Environment Installation

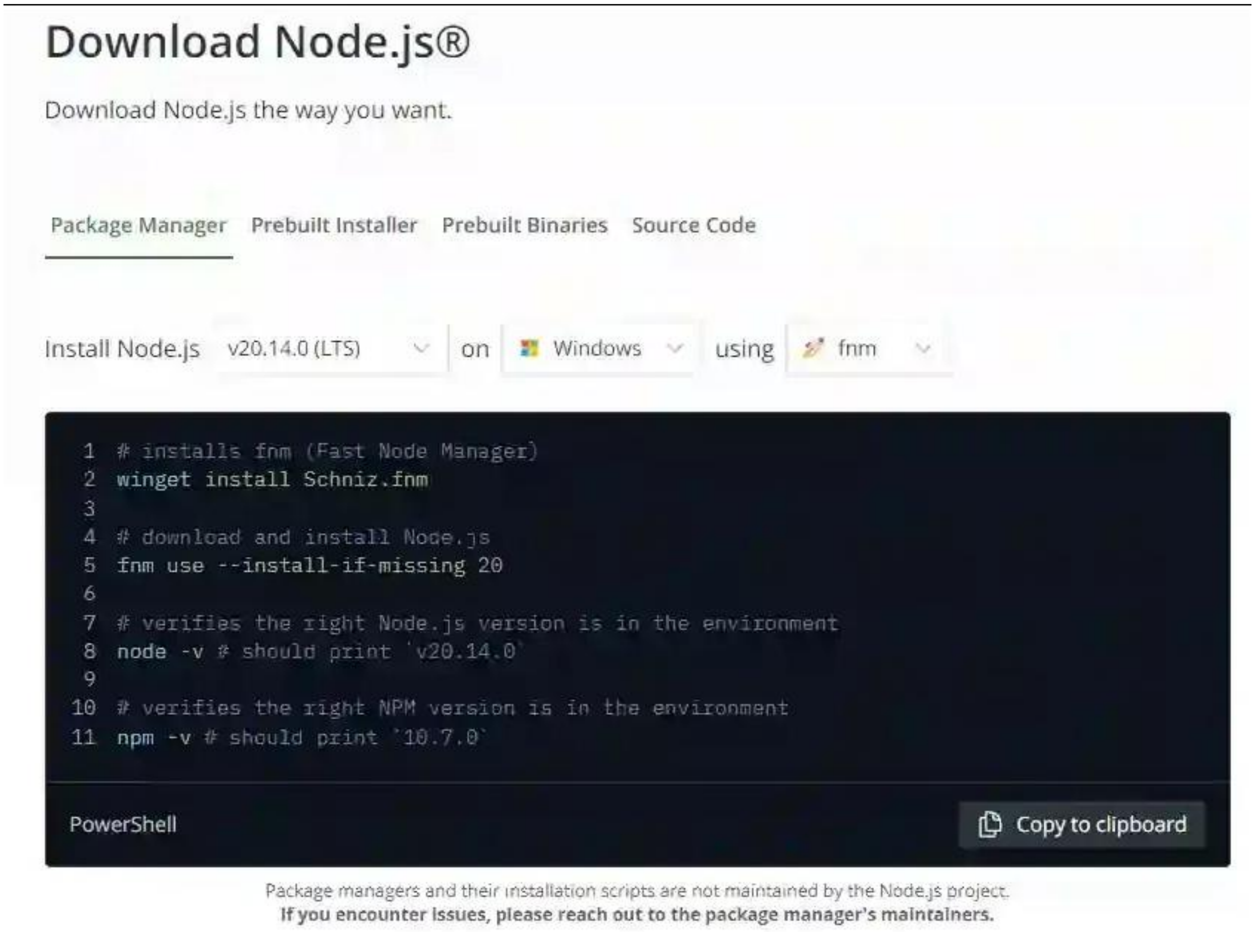
• Install Node.js environment for front-end

Use the Official Website

Follow these steps to install the Node.js on your Windows:

Step 1: Download Node.js Installer

Visit the official Node.js website to download the Node.js '.msi' installer



Download Node.js®

Download Node.js the way you want.

Install Node.js v20.14.0 (LTS) on Windows using fnm

```
# installs fnm (Fast Node Manager)
winget install Schniz.fnm

# download and install Node.js
fnm use --install-if-missing 20

# verifies the right Node.js version is in the environment
node -v # should print `v20.14.0`

# verifies the right NPM version is in the environment
npm -v # should print `10.7.0`
```

Package managers and their installation scripts are not maintained by the Node.js project.
If you encounter issues, please reach out to the package manager's maintainers.

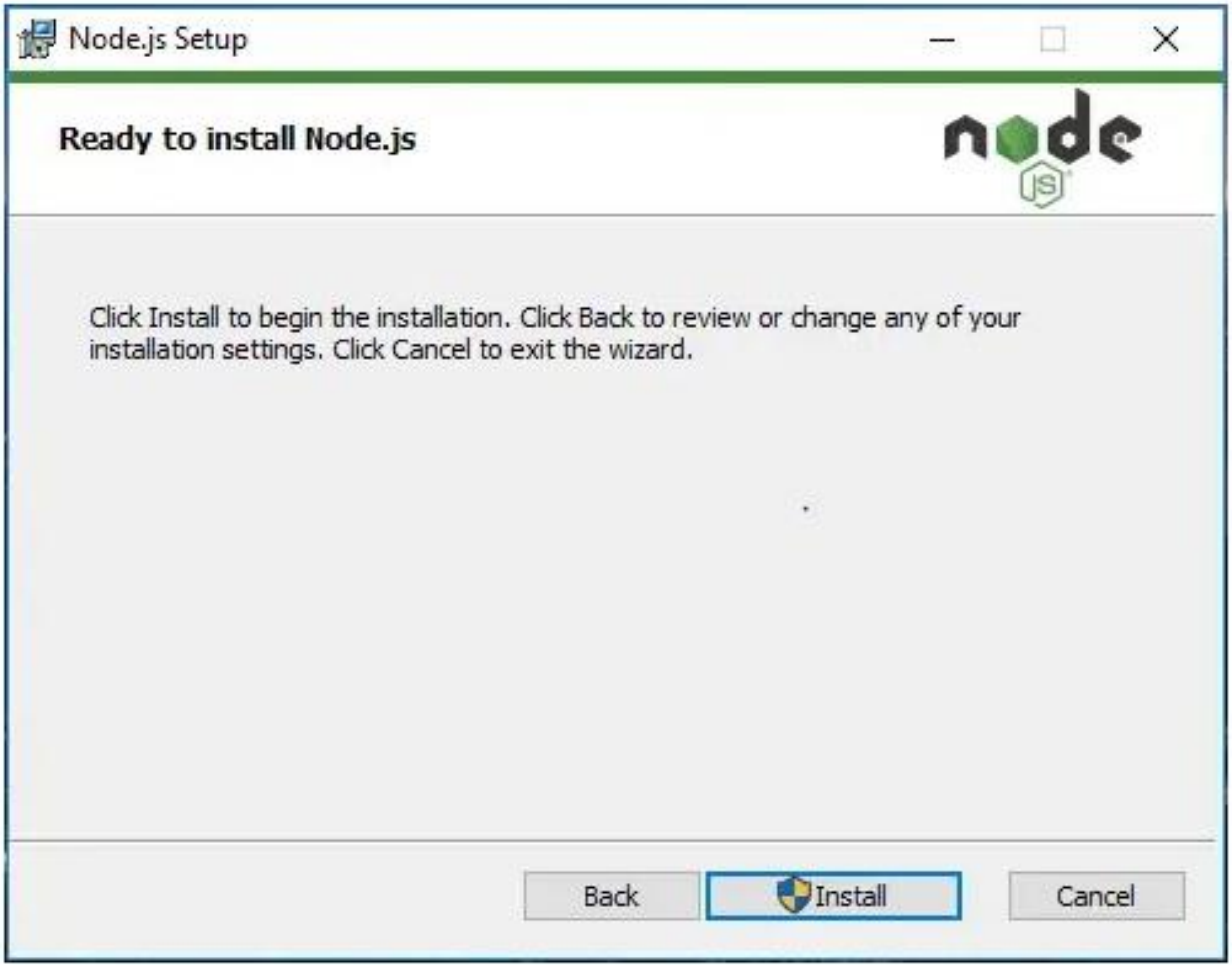
Step 2: Run the Installer

- Locate the downloaded **.msi** file and double-click to run it.

- Follow the prompts in the setup wizard, accept the license agreement, and use the default settings for installation.
- Select features to install such as:
    - npm: to manage packages for Node.js applications
    - Native modules: for building native C++ modules

Step 3: Finish Setup and Install Node.js and NPM

The installer may prompt you to "install tools for native modules". Select "Install" to complete the process.



