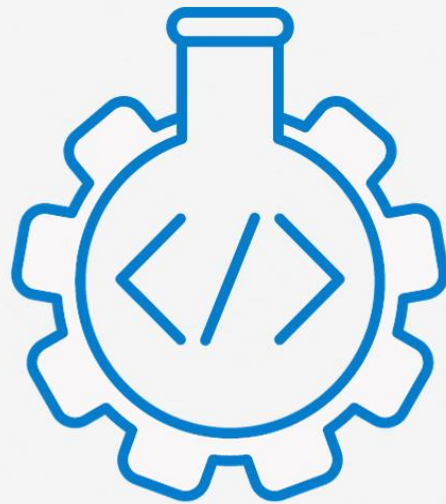
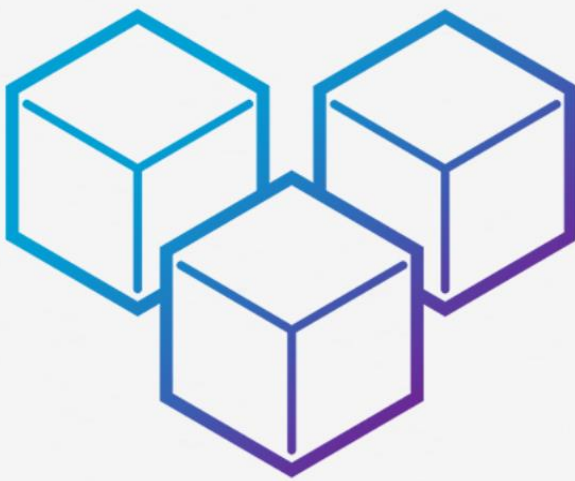


Microservices Certification Training Lab Guide



Microservices Training: Coding Lab Guide

Our learn-by-doing method enables you to build practical/coding experience that sticks. 95% of our learners say they remember more when they learn by doing hands-on which is required to translate knowledge into real-world results.

The recommended hardware and software requirements for our training are given below:

Hardware Requirements

- 1.8 GHz or faster 64-bit processor; Intel i5 or better recommended.
- 4 GB or higher RAM; 8GB recommended.
- 40 GB of available hard disk space.
- A higher display resolution; 1920 X 1080 or higher is recommended.

Software Requirements

- **Supported OS:** Windows 10, Windows 11
- **Not Supported OS:** Windows7, Windows8, Windows 8.1
- Visual Studio 2022 Community or higher
- Latest Visual Studio Code
- SQL Server Management Studio
- SQL Server 2019 Express or higher
- Docker Desktop
- Azure Account For AKS

Software Download Links

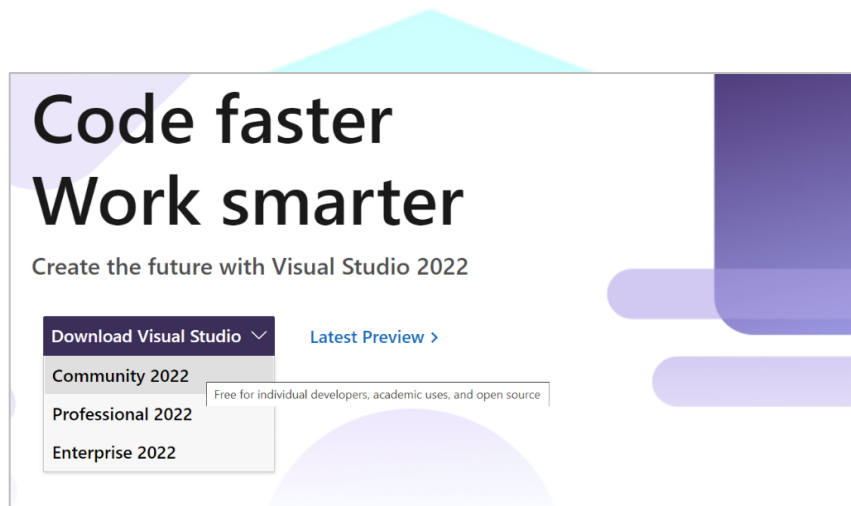
- Visual Studio 2022 Community or Higher: <https://visualstudio.microsoft.com/thank-you-downloading-visual-studio/?sku=Community&rel=17>
- SQL Server 2019 Express or Higher: <https://go.microsoft.com/fwlink/?linkid=866658>
- SQL Server Management Studio: <https://aka.ms/ssmsfullsetup>
- Docker Desktop: <https://www.docker.com/products/docker-desktop>
- Visual Studio Code: <http://code.visualstudio.com/>

1. Visual Studio 2022 Installation

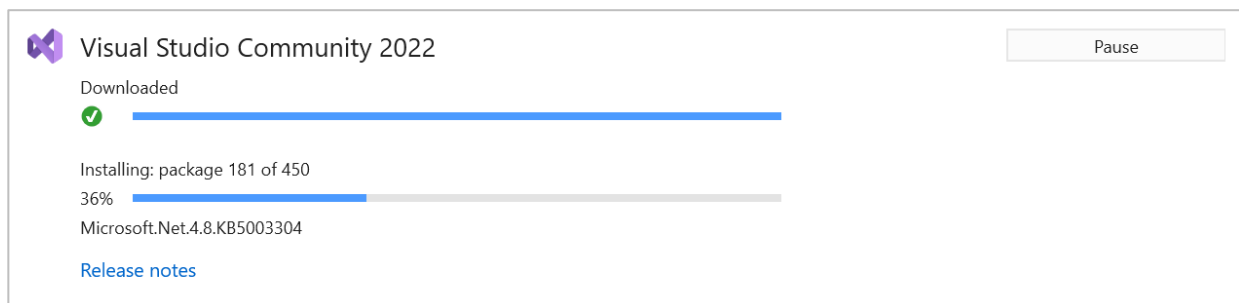
Visual Studio is an Integrated Development Environment (IDE) developed by Microsoft to develop GUI (Graphical User Interface), Web applications, web apps, mobile apps, cloud, and web services, etc.

To install and use Visual Studio for commercial purposes one must buy a license from Microsoft. For learning (non-commercial) purposes, Microsoft provided a free Visual Studio Community Version. We will use the Visual Studio Community Version 2022.

- **Step 1: Download the** <https://visualstudio.microsoft.com/downloads/>

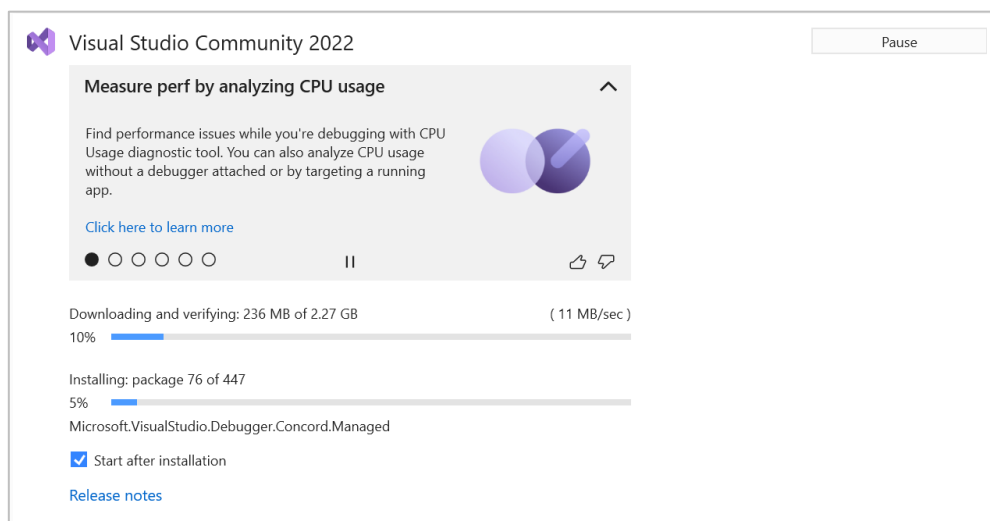
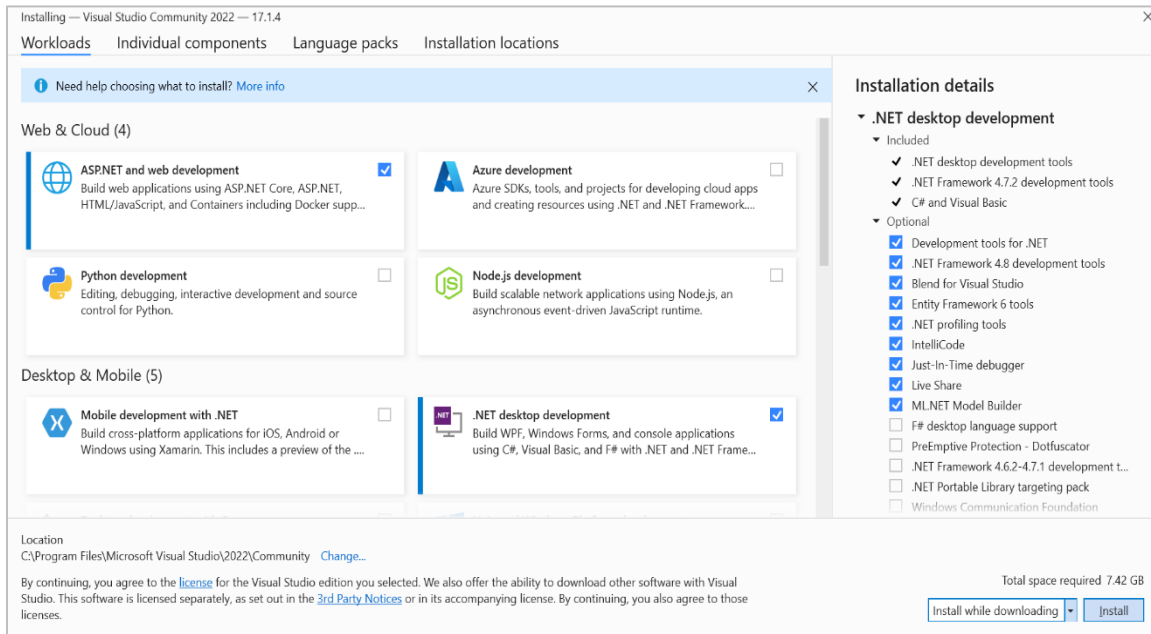


- **Step 2: Run the .exe file and follow the instructions to install the Visual Studio Community Version on the system.**



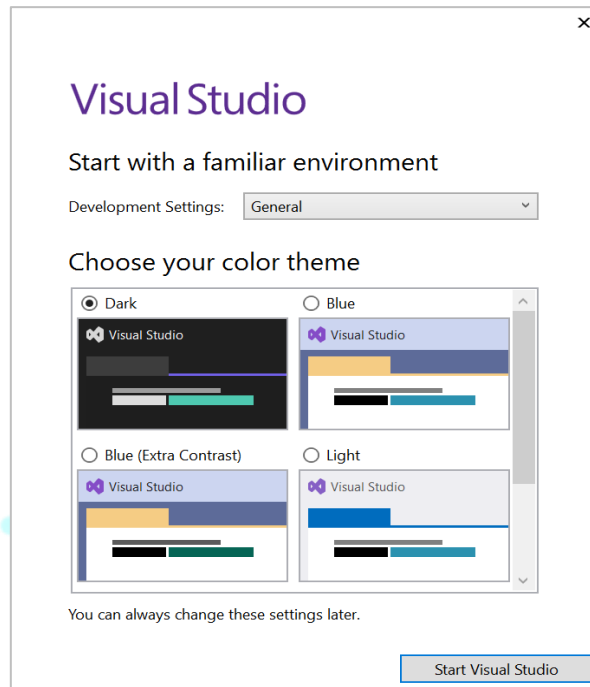
- **Step 3: Select ASP.NET and web development and .NET desktop development for windows forms and console applications etc. from the options and click to install in the bottom right corner as shown below.**

We are selecting both options. We can also modify it after installation.

