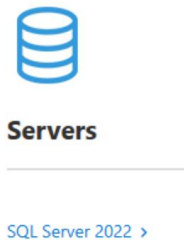
1. In your browser, navigate to https://my.visualstudio.com
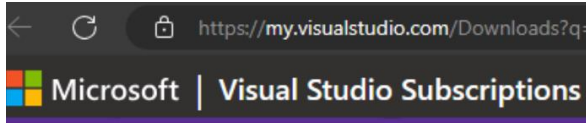
2. Log in if prompted
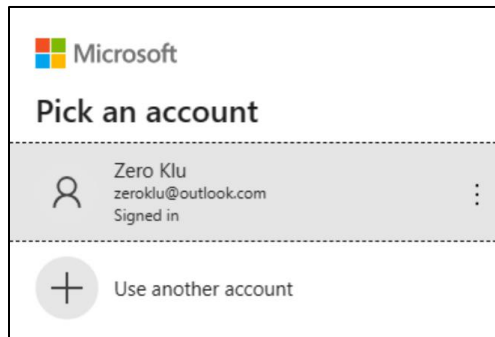
3. Click on the "Downloads" tab

4. Under the "Servers" section, click the link for SQL Server 2022

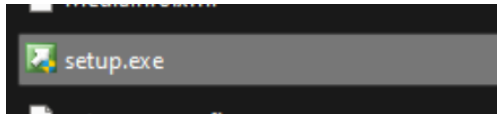5. Click the "Download" button on the "SQL Server 2022 Developer Edition" row

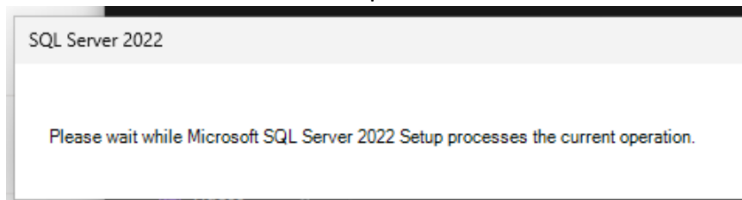6. The Developer edition of SQL Server does not require a license key to install

SQL Server 2022 Developer Edition

Info   Keys

🔍 No key required

7. Right-click the downloaded ISO file and choose "Mount"

⊙ **Mount**

Burn disc image

8. From the mounted drive, run the setup.exe file

🔧 setup.exe

9. Wait for the initial load to complete.

SQL Server 2022

Please wait while Microsoft SQL Server 2022 Setup processes the current operation.

10. When the installer dialog loads, select "Installation."

🗔 SQL Server Installation Center

Planning

Installation

Maintenance
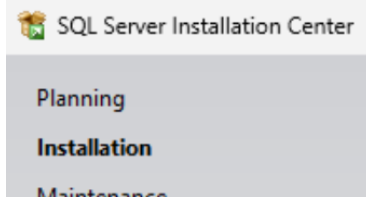
11. Select the option to create a "New SQL Server standalone installation…"

New SQL Server standalone installation or add features to an existing installation

Launch a wizard to install SQL Server 2022 in a non-clustered environment or to add features to an existing SQL Server 2022 instance.
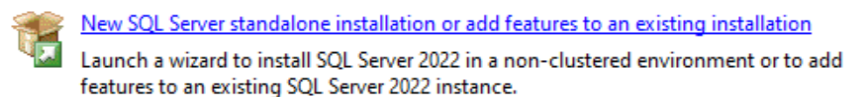
12. Leave the default setting of "Specify a free edition" and "Developer" then click [Next]

⦿ Specify a free edition:

Developer

13. Review and accept the license and click [Next]

☑ I accept the license terms and   Privacy Statement
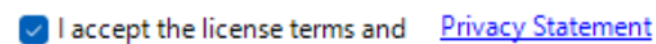
14. Your system will be scanned for compatibility with the install.

Operation completed. Passed: 4. Failed 0. Warning 1. Skipped 0.

Hide details <<		Re-run

View detailed report

Result	Rule	Status
✅	Machine Learning Server shared feature support	Passed
✅	Consistency validation for SQL Server registry keys	Passed
✅	Computer domain controller	Passed
⚠️	Windows Firewall	Warning
✅	Microsoft .NET Framework 4.7.2, or newer, is required	Passed

15. You may receive a warning about the Windows Firewall. This is not a problem for our purposes

Rule Check Result   ✕

⚠️   Rule "Windows Firewall" generated a warning.