Ready to install Node.js

Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.

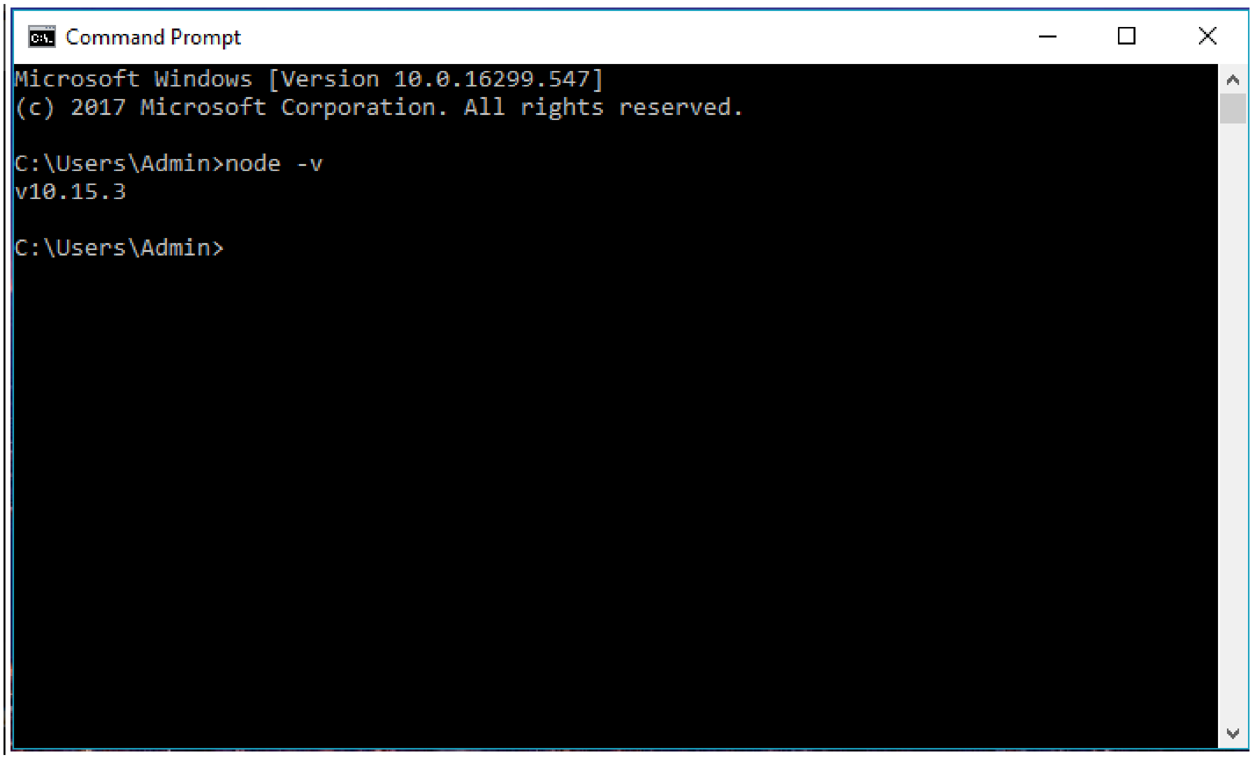
Wait for **"Finish"** to complete the setup.

Step 4: Verify the Installation

Open **Command Prompt** or **PowerShell** > Check the installed versions by running these commands:

- Type **node -v** and press Enter to check the Node.js version.
- Type **npm -v** and press Enter to check the npm version.
- Both commands should return version numbers, confirming successful installation.

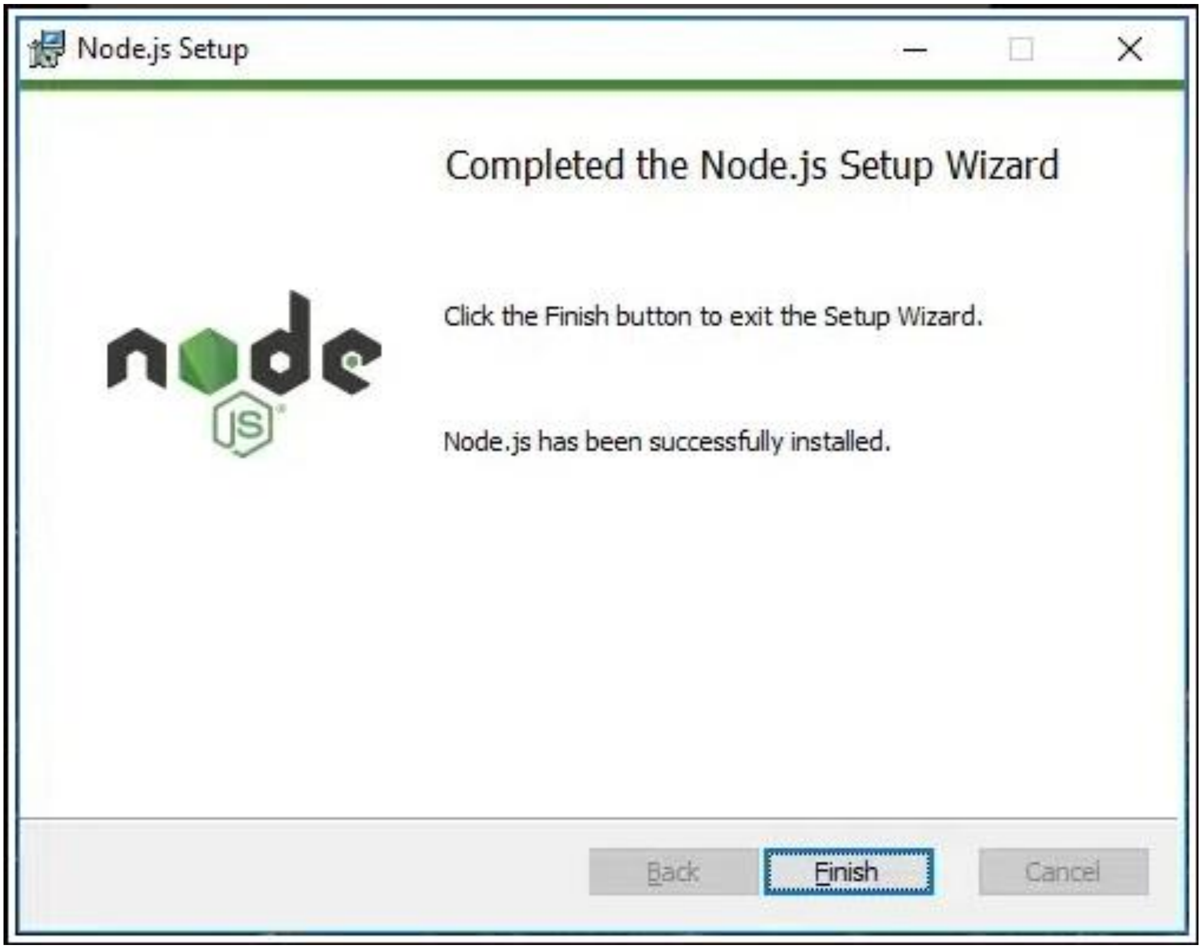
```
C:\Users\Admin> node -v
```



```
Microsoft Windows [Version 10.0.16299.547]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Admin>node -v
v10.15.3

C:\Users\Admin>
```



Completed the Node.js Setup Wizard

Click the Finish button to exit the Setup Wizard.

Node.js has been successfully installed.