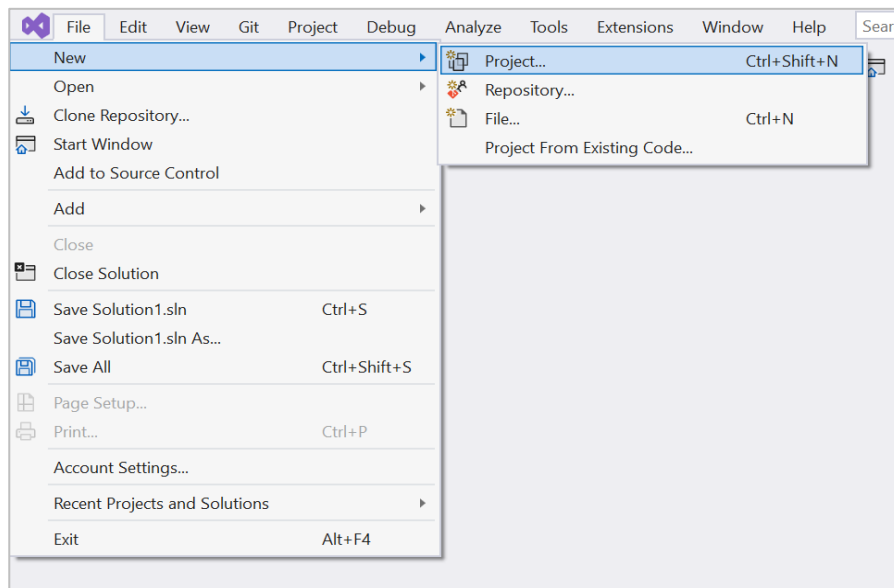


- **Step 4: Click on launch and then it displays the sign-in step which is completely optional.**
The dialog box will appear to choose the Development Settings and color theme. You need not to change the development settings.

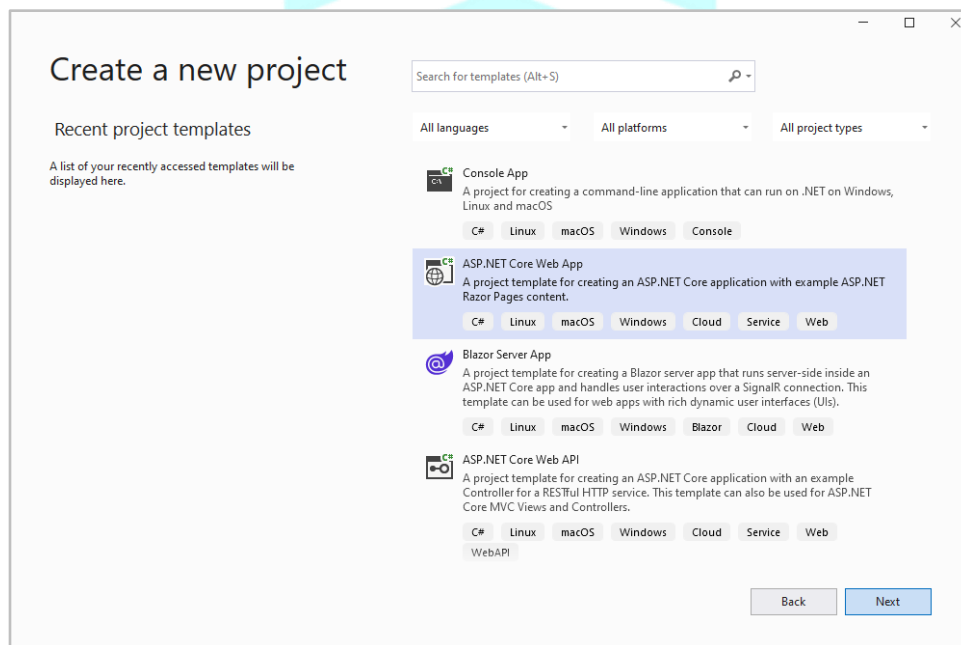
Once select the required options, click on the Start Visual Studio option.



- **Step 5: To create a new ASP.NET Web application, Go to File → New →Project like as shown below:**

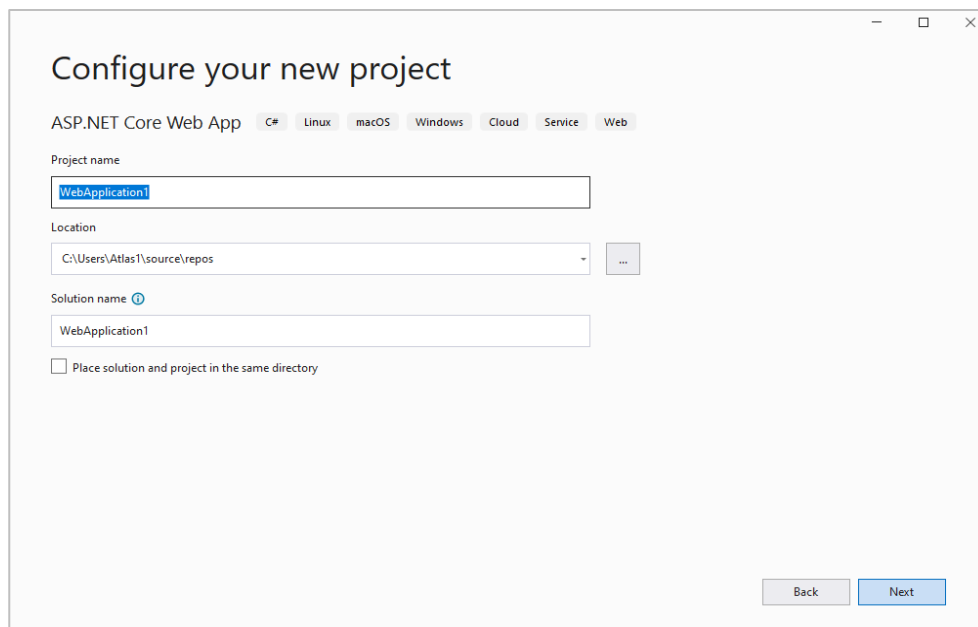


- **Step 6: As soon as we select the project, we will notice the different options of the Project. Select ASP.NET Core Web App and click *Next*.**



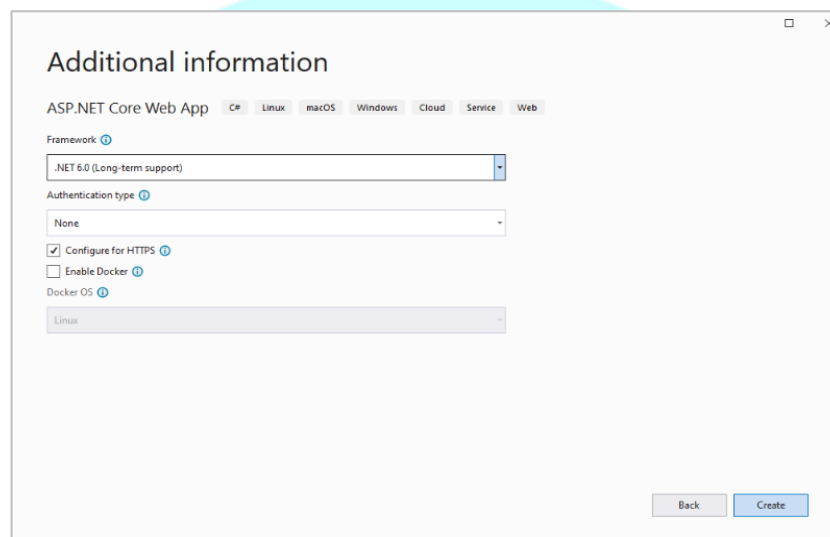
- **Step 7: The next step is to configure the project. Here, we have to choose the Project Name and Solution name and click on Next Button.**

We can also change the location of the project. We can put a different name for the solution as the solution is like a container for projects. We are putting the Project name and Solution name as WebApplication1 as shown in the below screenshot.



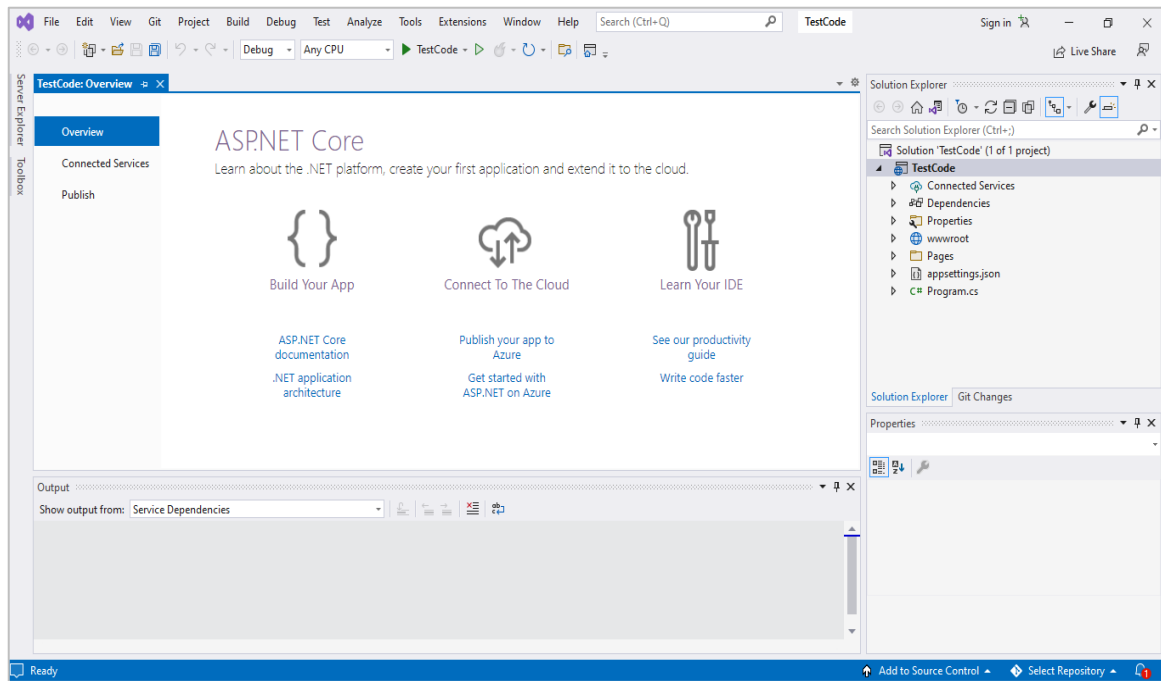
After Clicking the Next button, the Additional Information dialog box appears.

You don't have to modify anything. Just click on Create button.



- **Step 8: After Clicking on Create, Your Project is being created as shown in the following image.**

Visual Studio has been successfully installed. You're all set!




2. SQL Server 2019 Express Installation

MS SQL Server Express 2019 is a free version of Microsoft's SQL Server relational database management system used to develop databases and SQL queries, manipulate data, and perform database-related tasks that do not require large volumes of database storage. We are going to install SQL Server 2019 Express Edition on Windows Server 2019.