The Windows Firewall is enabled. Make sure the appropriate
ports are open to enable remote access. See the rules
documentation at https://go.microsoft.com/fwlink/?
linkid=2162127 for information about ports to open for each
feature.

OK
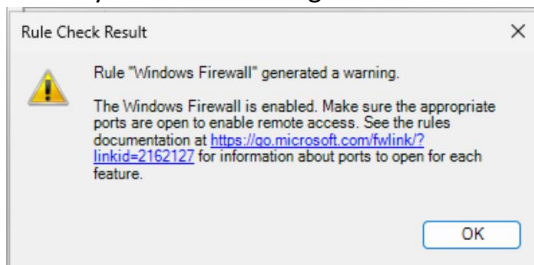
16. Uncheck the option for the Azure extension and click [Next]. We won't be working in Azure.

☐ Azure Extension for SQL Server

17. Under "Instance Features," we only need "Database Engine Services." Click [Next]

Instance Features
☑ Database Engine Services

18. Leave the default selection of "Default instance" and click [Next]

🔘 Default instance

19. Leave the default service settings and click [Next]

Service	Account Name	Password	Startup Type	
SQL Server Agent	NT Service\SQLSERVERA...		Manual	∨
SQL Server Database Engine	NT Service\MSSQLSERVER		Automatic	∨
SQL Server Browser	NT AUTHORITY\LOCAL ...		Disabled	∨

20. Change the "Authentication Mode" to "Mixed Mode…" and enter a password for the SA user.
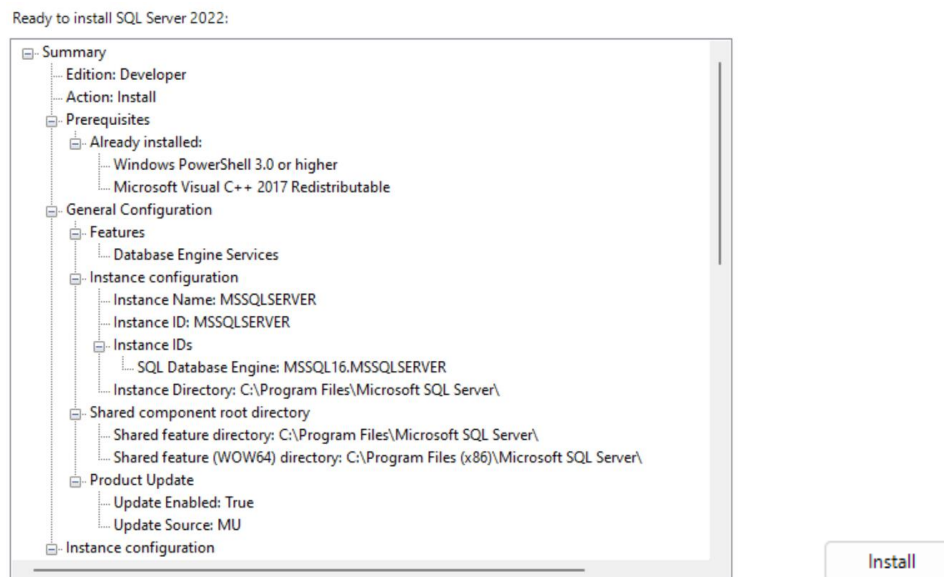

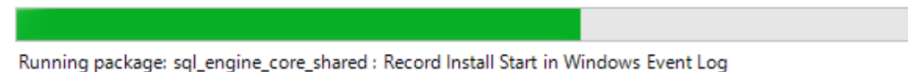21. Click the button labeled "Add Current User"

22. After your Windows user appears in the list, click [Next]
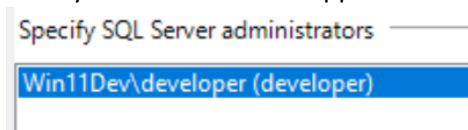
23. Review the installation summary, and click "Install"

24. SQL Server will install. This may take several minutes, so be patient.

25. When the install completes, you should see the following:

Information about the Setup operation or possible next steps:

Feature	Status
Database Engine Services	Succeeded
SQL Browser	Succeeded
SQL Writer	Succeeded
Setup Support Files	Succeeded

Details:

Install successful.