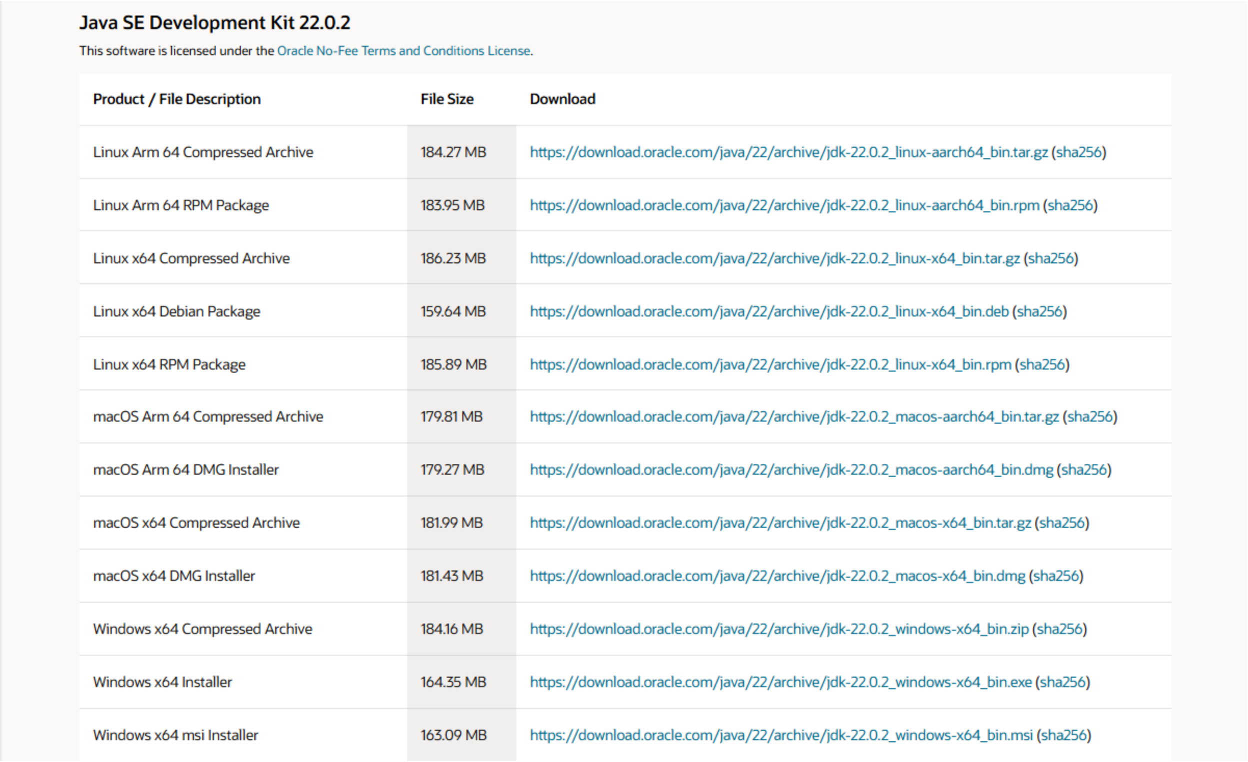
- **Install JDK 22 environment for Back-end**

Install JDK on Microsoft Windows

Follow the below steps to install JDK on Windows environment. The below steps works on every Windows like Windows 7, Windows 8, Windows 8.1, Windows 10, and Windows 11. So, whatever Windows you are running in your system just go through the step to install Java Development Kit.

Step 1: Download and Install Java Development Kit (JDK 22)

The very first step is to download the Oracle Java Development Kit (JDK) from the Official Oracle Website. For that, Head over to the Official Website..



Java SE Development Kit 22.0.2

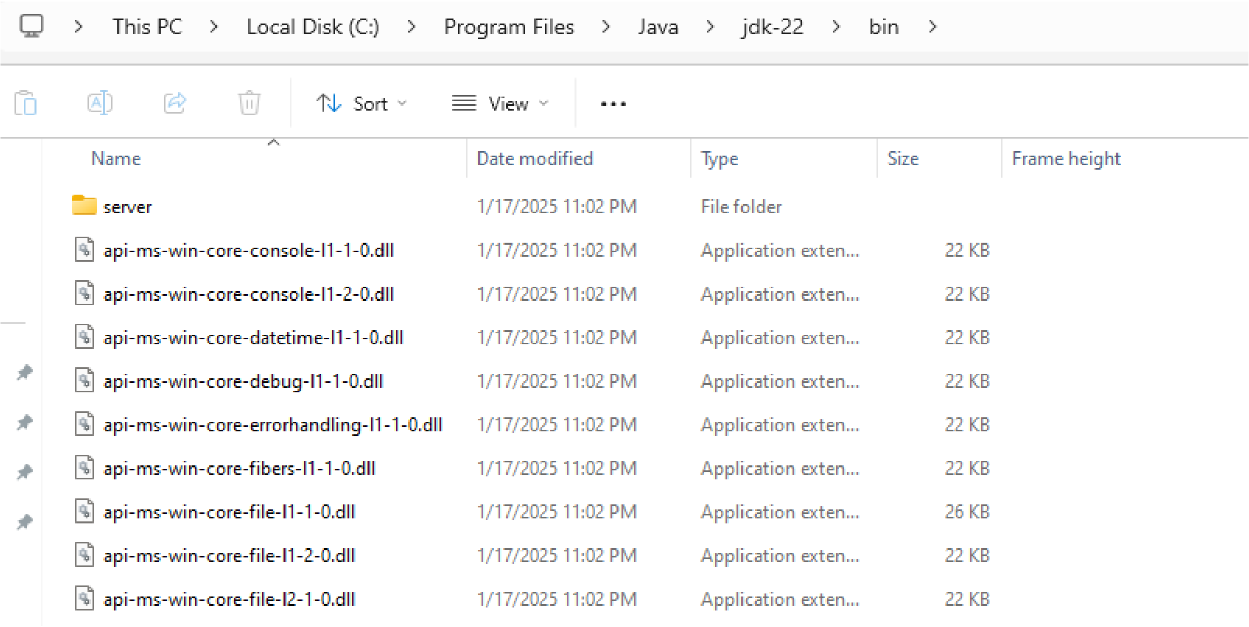
This software is licensed under the Oracle No-Fee Terms and Conditions License.

Product / File Description	File Size	Download
Linux Arm 64 Compressed Archive	184.27 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_linux-aarch64_bin.tar.gz (sha256)
Linux Arm 64 RPM Package	183.95 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_linux-aarch64_bin.rpm (sha256)
Linux x64 Compressed Archive	186.23 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_linux-x64_bin.tar.gz (sha256)
Linux x64 Debian Package	159.64 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_linux-x64_bin.deb (sha256)
Linux x64 RPM Package	185.89 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_linux-x64_bin.rpm (sha256)
macOS Arm 64 Compressed Archive	179.81 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_macos-aarch64_bin.tar.gz (sha256)
macOS Arm 64 DMG Installer	179.27 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_macos-aarch64_bin.dmg (sha256)
macOS x64 Compressed Archive	181.99 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_macos-x64_bin.tar.gz (sha256)
macOS x64 DMG Installer	181.43 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_macos-x64_bin.dmg (sha256)
Windows x64 Compressed Archive	184.16 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_windows-x64_bin.zip (sha256)
Windows x64 Installer	164.35 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_windows-x64_bin.exe (sha256)
Windows x64 msi Installer	163.09 MB	https://download.oracle.com/java/22/archive/jdk-22.0.2_windows-x64_bin.msi (sha256)

You need to identify your system specifications to choose the Product/file description. The website will contain the latest version for your corresponding system. For Windows, we'll be downloading the latest **x64 Installer of Java SE Development Kit 22.** After the download is complete, proceed to install the JDK by following the bootstrapped steps.