- **Step 1:** Before we begin, head over to the <https://www.microsoft.com/en-us/sql-server/sql-server-downloads> and download SQL Server 2019 Express Edition.


Or, download a free specialized edition



Developer

SQL Server 2019 Developer is a full-featured free edition, licensed for use as a development and test database in a non-production environment.

[Download now >](#)



Express

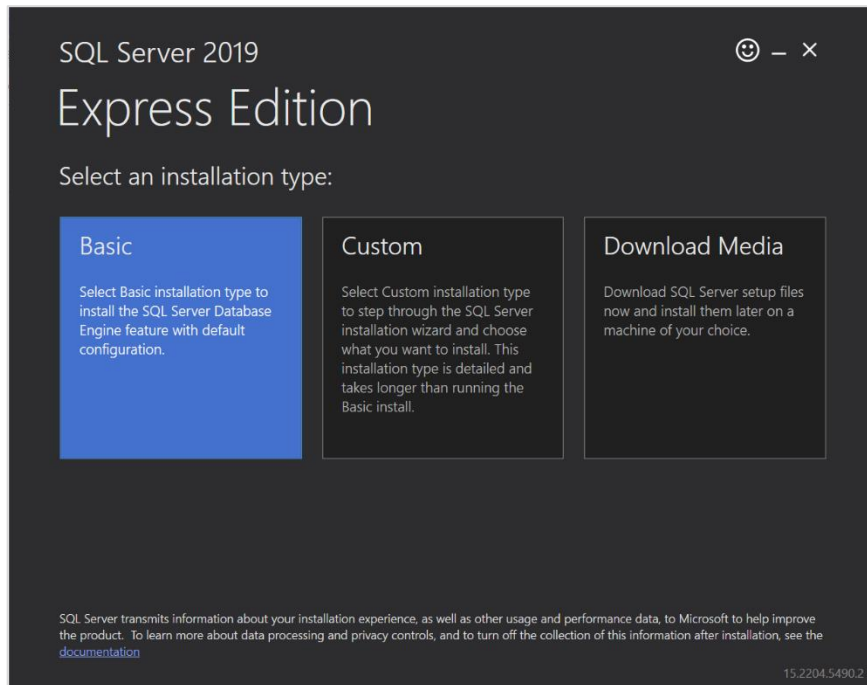
SQL Server 2019 Express is a free edition of SQL Server, ideal for development and production for desktop, web, and small server applications.

[Download now >](#)

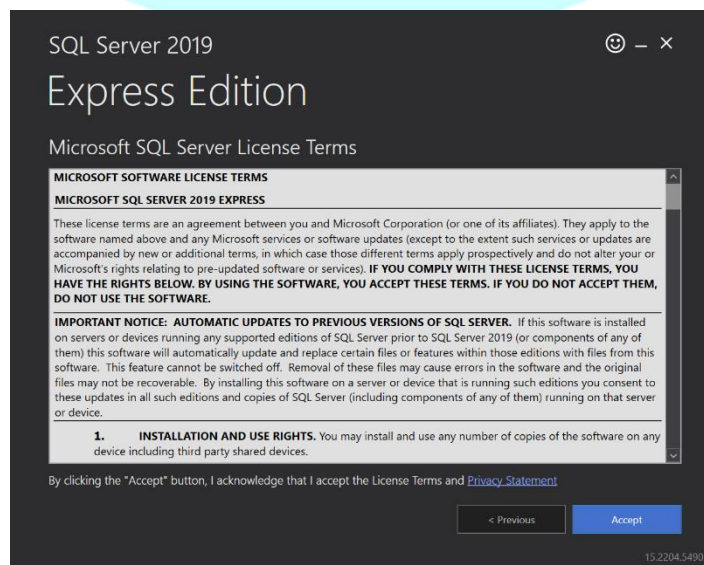
- **Step 2: An .exe file will be downloaded to your system. Double Click that file for further installation.**

	Name	Date modified	Type	Size
▼ Today (4)				
	SQL2019-SSEI-Expr	21-04-2022 23:32	Application	6,231 KB

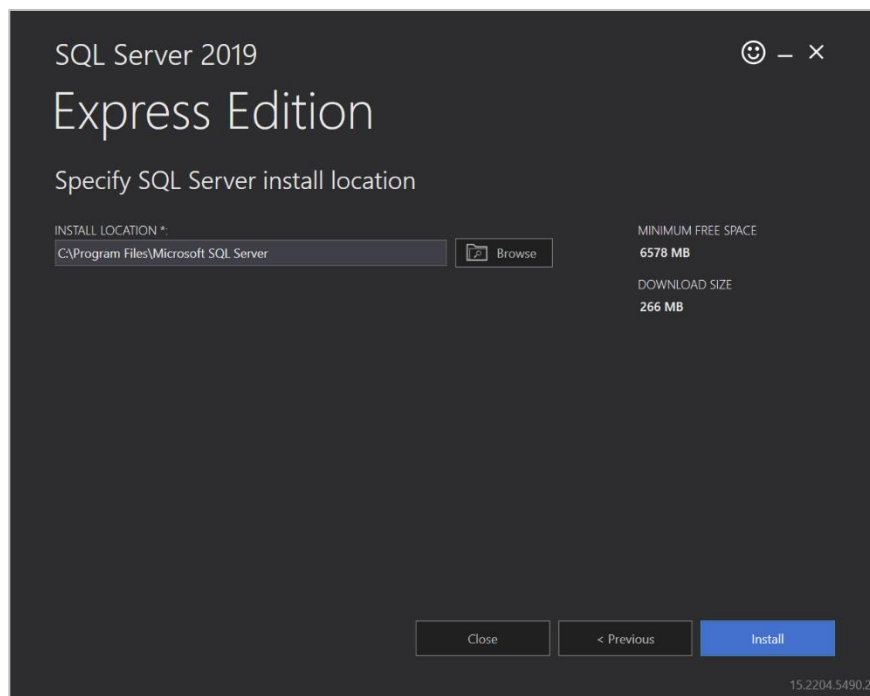
- **Step 3: After Double Clicking that .exe file, we have to choose our installation type.**
Let's start with Basic type as it will install default packages by downloading them from the internet whereas Custom Type provides customized features of SQL Server.



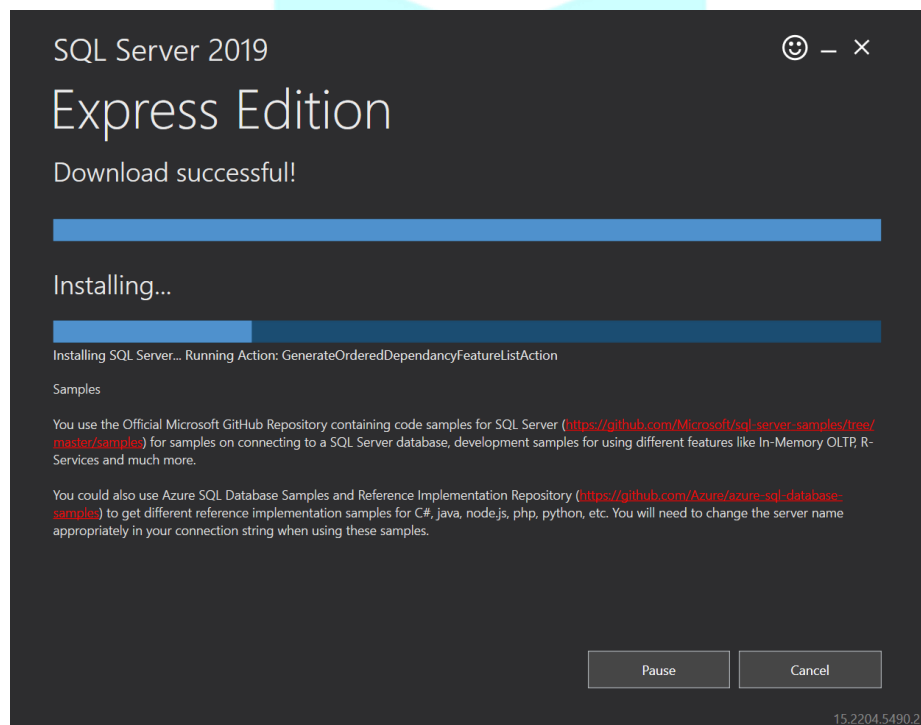
Step 4: Accept the License Agreement.



- **Step 5: After that, Specify the location for the install package and click install.**

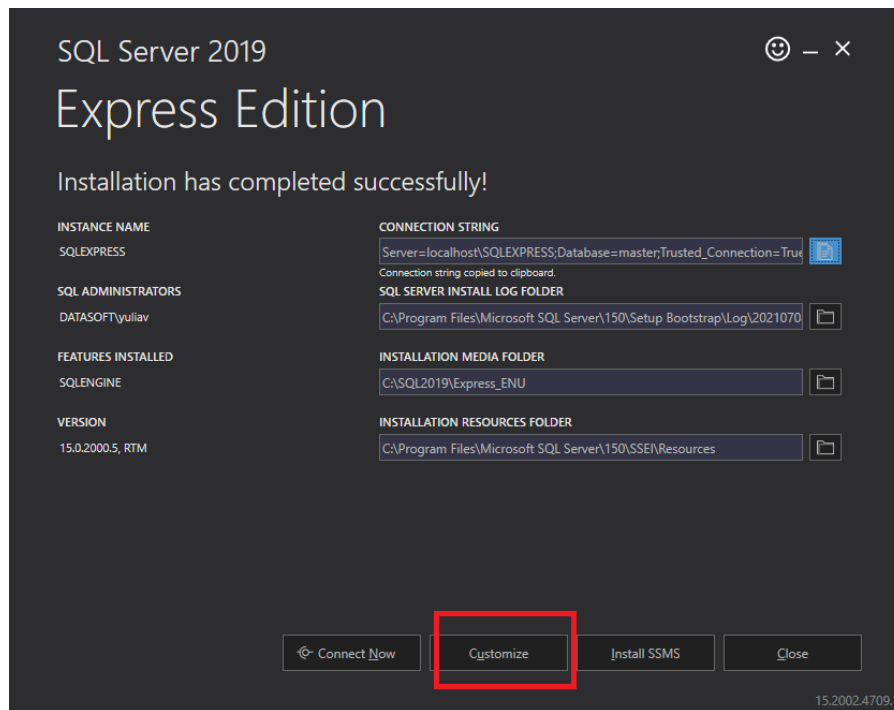


Step 6: After launching the installation process, you will see a progress bar informing that the install package is being downloaded and that SQL Server Express is being installed.



- **Step 7: After the installation has been completed, we can do the following:**
 - Connect to the SQL Server we have just installed via the sqlcmd utility.
 - Launch the SQL Server setup to customize the default configuration for the installation.
 - Install SQL Server Management Studio.
 - Close the installer.

Let's customize or modify the configuration of the SQL Server 2019 Express Edition we have just installed.



- **Step 8: The SQL Server 2019 Setup wizard open on the Installation Type tab where you choose either to install a new instance or modify the existing one.**

Here, we are adding features to an existing instance of SQL Server 2019. Click 'Next'.

SQL Server 2019 Setup

Installation Type

Perform a new installation or add features to an existing instance of SQL Server 2019.