Install SQL Server Management Studio (SSMS)

SQL Server Management Studio no longer installs along with the database engine. It is a separate, version-independent component. So, we'll need to install it now.

1. In your terminal, run the following command:
   ```
   winget install Microsoft.SQLServerManagementStudio
   ```
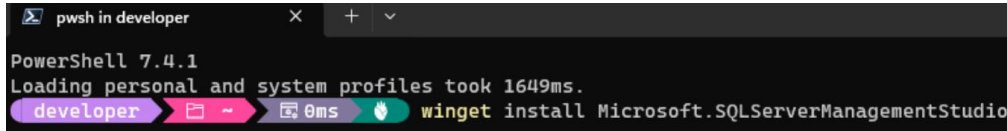
2. Respond "Yes" to the UAC prompt
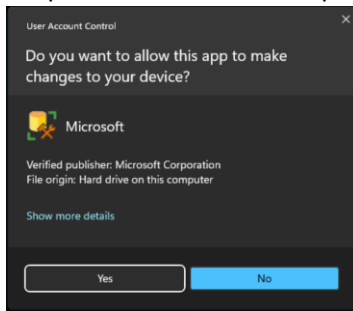
3. The installation will run
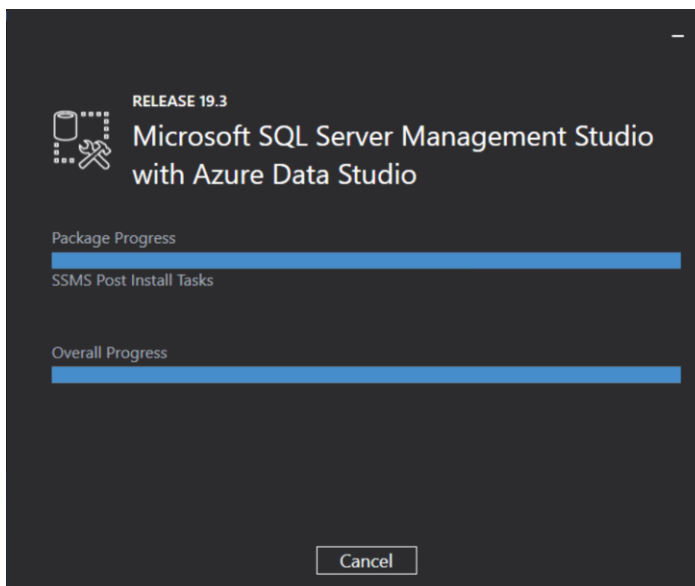
Restore the Sample Database

I have provided an example database that includes the data we will use in training. We need to make the database available in the SQL Server instance we just set up.

1. Launch SQL Server Management Studio

2. Log in either using Windows authentication as the user you added during the installation or SQL Server authentication with the SA user password you set up during installation.
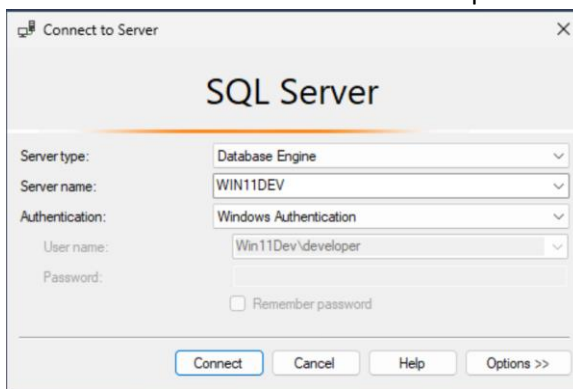
3. Right-click on the "Databases" node and select "Restore Database"
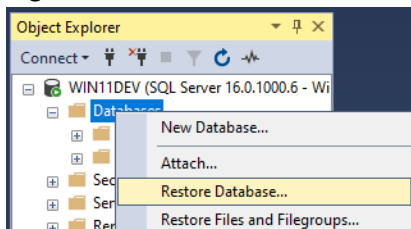
4. Select "Device" and click the browse […] button

