.NET SDK Installation and Setup Guide

1. Download and Install .NET SDK

1. Visit the official .NET SDK download page: https://dotnet.microsoft.com/en-us/download
2. Choose the version of .NET SDK that suits your needs (typically, the latest version is recommended).
3. Download and run the installer for your system (Windows, macOS, or Linux).
4. Follow the on-screen instructions to complete the installation.

2. Verify the Installation

1. Open **Command Prompt** (CMD).
2. Run the following command to verify if .NET is installed successfully:

```
bash
Copy
dotnet --version
```

3. If you see the .NET version displayed, the SDK is installed correctly.
4. If the command doesn't return a version number, you may need to add the .NET SDK path to your **Environment Variables**.

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3. Add .NET SDK Path to Environment Variables (if necessary)

1. Open **Start Menu** and search for "**System Environment Variables**."
2. Click on **Edit the system environment variables**.
3. In the **System Properties** window, click on the **Environment Variables...** button.
4. Under **System variables**, find the **Path** variable and click **Edit...**.
5. In the **Edit Environment Variables** window, click **New** and add the following path:

```
makefile
Copy
C:\Program Files\dotnet
```

6. Click **OK** to close the windows and save the changes.
7. Restart your **Command Prompt** and run `dotnet --version` again to verify.

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4. Setting Up Visual Studio Code (VSCode)

Install Visual Studio Code

1. Visit the official Visual Studio Code download page: https://code.visualstudio.com/Download
2. Download and install **VSCode** for your operating system.

Install Required Extensions for .NET Development

1. Open **Visual Studio Code**.
2. Click on the **Extensions** icon in the sidebar or press `Ctrl + Shift + X`.
3. Install the following extensions for .NET development:
   - **C#** (by Microsoft) - This is essential for C# development.
   - **C# for Visual Studio Code (powered by OmniSharp)** - For syntax highlighting, IntelliSense, etc.
   - **Debugger for Chrome** (optional, for front-end debugging in web projects like MVC).

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5. Create a New .NET Project in VSCode

For a Console Application

1. Open the **VSCode terminal** (press `Ctrl +` or select **Terminal** > **New Terminal**).
2. In the terminal, navigate to the folder where you want to create your project.
3. Run the following command to create a new console application:

```
bash
Copy
dotnet new console -n MyConsoleApp
```

4. After the project is created, navigate into the project directory:

```
bash
Copy
cd MyConsoleApp
```

5. To open the project in VSCode:

```
bash
Copy
code .
```

For an MVC Application (ASP.NET Core MVC)

1. In the terminal, navigate to the folder where you want to create your project.
2. Run the following command to create a new MVC application:

```
bash
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dotnet new mvc -n MyMvcApp
```

3. After the project is created, navigate into the project directory:

```
bash
Copy
cd MyMvcApp
```

4. To open the project in VSCode:

```
bash
Copy
code .
```

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6. Install .NET Watch for Hot Reload

1. To install `.NET Watch` (which provides hot reload functionality for faster development):

```
bash
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dotnet tool install --global dotnet-watch
```

2. To verify installation, run:

```
bash
Copy
dotnet watch --version
```

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7. Running the Project

Running Console Application

1. In the VSCode terminal, navigate to your project folder.
2. Run the following command to run the console application:

```
bash
Copy
dotnet run
```

Running MVC Application

1. In the VSCode terminal, navigate to your MVC project folder.
2. Run the following command to run the MVC application:

```
bash
Copy
dotnet run
```

3. Once the application is running, open a browser and navigate to `http://localhost:5000` to view your MVC app.

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8. Optional: .NET Run Installation for Global Use

To run .NET globally from anywhere in your system, you might need to ensure `dotnet` is in your PATH. If it's not, make sure to follow the steps in **Step 3: Add .NET SDK Path to Environment Variables**.

If you face any issues, you can reinstall or check that all prerequisites are installed.