Global Rules
Product Updates
Install Setup Files
Install Rules
Installation Type
Feature Selection
Feature Rules
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

☐ Perform a new installation of SQL Server 2019
Select this option if you want to install a new instance of SQL Server or want to install shared components.

☒ Add features to an existing instance of SQL Server 2019
Select this option if you want to add features to an existing instance of SQL Server. For example, you want to add the Analysis Services features to the instance that contains the Database Engine. Features within an instance must be the same edition.

SQLEXPRESS

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
MSSQLSERVER	MSSQL15.MSSQLS...	SQLEngine	Developer	15.0.2000.5
SQLEXPRESS	MSSQL15.SQLEXP...	SQLEngine	Express	15.0.2000.5

< Back **Next >** Cancel

- **Step 9: On the Feature Selection tab, select the instance features to be installed. Click Next.**

SQL Server 2019 Setup

Feature Selection

Select the Express features to install.

Global Rules
Product Updates
Install Setup Files
Install Rules
Installation Type
Feature Selection
Feature Rules
Feature Configuration Rules
Installation Progress
Complete

Looking for Reporting Services? [Download it from the web](#)

Features:

Instance Features

- ☒ Database Engine Services
- ☒ **SQL Server Replication**

Shared Features

- ☒ SQL Client Connectivity SDK

Redistributable Features

Feature description:

Includes a set of technologies for copying and distributing data and database objects from one database to another and synchronizing

Prerequisites for selected features:

Disk Space Requirements

Drive C: 0 MB required, 301232 MB available

Select All Unselect All

Instance root directory: C:\Program Files\Microsoft SQL Server\

Shared feature directory: C:\Program Files\Microsoft SQL Server\

Shared feature directory (x86): C:\Program Files (x86)\Microsoft SQL Server\

< Back **Next >** Cancel

- After the installation is complete, the Complete tab opens displaying the features installed or failed. In addition, you can view the log file for the feature.**

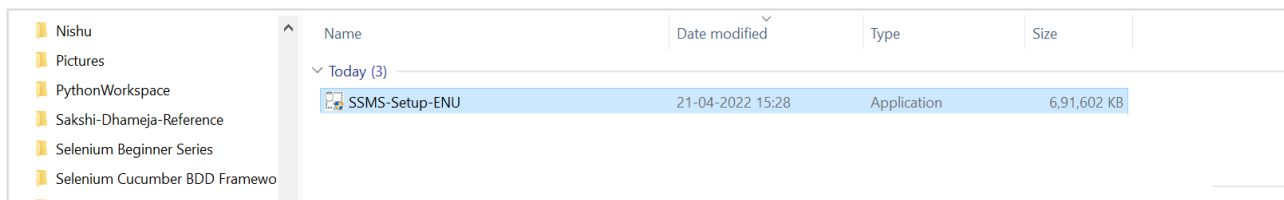
2.1 SQL Server Management Studio (SSMS) Installation

SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure. SSMS provides a single comprehensive utility that combines a broad group of graphical tools with many rich script editors to provide access to SQL Server for developers and database administrators of all skill levels.

- **Step 1: Download the SQL Server Management Studio** - <https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver15>

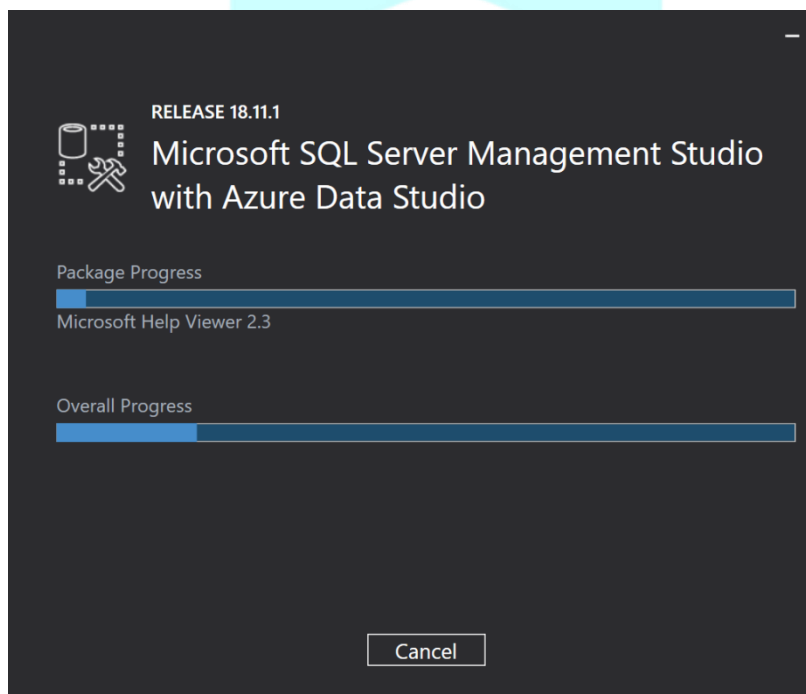
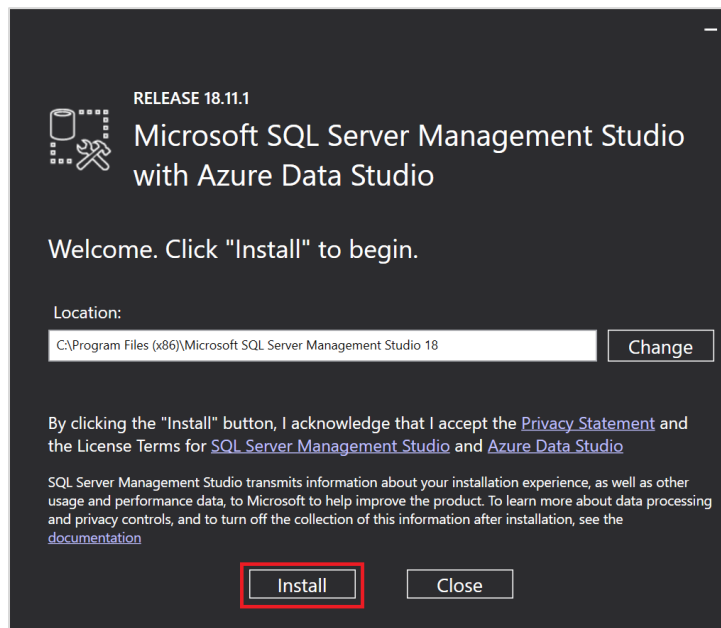


- **Step 2: Once the download is complete, go to the downloads folder in your system. Find the SSMS-Setup-ENU.exe and double click to install SSMS.**

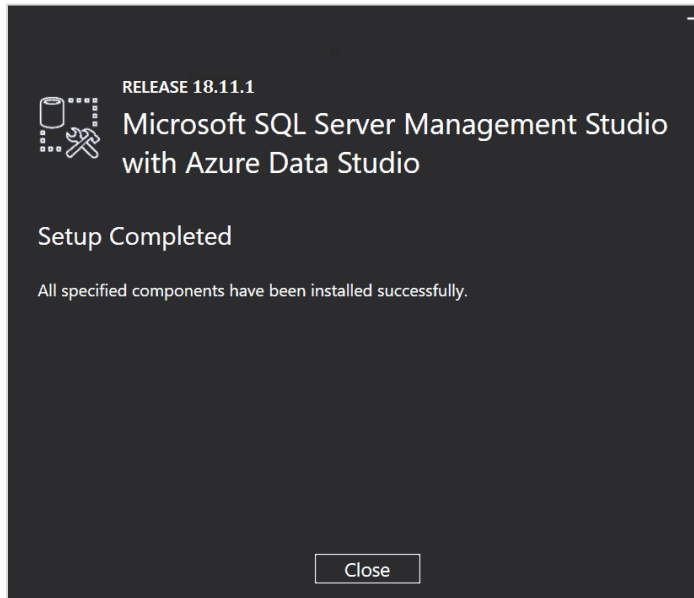


- **Step 3: An SSMS (SQL Server Management Studio) installation wizard appear.**

Click on the **Install** button to start installing SSMS. This will take a few minutes to complete installation.



- **Step 4: After the completion of Installation, Restart the server.**
Finally, SQL Server Management Studio (SSMS) is installed on your Server.



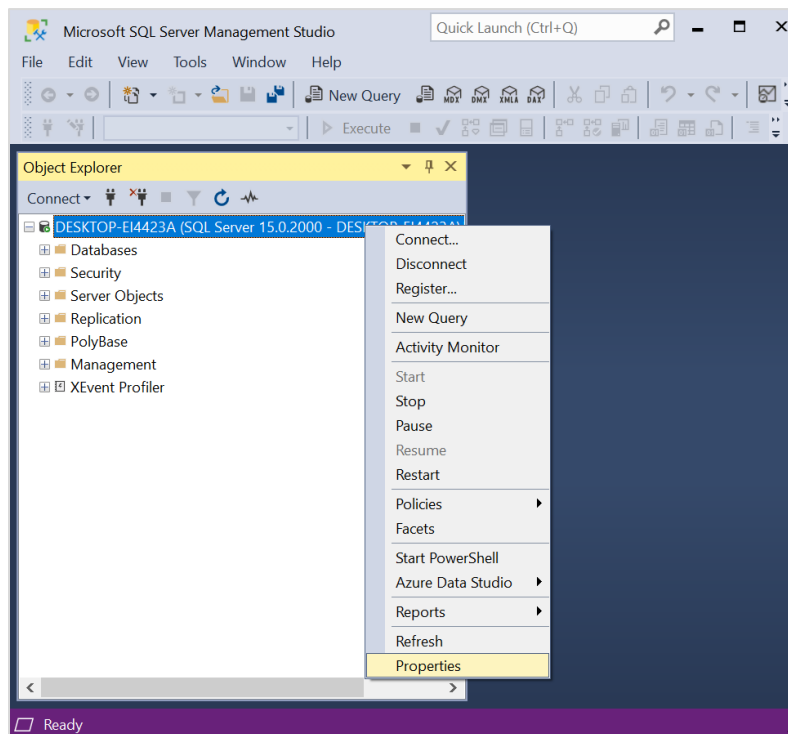
2.2 Change SQL Server to Mixed Role Authentication:

It is considered best practice to configure SQL Server instance to allow only Windows authentication. However, some situations require that SQL Server authentication be used. There are two methods to change SQL Server to mixed mode authentication after installation.

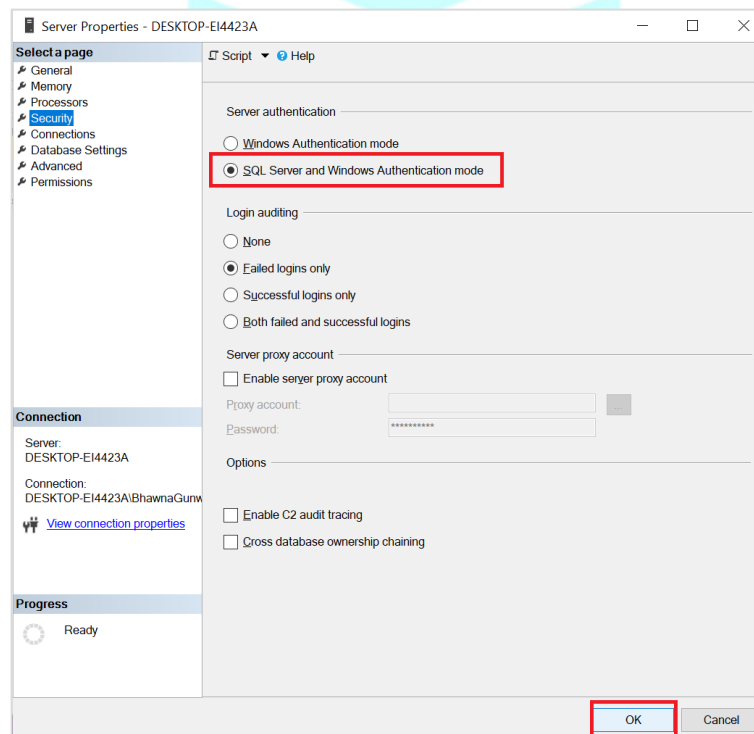
Step 1: Enable Mixed Mode Authentication in Management Studio.