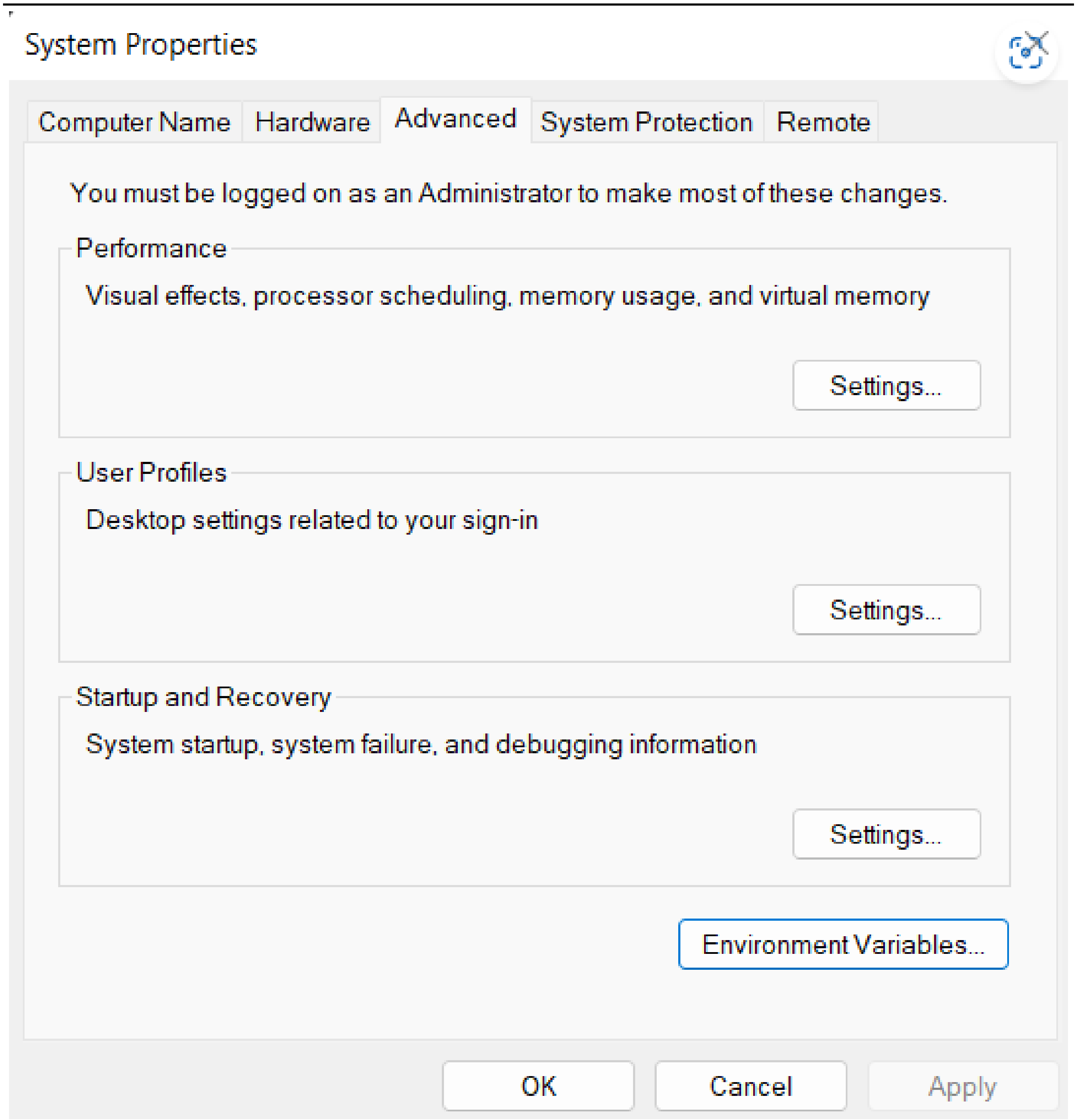
Step 2: Configure Environment Variables

After the installation is complete, we have to configure environment variables to notify the system about the directory in which JDK files are located. Proceed to C:\Program Files\Java\jdk22\bin


This PC > Local Disk (C:) > Program Files > Java > jdk-22 > bin >

Name	Date modified	Type	Size	Frame height
server	1/17/2025 11:02 PM	File folder		
api-ms-win-core-console-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-console-l1-2-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-datetime-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-debug-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-errorhandling-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-fibers-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-file-l1-1-0.dll	1/17/2025 11:02 PM	Application exten...	26 KB	
api-ms-win-core-file-l1-2-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	
api-ms-win-core-file-l2-1-0.dll	1/17/2025 11:02 PM	Application exten...	22 KB	

To set the Environment Variables, you need to search Environment Variables in the Task Bar and click on **“Edit the system environment variables”**.



You must be logged on as an Administrator to make most of these changes.

Performance

Visual effects, processor scheduling, memory usage, and virtual memory

User Profiles

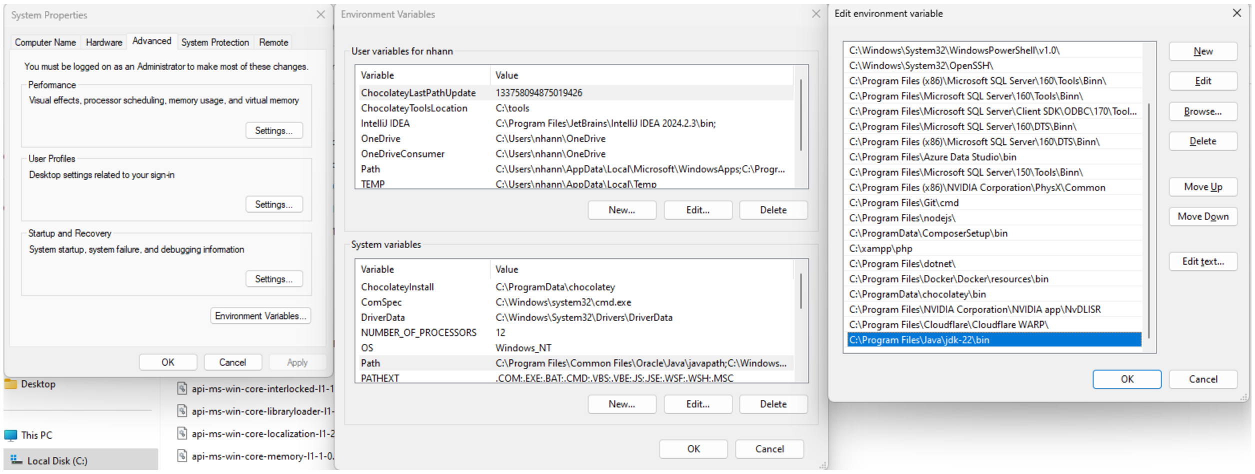
Desktop settings related to your sign-in

Startup and Recovery

System startup, system failure, and debugging information

Under the **Advanced** section, Click on **“Environment Variables”**.

Under **System variables**, select the **“Path”** variable and click on **“Edit”**. Click on **“New”** then paste the Path Address i.e. **C:\Program Files\Java\jdk22\bin**. Click on **“OK”**.



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User variables for nhann

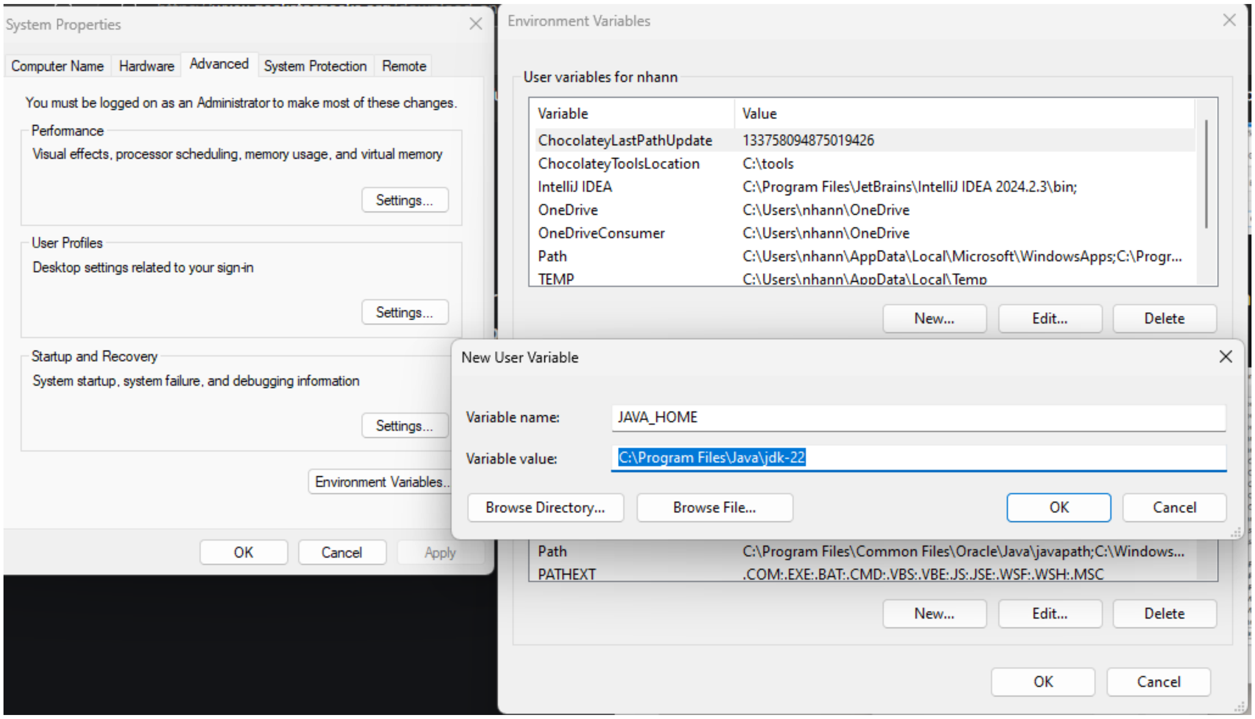
Variable	Value
ChocolateyLastPathUpdate	133758094875019426
ChocolateyToolsLocation	C:\tools
IntelliJ IDEA	C:\Program Files\JetBrains\IntelliJ IDEA 2024.2.3\bin;
OneDrive	C:\Users\nhann\OneDrive
OneDriveConsumer	C:\Users\nhann\OneDrive
Path	C:\Users\nhann\AppData\Local\Microsoft\WindowsApps;C:\Progr...
TEMP	C:\Users\nhann\AppData\Local\Temp

System variables

Variable	Value
ChocolateyInstall	C:\ProgramData\chocolatey
ComSpec	C:\Windows\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	12
OS	Windows_NT
Path	C:\Program Files\Common Files\Oracle\Java\javapath;C:\Windows...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC

```
C:\Windows\System32\WindowsPowerShell\v1.0\
C:\Windows\System32\OpenSSH\
C:\Program Files (x86)\Microsoft SQL Server\160\Tools\Binn\
C:\Program Files\Microsoft SQL Server\160\Tools\Binn\
C:\Program Files\Microsoft SQL Server\Client SDK\ODBC\170\Tool...
C:\Program Files\Microsoft SQL Server\160\DTS\Binn\
C:\Program Files (x86)\Microsoft SQL Server\160\DTS\Binn\
C:\Program Files\Azure Data Studio\bin
C:\Program Files\Microsoft SQL Server\150\Tools\Binn\
C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common
C:\Program Files\Git\cmd
C:\Program Files\nodejs\
C:\ProgramData\ComposerSetup\bin
C:\xampp\php
C:\Program Files\dotnet\
C:\Program Files\Docker\Docker\resources\bin
C:\ProgramData\chocolatey\bin
C:\Program Files\NVIDIA Corporation\NVIDIA app\NvDLISR
C:\Program Files\Cloudflare\Cloudflare WARP\
C:\Program Files\Java\jdk-22\bin
```

Now, in the **Environment Variables** dialogue, under **System variables**, click on **"New"** and then under **Variable name: JAVA_HOME** and **Variable value:** paste address i.e. **C:\Program Files\Java\jdk-22**. Click on **OK => OK => OK**



You must be logged on as an Administrator to make most of these changes.