5. In the dialog that comes up, click the "Add" button
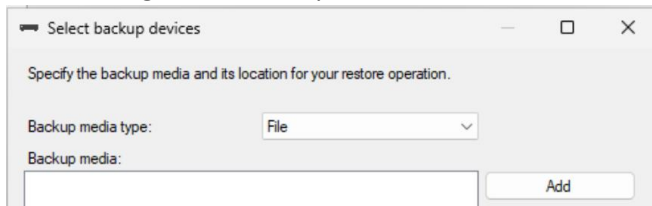
6. Navigate into the repository you cloned earlier and into the "Other Resources" folder, and select the file called "ExternalData.bak" then click [OK] and [OK] again
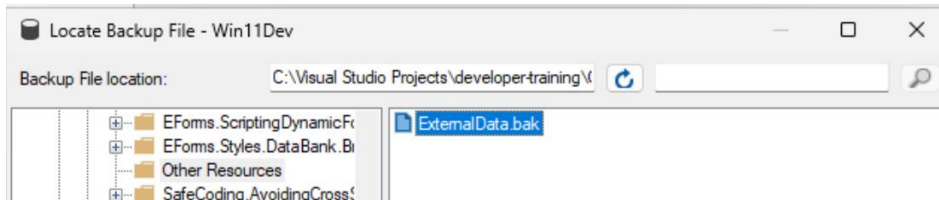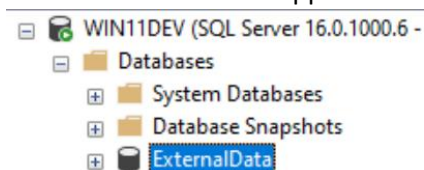
7. Leave the default settings and click [OK]
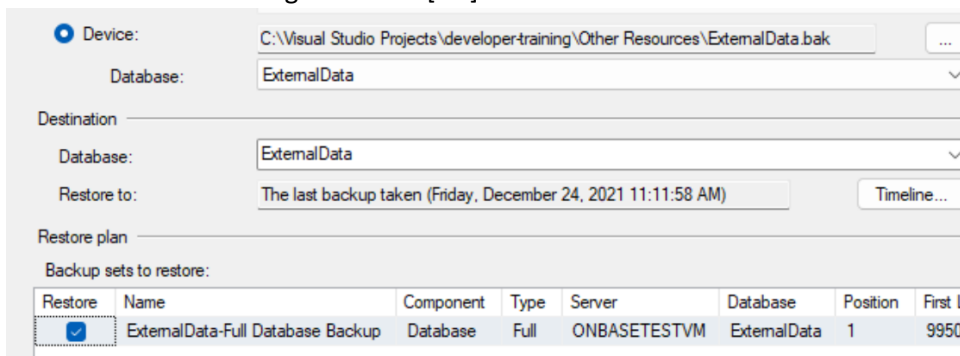
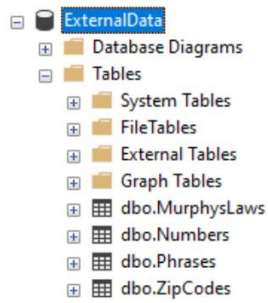8. After the backup completes, you should see the following message:
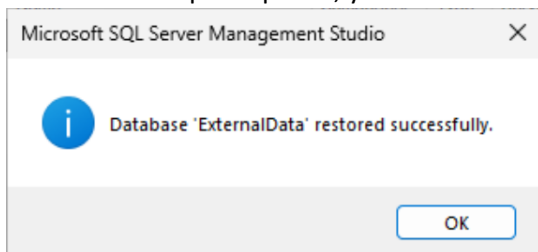
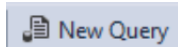9. The database will now appear under the "Databases" node. Select it.

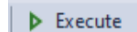10. You should note four tables in the database if you expand the "Tables" node.
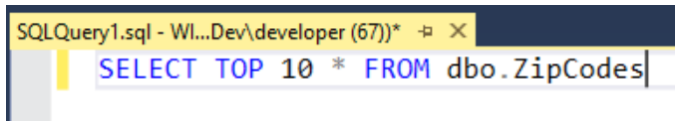

11. Click the "New Query" button at the tom of the UI

12. Enter the following SQL Query and click the "Execute" button or press [F5]

```
SELECT TOP 10 * FROM dbo.ZipCodes
```


13. You should see the following results:

	Id	State	County	City	ZipCode
1	1	AA	NONE	APO	34002
2	2	AA	NONE	APO	34003
3	3	AA	NONE	APO	34009
4	4	AA	NONE	APO	34020
5	5	AA	NONE	APO	34021
6	6	AA	NONE	APO	34022
7	7	AA	NONE	APO	34023
8	8	AA	NONE	APO	34024
9	9	AA	NONE	APO	34025
10	10	AA	NONE	APO	34030