As long as you can connect to SQL Server with Windows authentication, you can enable mixed-mode authentication easily using SQL Server Management Studio.

1. Login into SQL Server with SQL Server Management Studio.
2. In Object Explorer, right-click the name of the server that you wish to reconfigure and select Properties from the menu that appears.



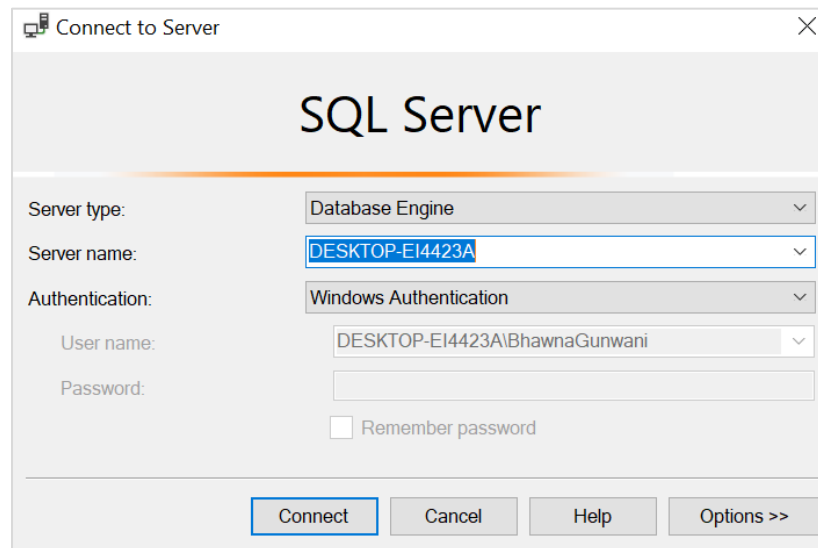
3. This displays the Server Properties dialog box. Select the Security tab and you can then choose SQL Server and Windows Authentication mode (also known as mixed mode authentication).



4. Click OK to save the changes and restart the SQL Server service.

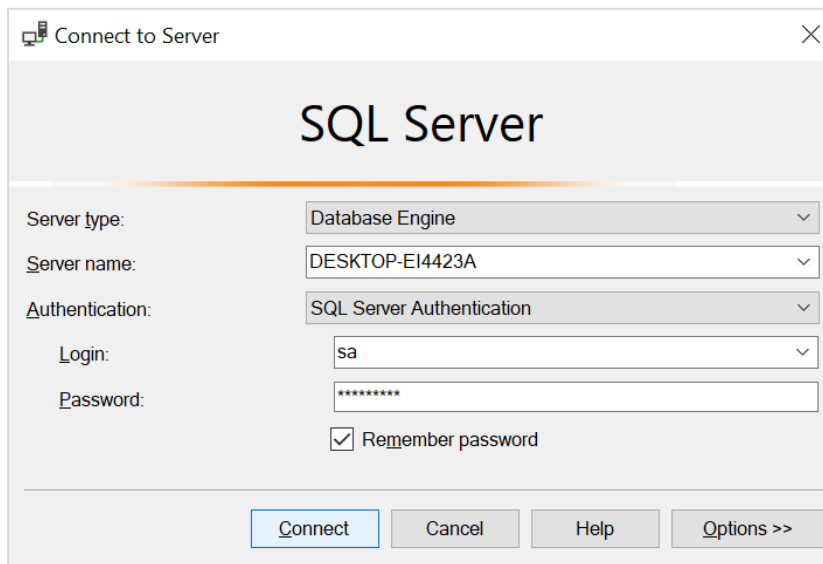
Step 2: To Connect with Windows Authentication Mode:

1. Go to the File.
2. Click on “Connect Object Explorer”.
3. Server name will be your System Name. If you don’t get it, you can browse for more.
4. By default, Windows Authentication is selected. Then, just Click on **Connect**.



Step 3: To Connect with SQL Server Authentication Mode:

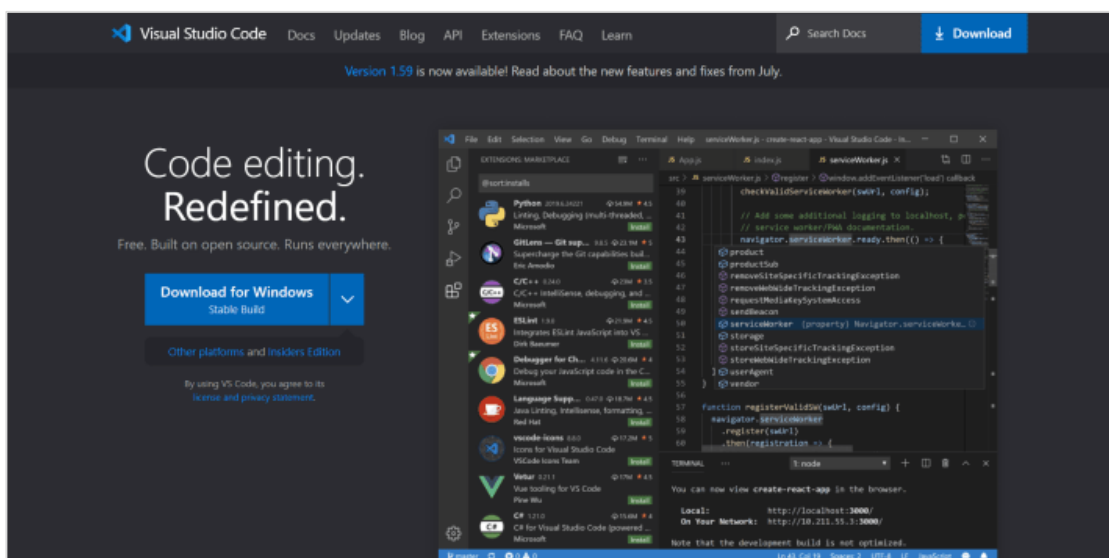
1. Go to the File.
2. Click on ‘Connect Object Explorer’.
3. From the Authentication drop-down menu, Select SQL Server Authentication.
4. By default, Login name will be **sa** (System Admin).
5. Password will remain same that you’ve entered while installing SQL Server.
6. Click on **Connect**.



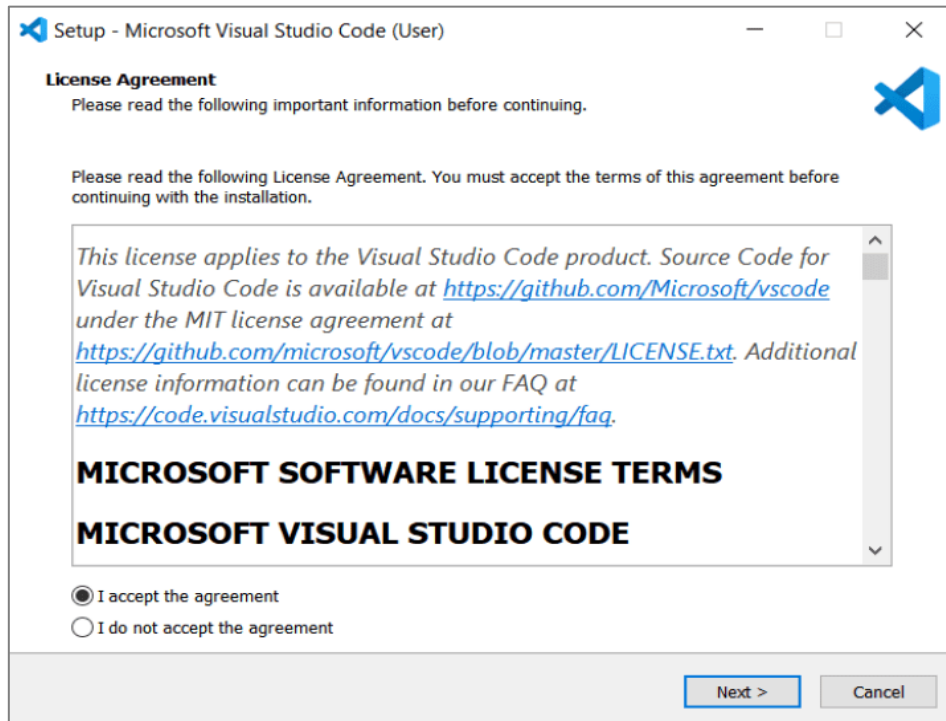
3. Visual Studio Code Installation

VS Code is an open-source code editor developed by Microsoft for Windows, Linux, and Mac OS platforms. Here we discuss the steps to install Visual Studio Code or VS code on Windows. It has built-in support for TypeScript, JavaScript, Node.js, and almost all programming language/library/framework-based plugins are available in VS studio right now.

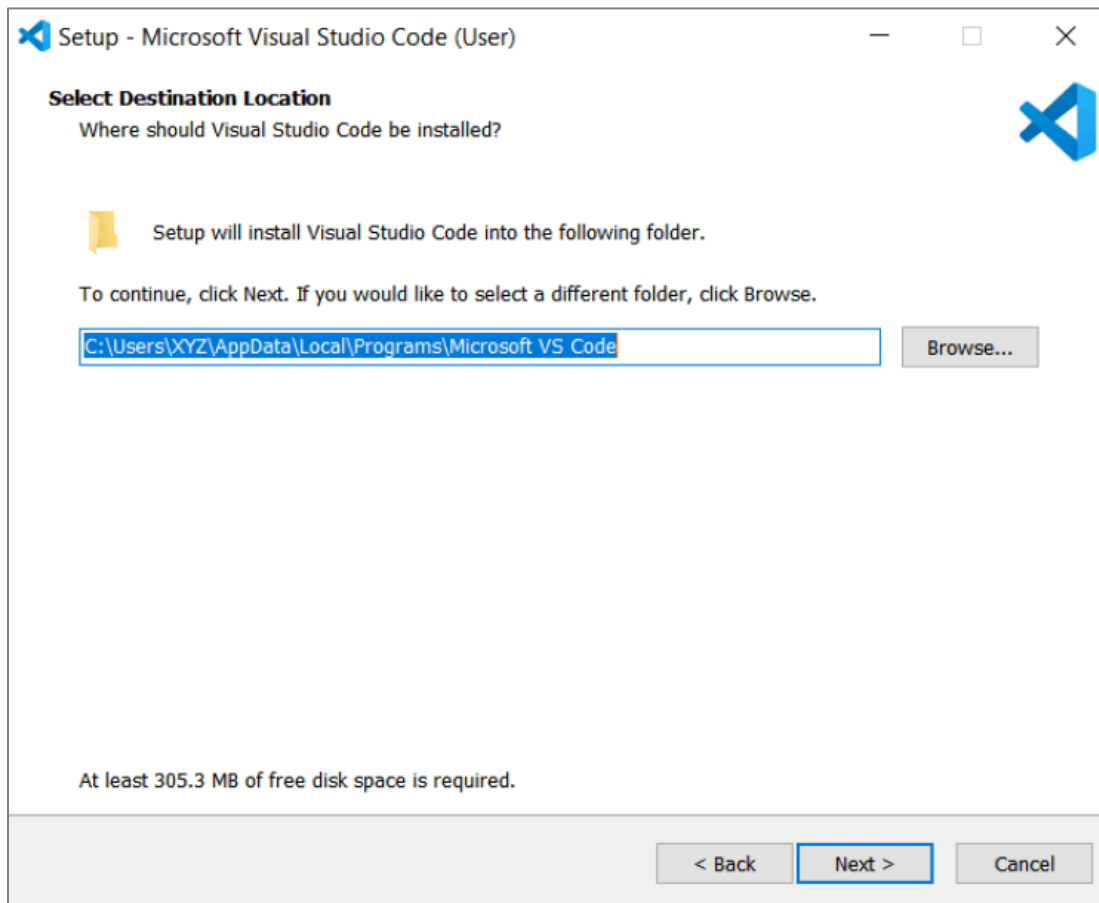
- **Step 1:** Go to <https://code.visualstudio.com/> and download the Setup file according to your Operating System.