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Desktop settings related to your sign-in

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System startup, system failure, and debugging information

User variables for nhann

Variable	Value
ChocolateyLastPathUpdate	133758094875019426
ChocolateyToolsLocation	C:\tools
IntelliJ IDEA	C:\Program Files\JetBrains\IntelliJ IDEA 2024.2.3\bin;
OneDrive	C:\Users\nhann\OneDrive
OneDriveConsumer	C:\Users\nhann\OneDrive
Path	C:\Users\nhann\AppData\Local\Microsoft\WindowsApps;C:\Progr...
TEMP	C:\Users\nhann\AppData\Local\Temp

Variable name: JAVA_HOME

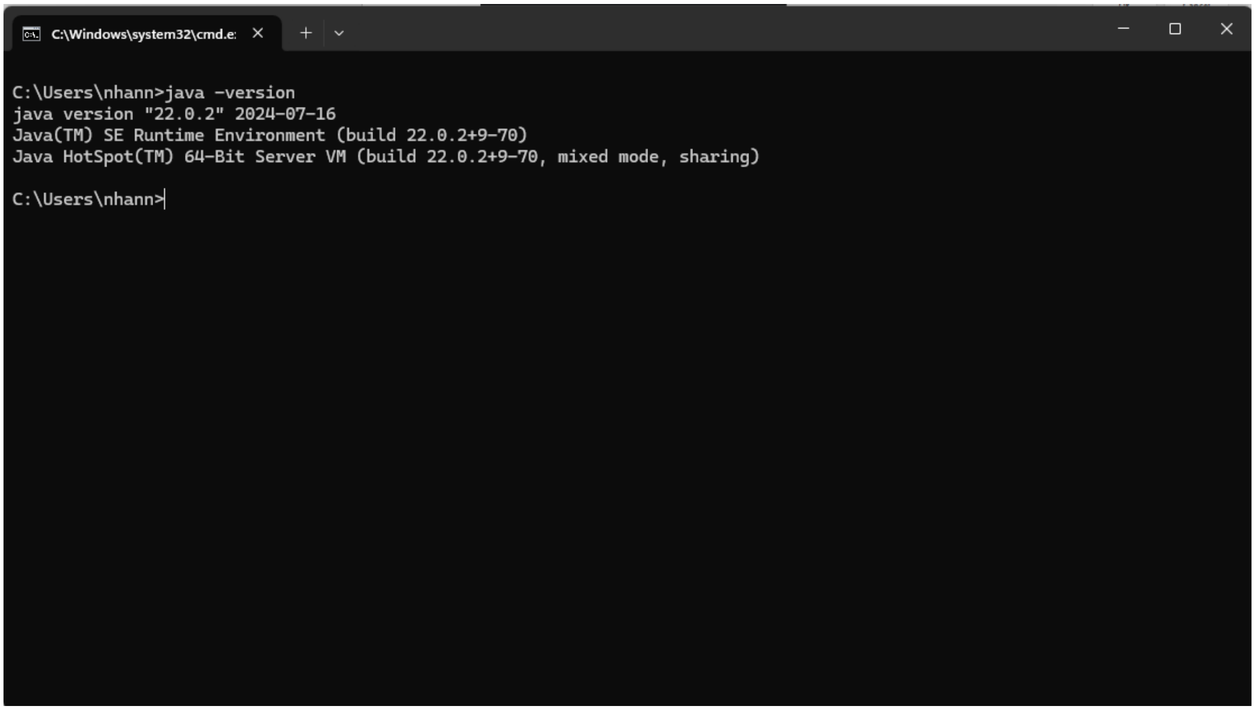
Variable value: C:\Program Files\Java\jdk-22

Path	C:\Program Files\Common Files\Oracle\Java\javapath;C:\Windows...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC

Step 3: Check the Java Version

Open **Command Prompt** and enter the following commands

```
java -version
javac -version
```



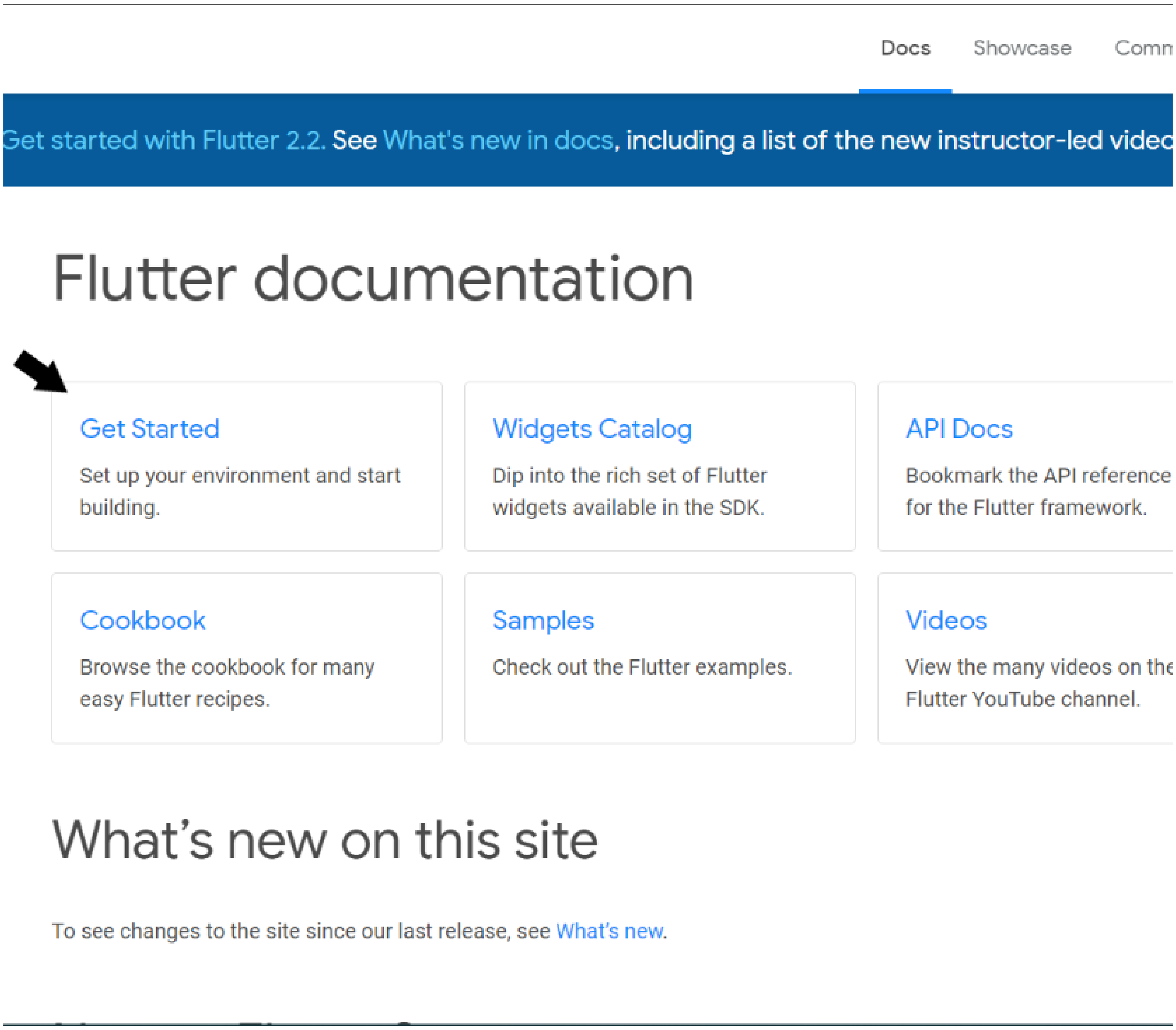
```
C:\Users\nhann>java -version
java version "22.0.2" 2024-07-16
Java(TM) SE Runtime Environment (build 22.0.2+9-70)
Java HotSpot(TM) 64-Bit Server VM (build 22.0.2+9-70, mixed mode, sharing)

C:\Users\nhann>
```

• Install Flutter for Mobile-app

Installing Flutter on Windows:

Follow the below steps to install Flutter on Windows:

Step 1: Navigate to flutter.dev on your webpage. On the top menu bar, select Docs > Get Started > Install > Windows.