(Optional) Install ReSharper

If you are on one of the teams for whom DataBank purchases ReSharper, follow the instructions below to add it to Visual Studio. ReSharper requires a license, so if you have not been issued a license, skip this section.
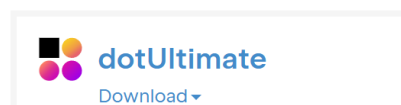
1. In your browser, navigate to https://www.jetbrains.com
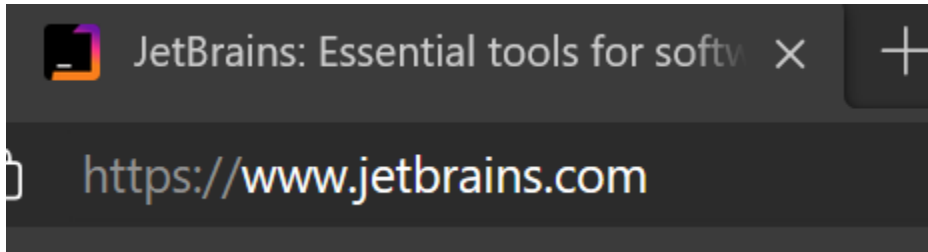
2. Click on the account icon

3. Log in with your JetBrains credentials.

4. If you're licensed, you should see your license here:

1 Toolbox Subscription

Please use your JetBrains Acc

5. Click on the "Download" link and select the item that matches your license
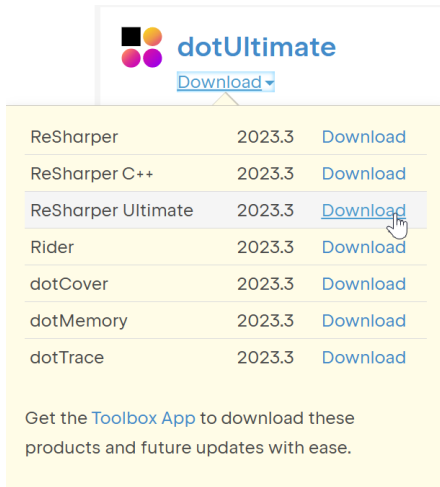
6. If given the choice between the "web" and full installers, download the full installer. It's 2GB, so it might take a minute.

7. Once the download completes, run the installer. Agree to the license agreement and select the items included in your subscription that you want to install. Make sure to select the option for the Visual Studio 2022 integration.

8. Click [Next] and review the summary. If Visual Studio is running, you may receive a warning like the one below. Click [Install]
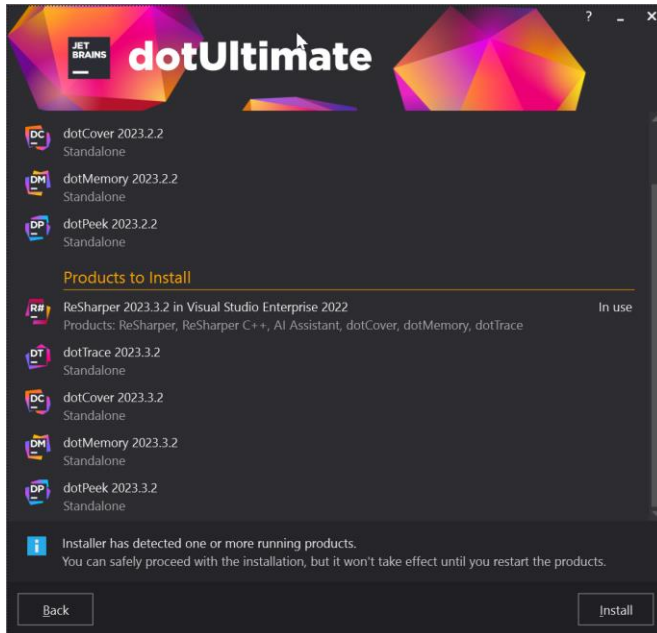
9. The installation may take a while, and it may appear to pause on the last step (Configuring ETW Service), which can take several minutes before presenting the UAC prompt. You may also see your monitor(s) flicker off and on (especially if you're using a docking station. Both of these effects are expected (if annoying).
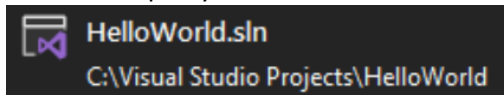