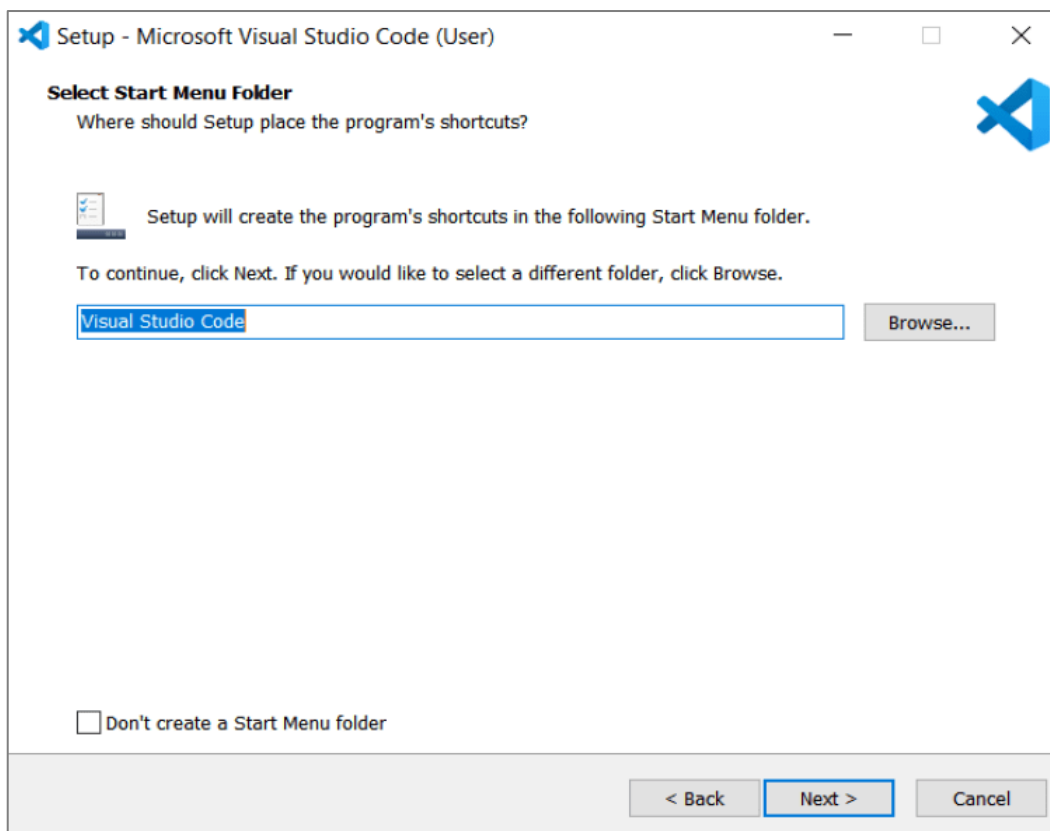
- Step 2: After Downloading the file from the link, open the installer.
- Step 3: Accept the license agreement and click on Next.



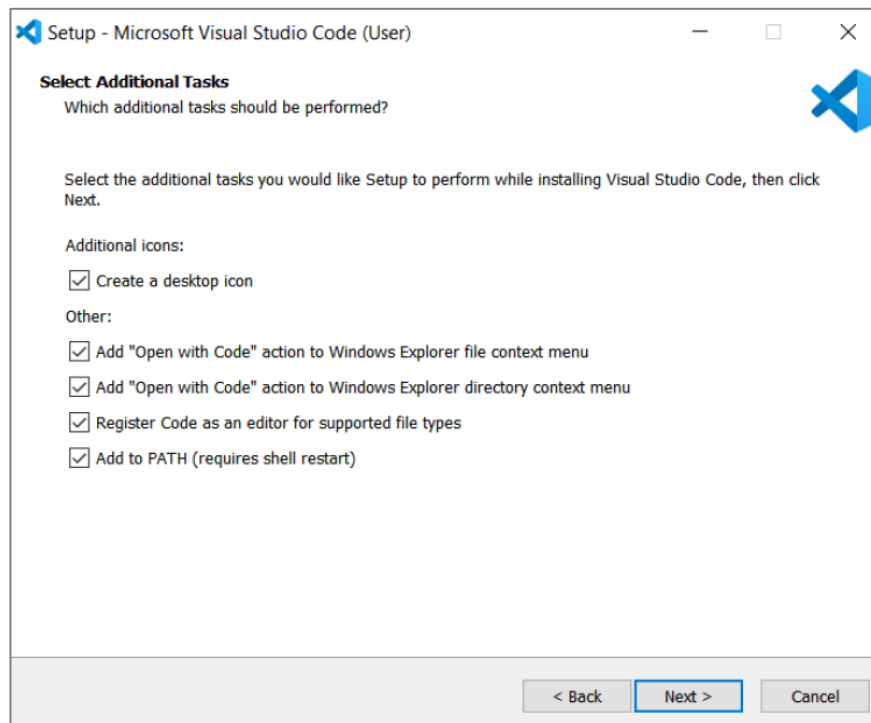
- **Step 4:** You can Select the destination where you need to install, by default it will be installed in the folder given in the below image.



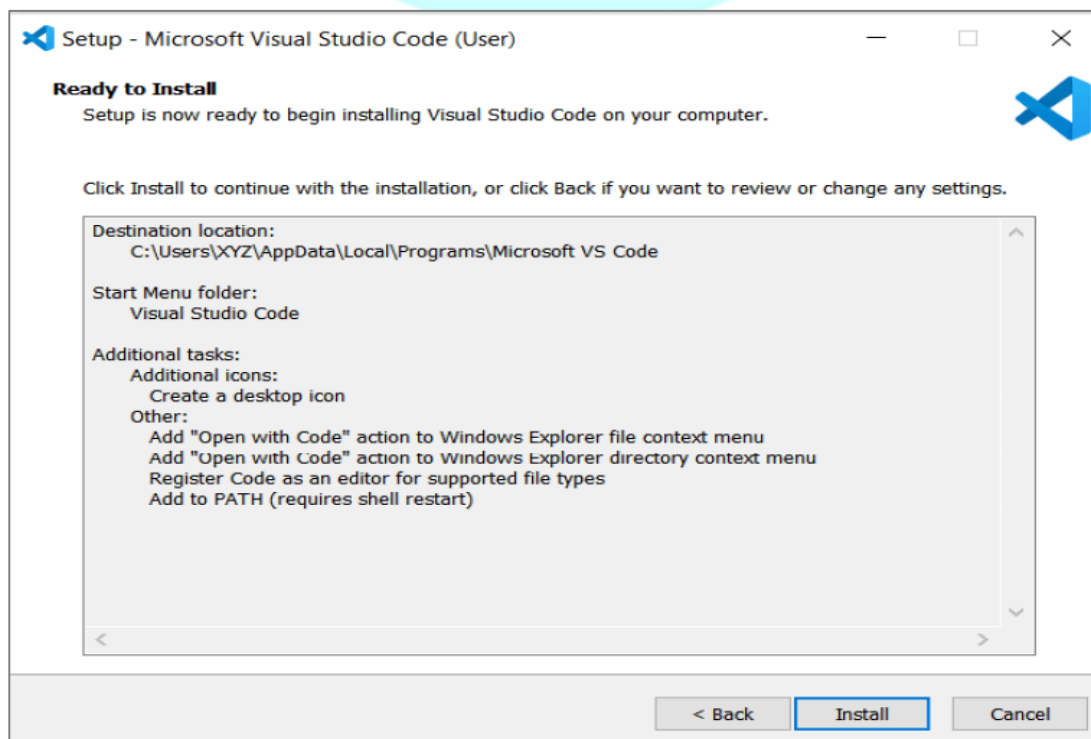
- **Step 5: Click on Next and It will create folder in start menu.**



Step 6: Click all the checkboxes and it will be helpful and it will also add to the PATH.



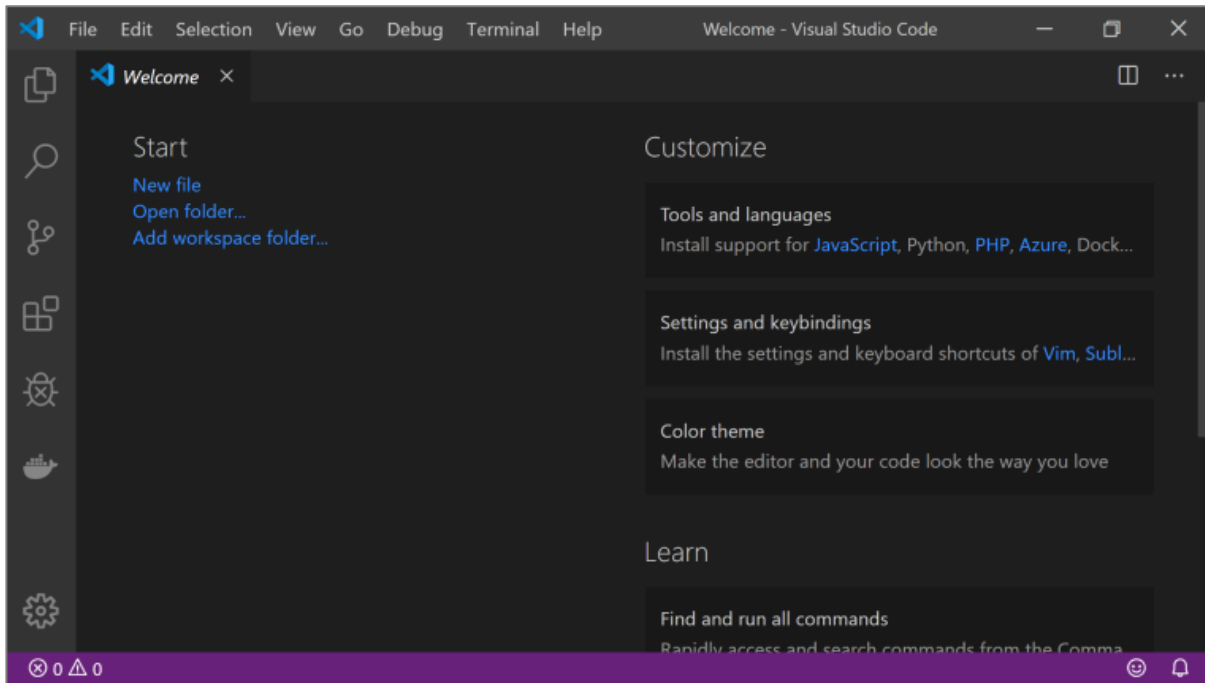
● Step 7: Review Settings



Now it will show all your settings there to install VS Code.