Get started with Flutter 2.2. See What's new in docs, including a list of the new instructor-led videc

Flutter documentation

Get Started

Set up your environment and start building.

Widgets Catalog

Dip into the rich set of Flutter widgets available in the SDK.

API Docs

Bookmark the API reference for the Flutter framework.

Cookbook

Browse the cookbook for many easy Flutter recipes.

Samples

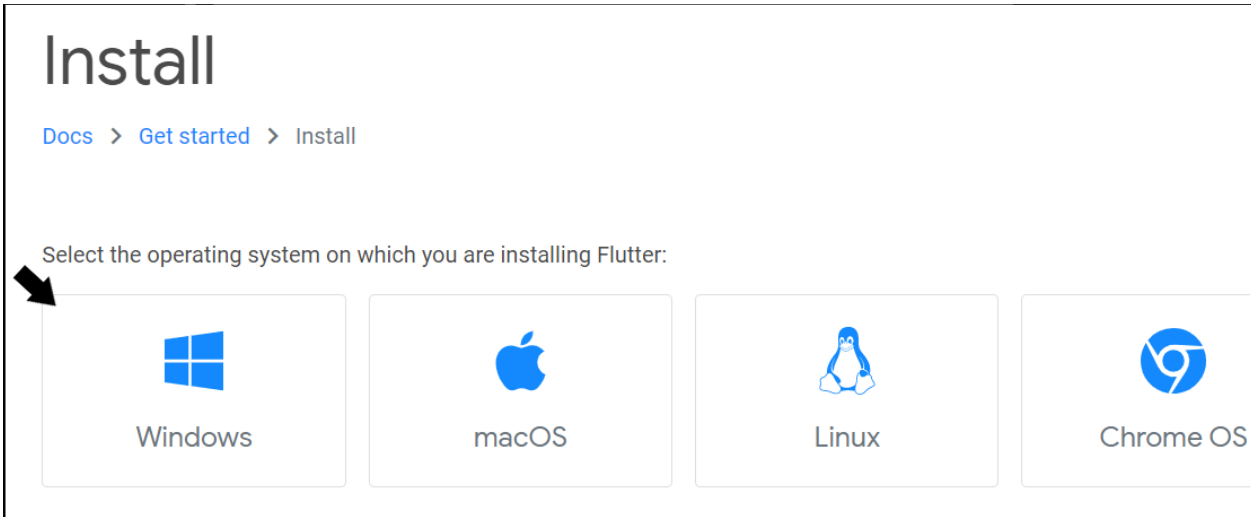
Check out the Flutter examples.

Videos

View the many videos on the Flutter YouTube channel.

What's new on this site

To see changes to the site since our last release, see What's new.

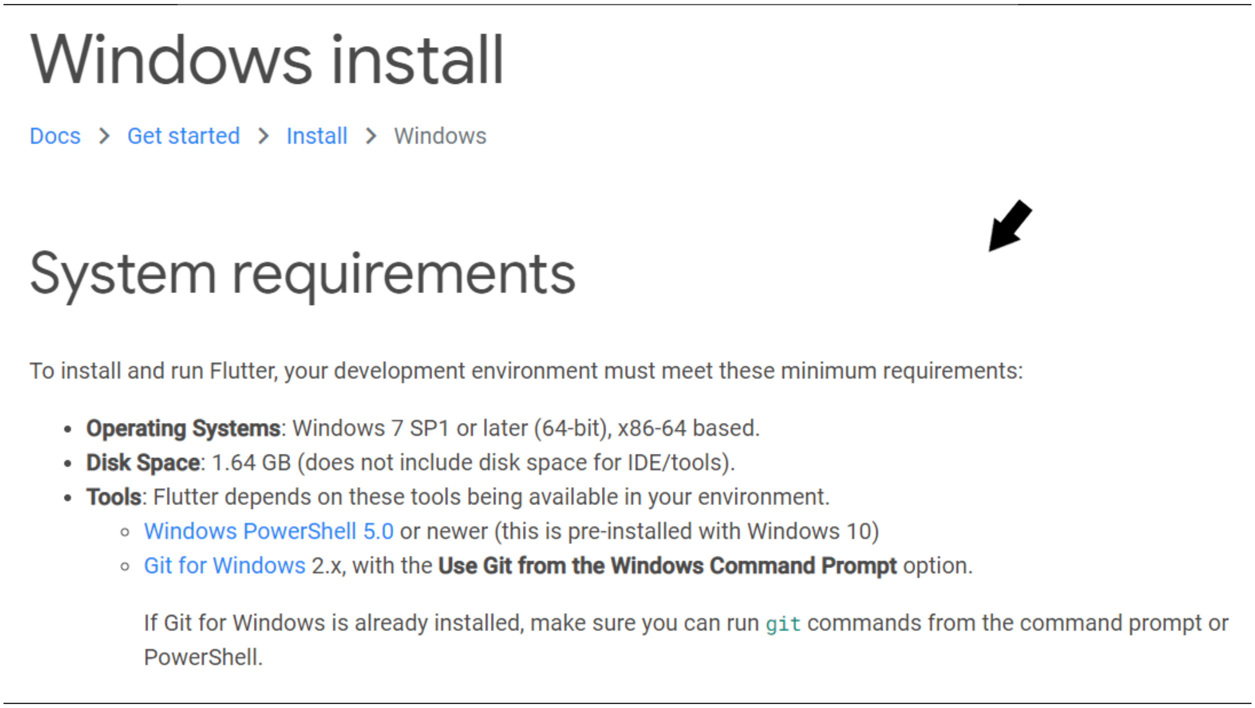


Install

Docs > Get started > Install

Select the operating system on which you are installing Flutter:

Step 2: Check for the **System Requirements**. Henceforth, you can begin the installation.



Windows install

Docs > Get started > Install > Windows

System requirements

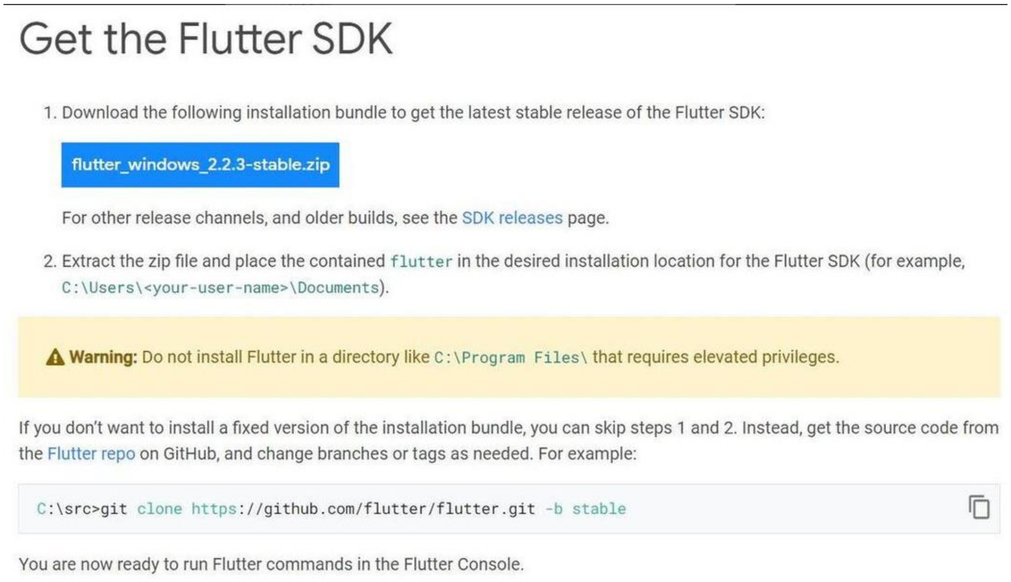
To install and run Flutter, your development environment must meet these minimum requirements:

- **Operating Systems**: Windows 7 SP1 or later (64-bit), x86-64 based.
- **Disk Space**: 1.64 GB (does not include disk space for IDE/tools).
- **Tools**: Flutter depends on these tools being available in your environment.
  - Windows PowerShell 5.0 or newer (this is pre-installed with Windows 10)
  - Git for Windows 2.x, with the **Use Git from the Windows Command Prompt** option.

    If Git for Windows is already installed, make sure you can run `git` commands from the command prompt or PowerShell.