10. After completing the install, you'll see a message indicating successful installation, after which you can close the installer.
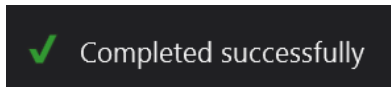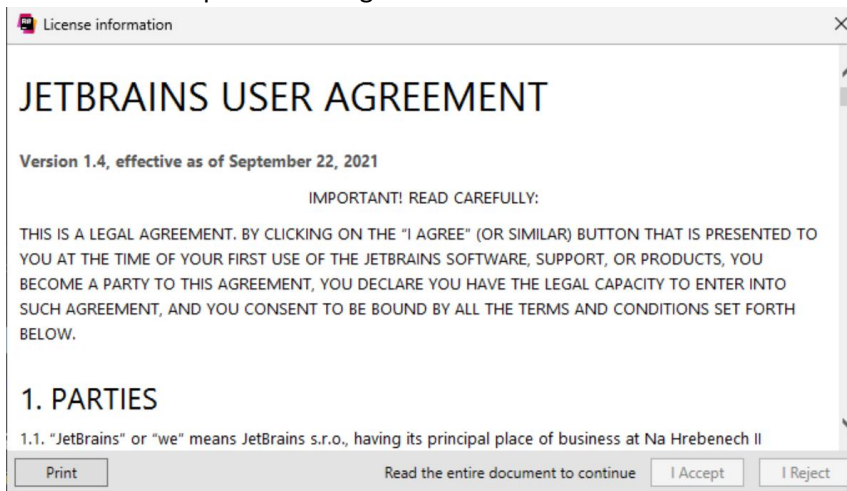

11. Launch Visual Studio

12. Choose to open your "HelloWorld" solution
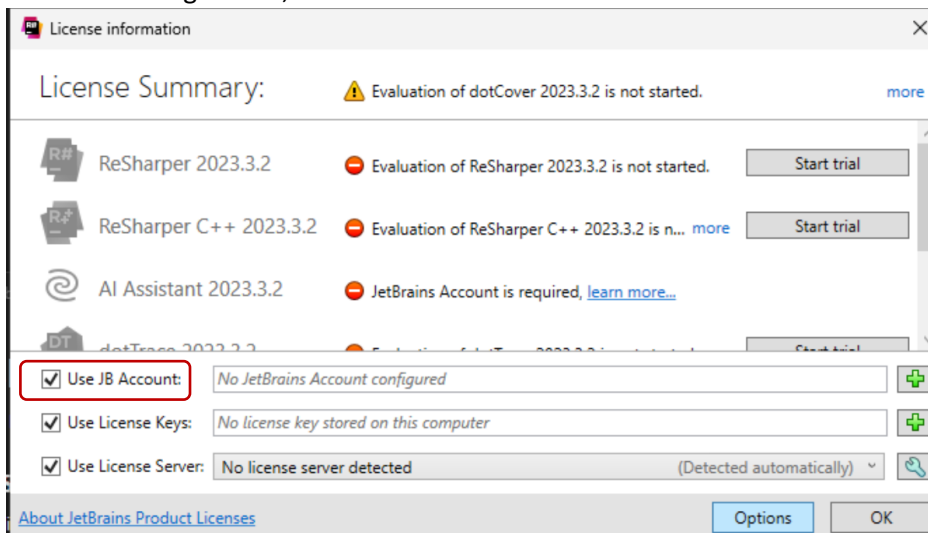
13. Review and accept the User Agreement

14. Leave the option to share statistics unchecked and click [OK]

15. On the licensing screen, choose "Use JB Account"
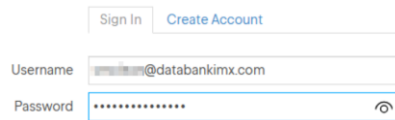
16. Click "Log in with JetBrains account"

17. Enter your email and password in the browser window that opens.

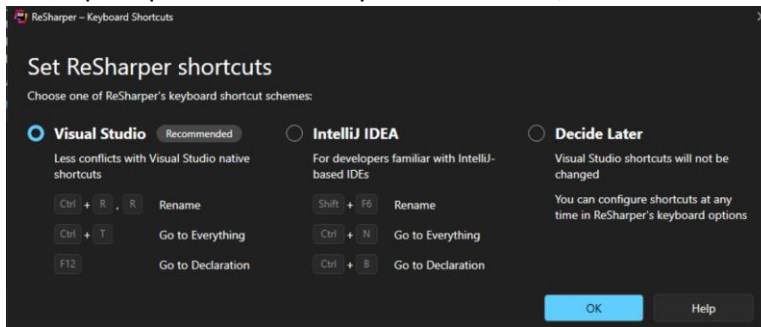18. You will see this response and can then close the browser.