- **Step 8: Launch VS Code**

Then you will see the Welcome Screen of VS Code as shown below.



Visual Studio Code has successfully installed. Let the programming fun begin!

4. Docker Desktop Installation

This document will help you to install the Docker Desktop on your windows operating system.

- **Step 1: Download the latest WSL2 for Windows from the given link:**

[Manual installation steps for older versions of WSL | Microsoft Learn](#)

Refer to step 4 for getting the link to download the latest package.

Filter by title

WSL Documentation

> Overview

> Install

Install WSL

Manual install steps for older versions

Install on Windows Server

> Tutorials

> Concepts

> How-to

Frequently Asked Questions

Troubleshooting

> Release Notes

Download PDF

Step 4 - Download the Linux kernel update package

1. Download the latest package:

- WSL2 Linux kernel update package for x64 machines

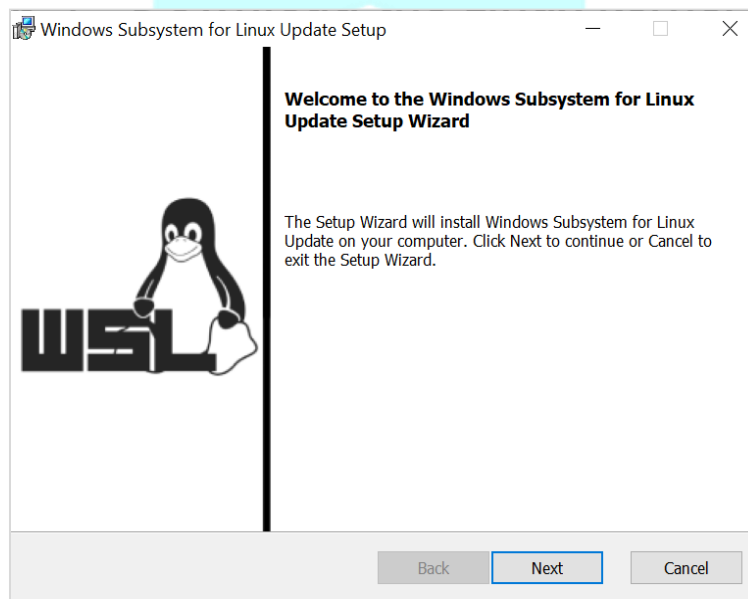
Note

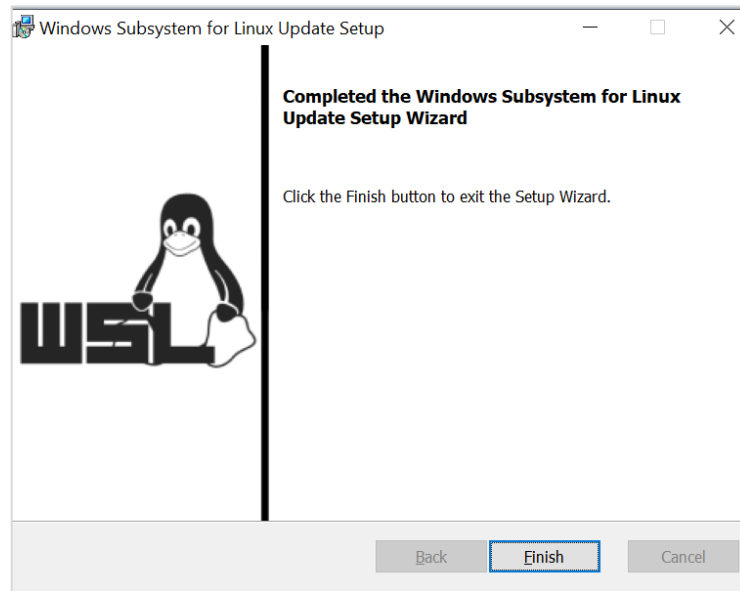
If you're using an ARM64 machine, please download the [ARM64 package](#) instead. If you're not sure what kind of machine you have, open Command Prompt or PowerShell and enter: `systeminfo | find "System Type"`. **Caveat:** On non-English Windows versions, you might have to modify the search text, translating the "System Type" string. You may also need to escape the quotations for the find command. For example, in German `systeminfo | find "Systemtyp"`.

2. Run the update package downloaded in the previous step. (Double-click to run - you will be prompted for elevated permissions, select 'yes' to approve this installation.)

Once the installation is complete, move on to the next step - setting WSL 2 as your

Open the downloaded file and click on Next.



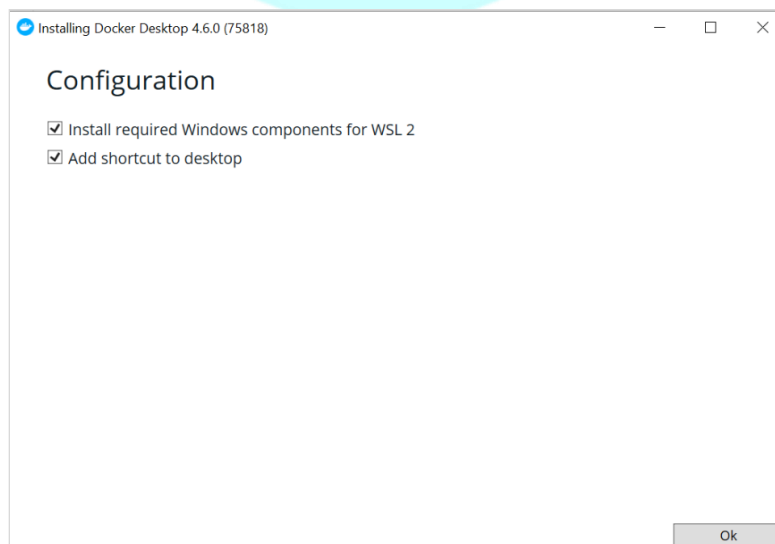


Once the installation is completed, Click on Finish.

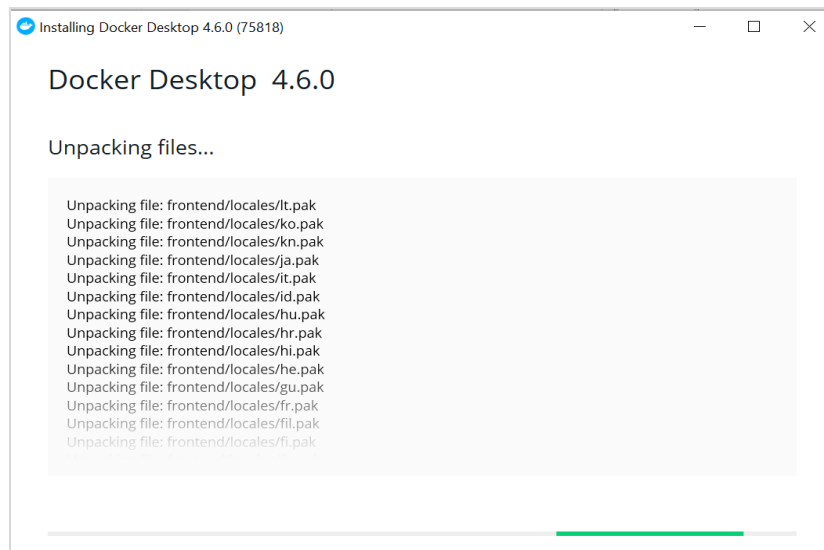
- **Step 2: Download the Docker for Windows from the given link.**

Download Link: [Install Docker Desktop on Windows | Docker Docs](#)

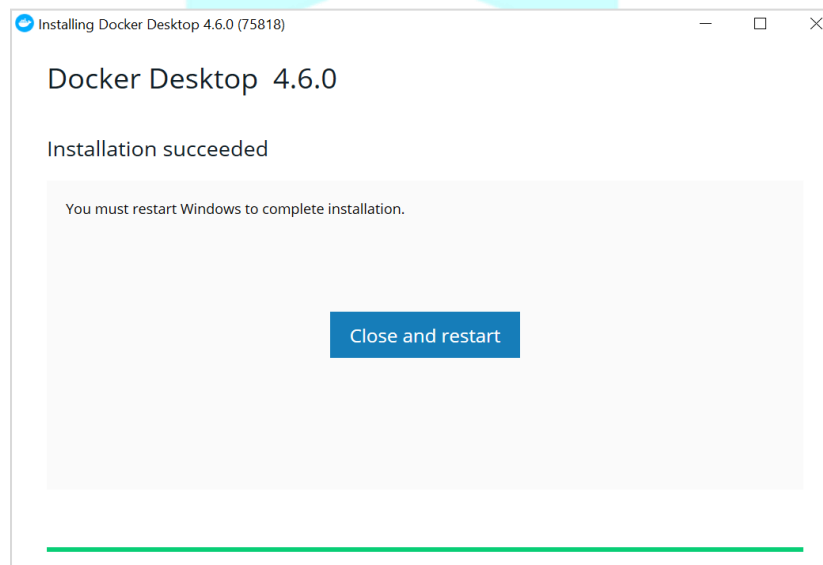
- **Step 3: Go to the path/folder where the file has been downloaded and Run Installer. In the configuration step Tick, all the configuration options and click on Next.**



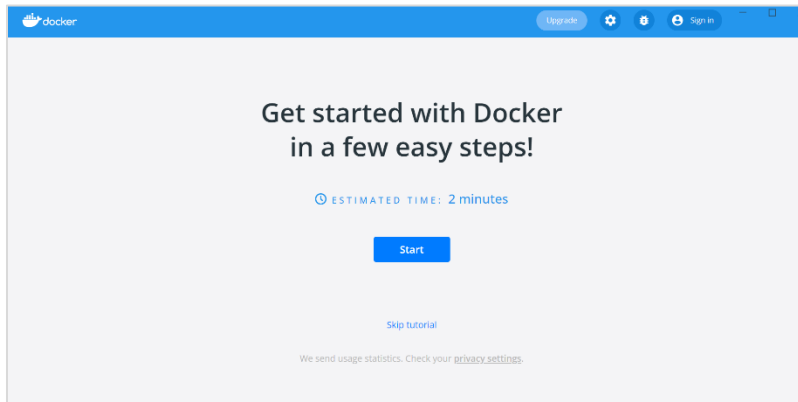
Now it will start Installing the Docker and it will take a couple of minutes.



And within a few minutes, you will get Installation Succeeded Message.



After Complete Installation, Docker gets started!



- **Step 4: To verify whether Docker is installed properly or not – Go to Command Prompt and type following command.**

`docker --version`

```
C:\ Command Prompt
Microsoft Windows [Version 10.0.19044.1586]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Miles pc>docker --version
Docker version 20.10.13, build a224086

C:\Users\Miles pc>
```

If you can see Client-server Details, then it is Installed Completely.