You can get a detailed procedure for installing the latest versions of Windows PowerShell 5.0 and Git for Windows, if not already installed.

Step 3: Restart the system after installing Git on your windows. Once done, let's get to the installation of Flutter Software development Kit (Flutter SDK). Click on the download link for the latest version (as of today).



Get the Flutter SDK

1. Download the following installation bundle to get the latest stable release of the Flutter SDK:

   For other release channels, and older builds, see the SDK releases page.

2. Extract the zip file and place the contained `flutter` in the desired installation location for the Flutter SDK (for example, `C:\Users\<your-user-name>\Documents`).

⚠ **Warning:** Do not install Flutter in a directory like `C:\Program Files\` that requires elevated privileges.

If you don't want to install a fixed version of the installation bundle, you can skip steps 1 and 2. Instead, get the source code from the Flutter repo on GitHub, and change branches or tags as needed. For example:

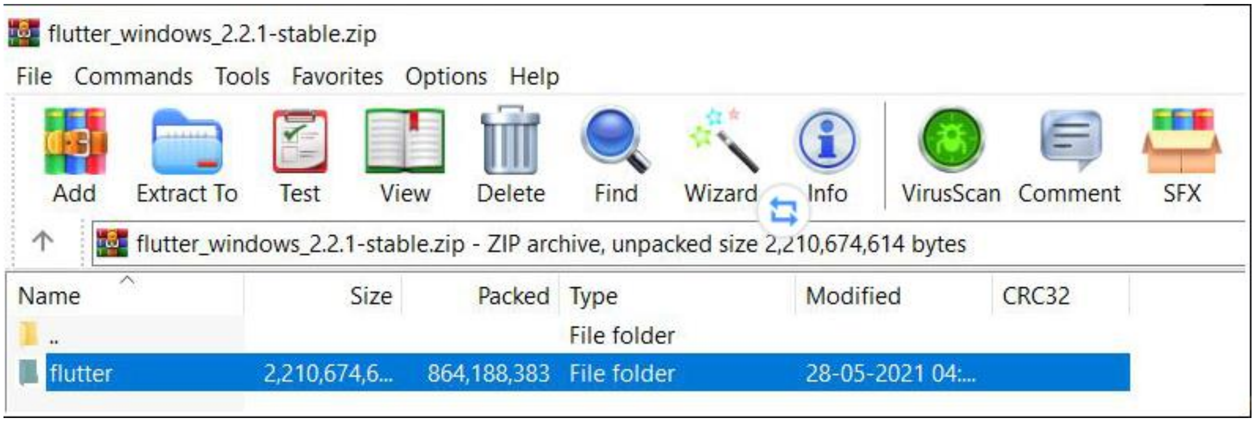
```
C:\src>git clone https://github.com/flutter/flutter.git -b stable
```

You are now ready to run Flutter commands in the Flutter Console.

Flutter SDK is the tool that not only allows us to create flutter projects but also build those projects and transform them into native mobile applications. In simpler words, **Flutter SDK is the core tool for building a flutter UI.**

Once the zip file is downloaded, extract the **'flutter'** folder (drag and drop) to any path/directory of the system where you get the **read and write access**. Typically, it is better to create a new folder in a separate directory apart from the system drive due to permission issues (In my case, the target destination is **D: > development > flutter**).

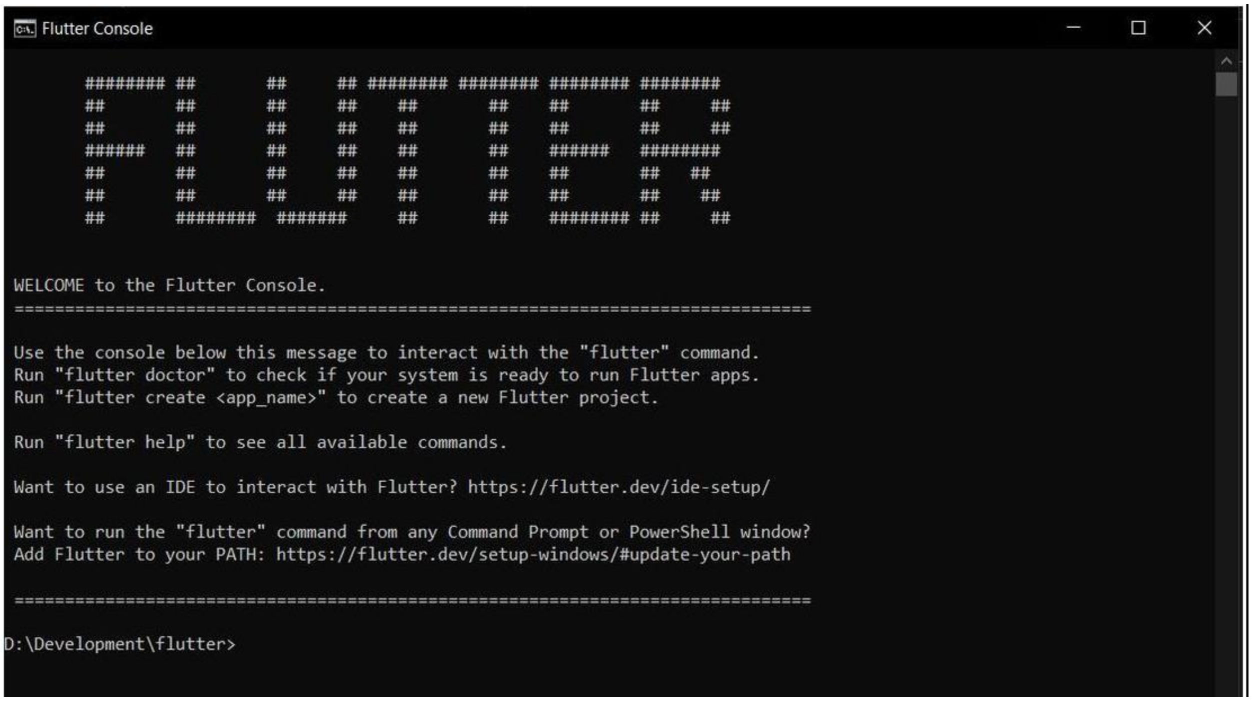
Once the zip file is downloaded, extract the **'flutter'** folder (drag and drop) to any path/directory of the system where you get the **read and write access**. Typically, it is better to create a new folder in a separate directory apart from the system drive due to permission issues (In my case, the target destination is **D: > development > flutter**).



flutter_windows_2.2.1-stable.zip - ZIP archive, unpacked size 2,210,674,614 bytes

Name	Size	Packed	Type	Modified	CRC32
..			File folder		
flutter	2,210,674,6...	864,188,383	File folder	28-05-2021 04:...	