Authorization successful

Now you can close this page and return to ReSharper

19. Your products are now licensed. Click OK
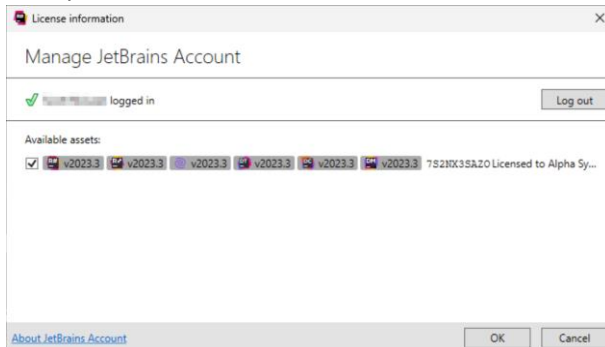
20. When prompted to set the keyboard shortcuts, stick with the default (Visual Studio) option.
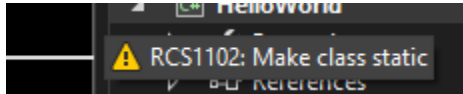
21. You will now see the ReSharper evaluation at the top of the code-view column

22. Right now, we have a couple of warnings. You can navigate directly to a warning by clicking the yellow bar in the code-view panel.

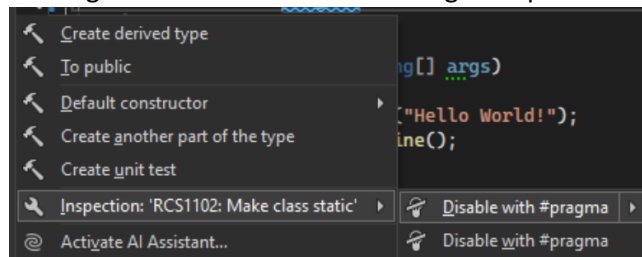23. The first warning indicates that our class should be static

24. We can correct this warning by either:
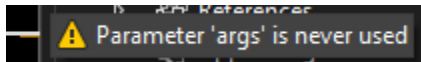   a. Adding the "static" keyword to the class declaration:


    or
    b. Clicking on the tool icon and choosing the option to disable this message


25. The second warning indicates that we have an unused argument (in this case the command-line arguments `string[] args`), which can be omitted.

26. For this one, we are presented with an idea (lightbulb) icon, that will provide an option to automate fixing the warning. Click on the lightbulb and select "Remove parameter (and update usages)."
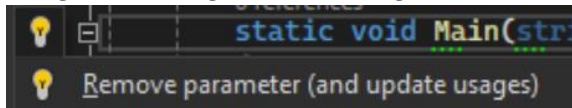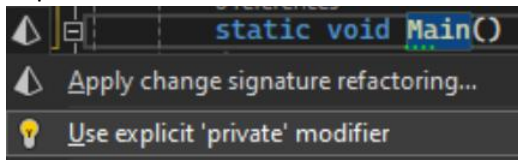

27. Now our program evaluates as error-free
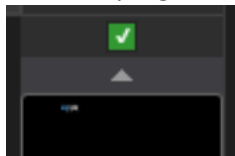
28. We can still correct one additional item. Notice the green dots under the Main function declaration

29. Clicking on the dots will present a recommended change (make the function Private). Go ahead and implement this fix.

30. Click the start button to re-run your program to see that these changes did not have a negative effect.
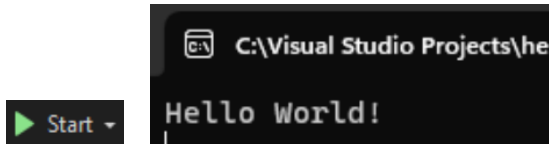
Congratulations! Your system is set up for development training.

Happy Coding!