5. Microsoft Azure Account Setup

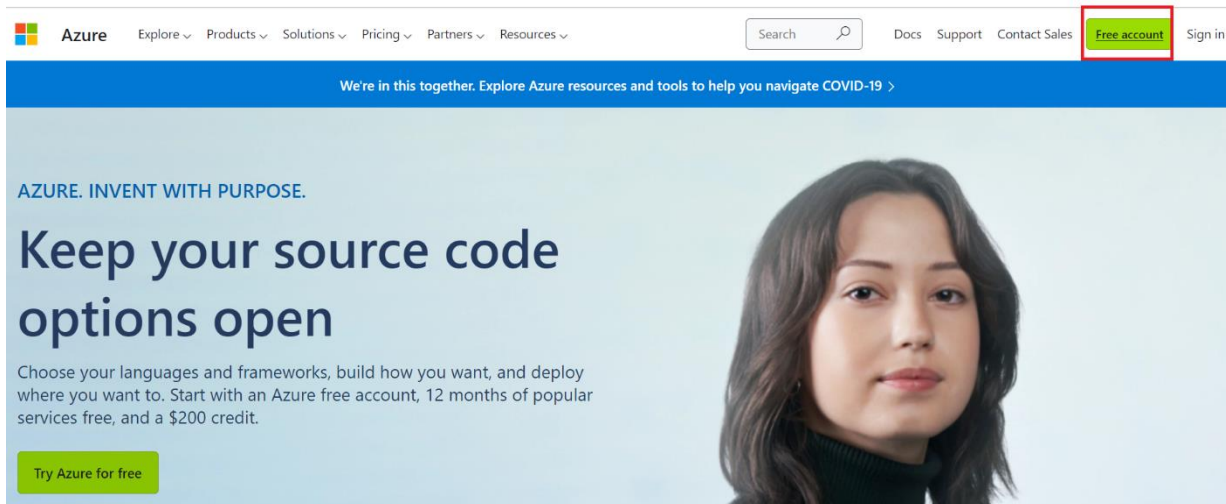
You can create a free Azure account. Azure allows you to create a free trial account for 30 days and also gives you some credit of 200 USD to use azure services. After completing your trial of 30 days and using your credits, you can upgrade your subscription and keep using the paid services.

r

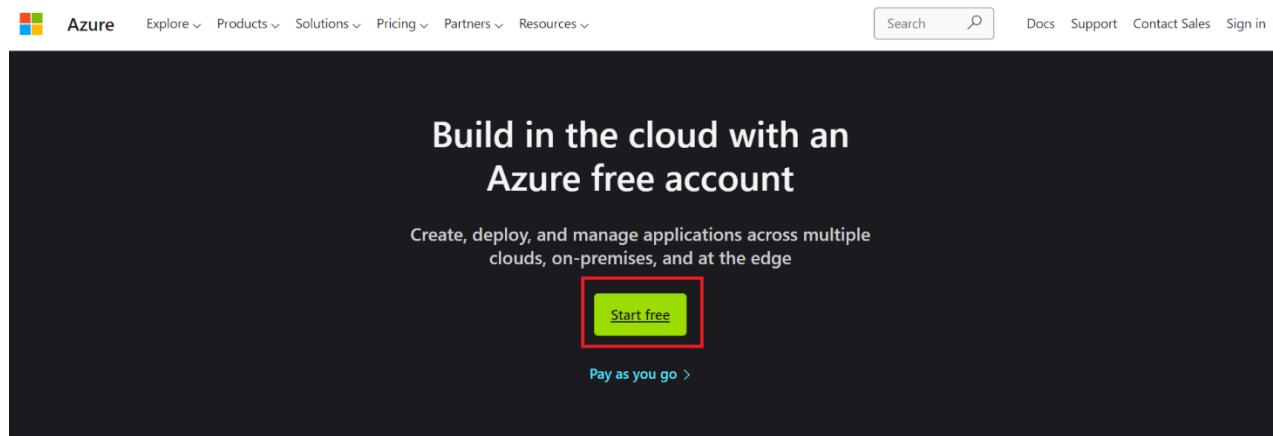
You can use your personal email address or Microsoft outlook account to create an account on the Azure platform. But you cannot sign up here with your work or school account.

Now, we will see how to create a free account on Azure.

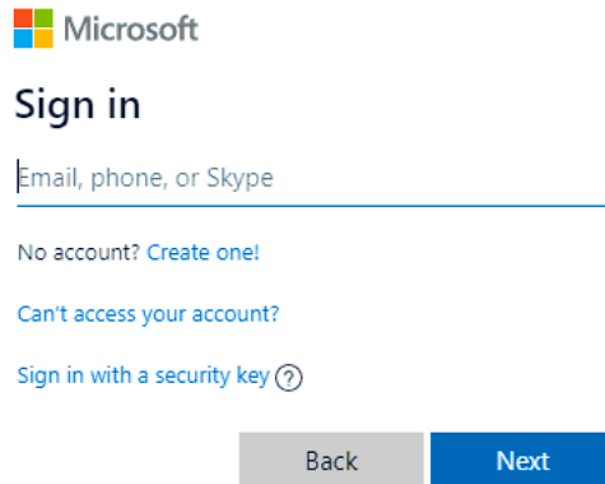
- **Step 1: Visit the Azure Home Page - <https://azure.microsoft.com/en-us/>**
- **Step 2: Click on the FREE ACCOUNT as shown in the below image.**



- **Step 3: Click on START FREE.**



- **Step 4: Sign in using an email address or create a new one.**



The image shows the Microsoft sign-in page. At the top is the Microsoft logo. Below it is the heading "Sign in". There is a text input field with the placeholder text "Email, phone, or Skype". Below the input field are three links: "No account? Create one!", "Can't access your account?", and "Sign in with a security key ?". At the bottom are two buttons: "Back" and "Next".

- **Step 5: Now enter the following details.**

- Country/Region
- Your Name
- Email Address
- Mobile Number
- And verify the mobile number

Your profile

Country/Region ⓘ
India ▼

Choose the location that matches your billing address. You cannot change this selection later. If your country is not listed, the offer is not available in your region. [Learn More](#)

First name
|

Middle name (Optional)

Last name

Email address ⓘ

Phone ⓘ
Example: 81234-56789

☐ Use a different phone number to verify your identity.

Text me **Call me**

Create your Azure free account

Popular services free for 12 months

25+ services always free

₹13,300 credit to use in your first 30 days

No automatic charges
After your credit is over, we'll ask you if you want to continue with pay-as-you-go. If you do, you'll only pay if you use more than the free amounts of services.

- **Step 6: Then it will ask you to provide the Phone number details, make sure to provide a valid phone number. Because you need to confirm by a text message or by a call.**

Once verification is done, click on Next.

Identity verification by phone

A text or phone call helps us make sure this is you.

Country code

India (+91) ▼

Phone number

Text me

Call me

Verification code



Verify code

- **Step 7: Now you need to provide the credit card details. Provide everything correctly here. Because it is going to deduct a little amount of money from your account.**

signup.azure.com/signup?offer=ms-azr-0044p&appId=1028ref=azureplat-generic&redirectURL=https%3F%2Fazure.microsoft.com%2Fen-us%2Fget-started%2Fwelcome-to-azure%2F

You won't be charged unless you upgrade.

We accept the following cards:

VISA  

Cardholder Name

Card number

Expires

CVV
 What is a CVV?

Address line 1

Address line 2 (Optional)

City

County (Optional)

Postal Code

Country/Region

30 days—beyond the free product amounts.

✓ **25+ always-free products**
 Take advantage of more than 25 products, including *serverless*, *containers*, and *artificial intelligence*, that are always free. Get these in your first 30 days, and always—once you choose to upgrade.

✓ **No automatic charges**
 You won't be charged unless you choose to upgrade. Before the end of your first 30 days, you'll be notified and have the chance to upgrade and start paying only for the resources you use beyond the free amounts.

- **Step 8: Check the Terms and Conditions and click Sign-Up.**

Follow these steps to get started. We ask for these details to protect your account and information. There are no upfront charges or fees.

1 About you

2 Identity verification by phone

3 Identity verification by card

4 **Agreement**

☒ I agree to the [subscription agreement](#), [offer details](#), and [privacy statement](#).

☒ I would like information, tips, and offers from Microsoft or selected partners about Azure, including Azure Newsletter, Pricing updates, and other Microsoft products and services.

[Sign up](#)

What's included

✓ **12 months of free products**
 Get free access to popular products like *virtual machines*, *storage*, and *databases* in your first 30 days, and for 12 months after you upgrade your account to pay-as-you-go pricing.

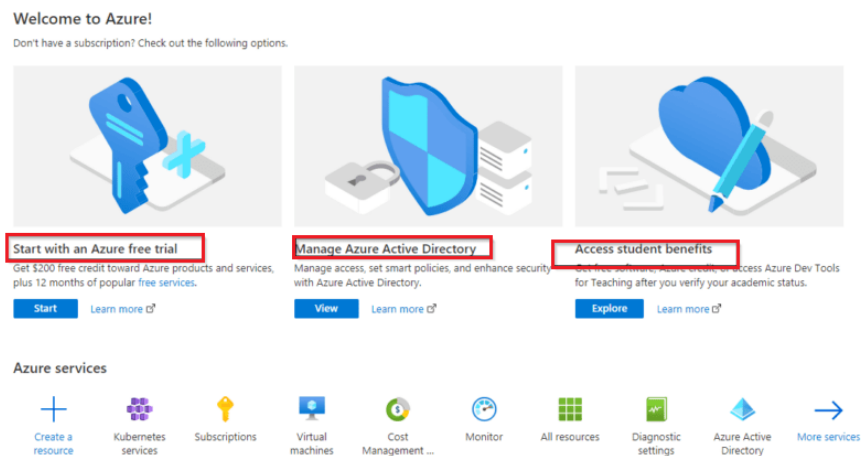
✓ **£150 credit**
 Use your £150 credit to experiment with any Azure service in your first 30 days—beyond the free product amounts.

✓ **25+ always-free products**
 Take advantage of more than 25 products, including *serverless*, *containers*, and *artificial intelligence*, that are always free. Get these in your first 30 days, and always—once you choose to upgrade.

- **Step 9: You have successfully created a Microsoft Azure free account.**

- **Step 10:** Click on Portal on the top right corner of the screen. You'll be redirected to the Azure Portal.
- **Step 11:** If you have exhausted your free credit then you have to move to the Pay as you go subscription policy.

if you have crossed the limit or time limit then you will get “your subscription is disabled and cannot perform operations until its re-enabled”



You cannot create multiple Microsoft azure free accounts or after one account expires to another account for free credit of 200\$ using a single Credit card.

Note: *If you are a student and don't have a credit card, then you can also register using your student ID.*

```

Select Command Prompt

C:\Users\Miles pc>docker version
Client:
Cloud integration: v1.0.22
Version: 20.10.13
API version: 1.41
Go version: go1.16.15
Git commit: a224086
Built: Thu Mar 10 14:13:04 2022
OS/Arch: windows/amd64
Context: default
Experimental: true

Server: Docker Desktop 4.6.0 (75818)
Engine:
Version: 20.10.13
API version: 1.41 (minimum version 1.12)
Go version: go1.16.15
Git commit: 906f57f
Built: Thu Mar 10 14:06:05 2022
OS/Arch: linux/amd64
Experimental: false
containerd:
Version: 1.5.10
GitCommit: 2a1d4dbdb2a1030dc5b01e96fb110a9d9f150ecc
runc:
Version: 1.0.3
GitCommit: v1.0.3-0-gf46b6ba
docker-init:
Version: 0.19.0

```

Contact Us

If you are still facing any issues while installing the software and configuring the system, please free to reach out to us at **+91 9999 123 502/503** or email us at hello@scholarhat.com