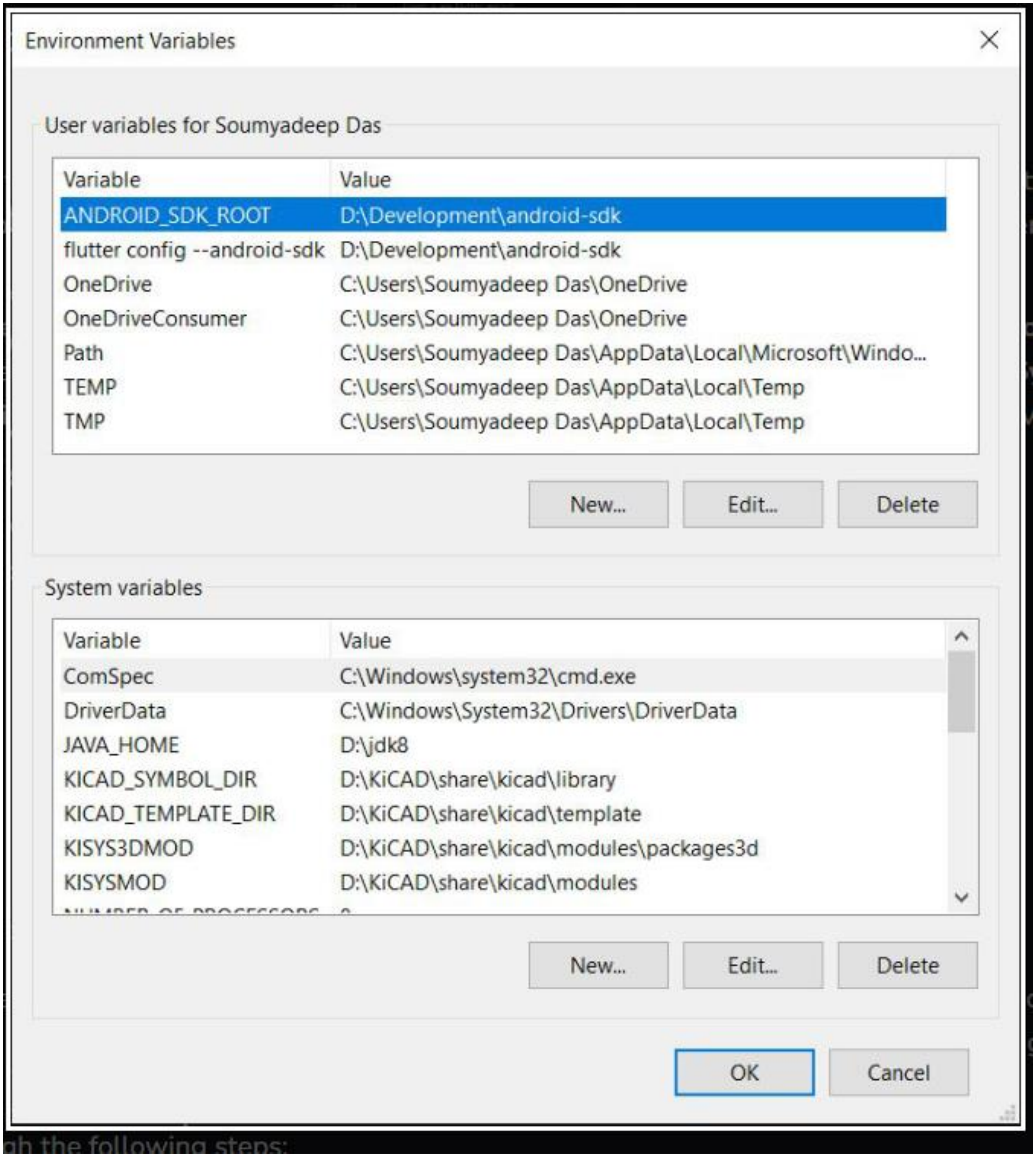
Now double-click on the **'flutter'** folder. Go to **'flutter_console.bat' file** and double-click to open a command prompt window. It should look something like this:



```
       ######## ##       ##     ## ######## ######## ######## ########
       ##       ##       ##     ##    ##       ##    ##       ##     ##
       ##       ##       ##     ##    ##       ##    ##       ##     ##
       ######   ##       ##     ##    ##       ##    ######   ########
       ##       ##       ##     ##    ##       ##    ##       ##   ##
       ##       ##       ##     ##    ##       ##    ##       ##    ##
       ##       ########  #######     ##       ##    ######## ##     ##


WELCOME to the Flutter Console.
================================================================================

Use the console below this message to interact with the "flutter" command.
Run "flutter doctor" to check if your system is ready to run Flutter apps.
Run "flutter create <app_name>" to create a new Flutter project.

Run "flutter help" to see all available commands.

Want to use an IDE to interact with Flutter? https://flutter.dev/ide-setup/

Want to run the "flutter" command from any Command Prompt or PowerShell window?
Add Flutter to your PATH: https://flutter.dev/setup-windows/#update-your-path

================================================================================

D:\Development\flutter>
```

This console is actually a Windows terminal available for the developer to run flutter commands. Type in **'flutter'** to get a list of all the flutter commands that can be run.

Step 4: Check and edit environment variables for global system access. For this, scroll down to **'Update your path'** on the official Docs page of the flutter installation page. For this, go to **Control Panel > System and Security > System > Advanced System Settings > Environment Variables…** . A dialog box displaying a list of the available environment variables appears on your screen.



Environment Variables

User variables for Soumyadeep Das

Variable	Value
ANDROID_SDK_ROOT	D:\Development\android-sdk
flutter config --android-sdk	D:\Development\android-sdk
OneDrive	C:\Users\Soumyadeep Das\OneDrive
OneDriveConsumer	C:\Users\Soumyadeep Das\OneDrive
Path	C:\Users\Soumyadeep Das\AppData\Local\Microsoft\Windo...
TEMP	C:\Users\Soumyadeep Das\AppData\Local\Temp
TMP	C:\Users\Soumyadeep Das\AppData\Local\Temp

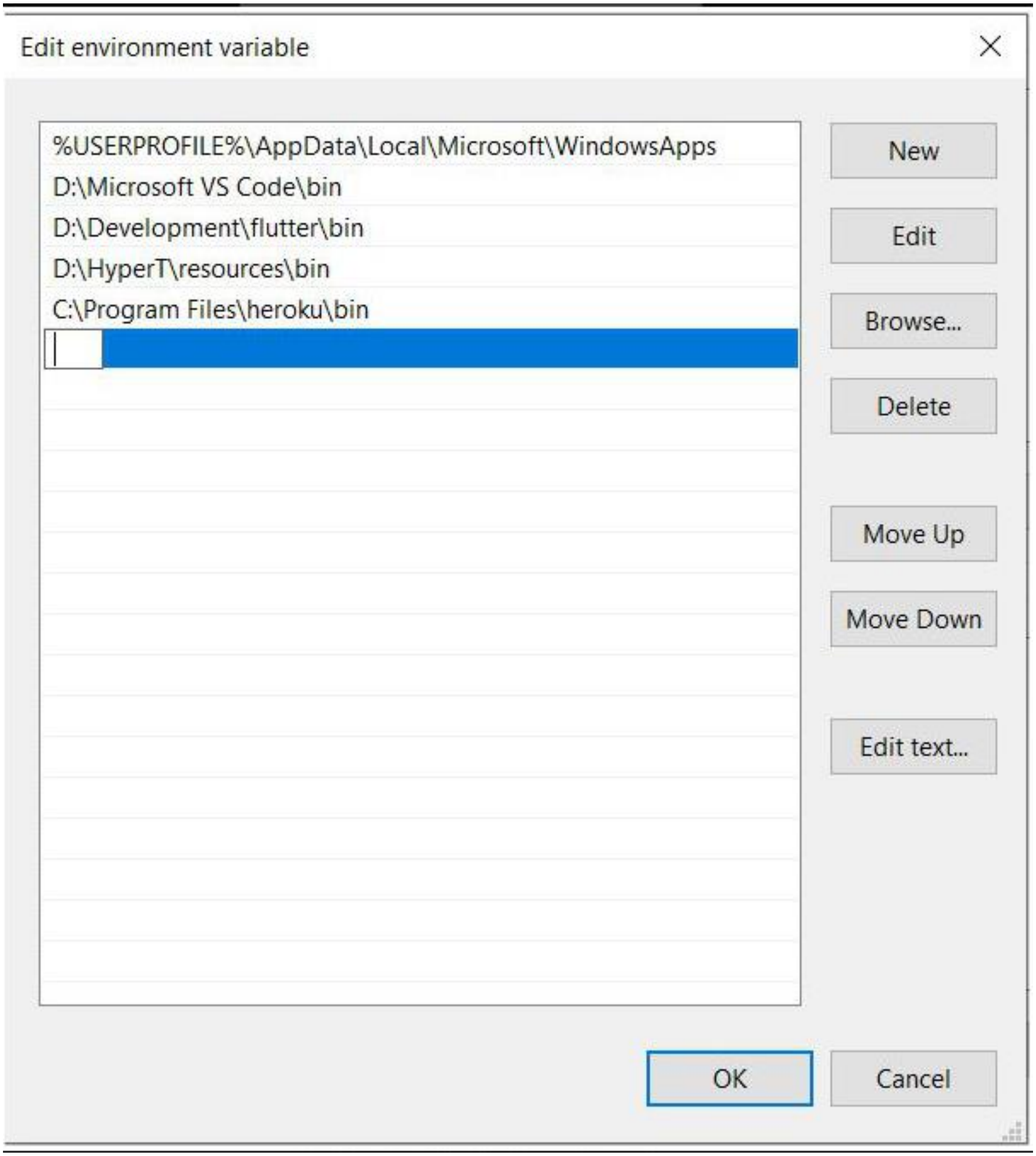
System variables

Variable	Value
ComSpec	C:\Windows\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
JAVA_HOME	D:\jdk8
KICAD_SYMBOL_DIR	D:\KiCAD\share\kicad\library
KICAD_TEMPLATE_DIR	D:\KiCAD\share\kicad\template
KISYS3DMOD	D:\KiCAD\share\kicad\modules\packages3d
KISYSMOD	D:\KiCAD\share\kicad\modules
NUMBER_OF_PROCESSORS	8

Environment Variables are global system variables present at the root level, which aids in configuring various aspects of Windows. We will now add the flutter tool as an environment variable for direct access (instead of running the .bat executable), and unlock it on the entire PowerShell and Command Prompt of your system.

To do this, glance through the following steps:

- Check for **‘Path’** variable under **User Variables** list. If not already present, create a new variable **(‘New…’)** and assign the ‘**flutter\bin**‘ directory as its value.
- Now double-click on the **‘Path’** variable and add a new entry by double-clicking on a column below. It should look something like this:

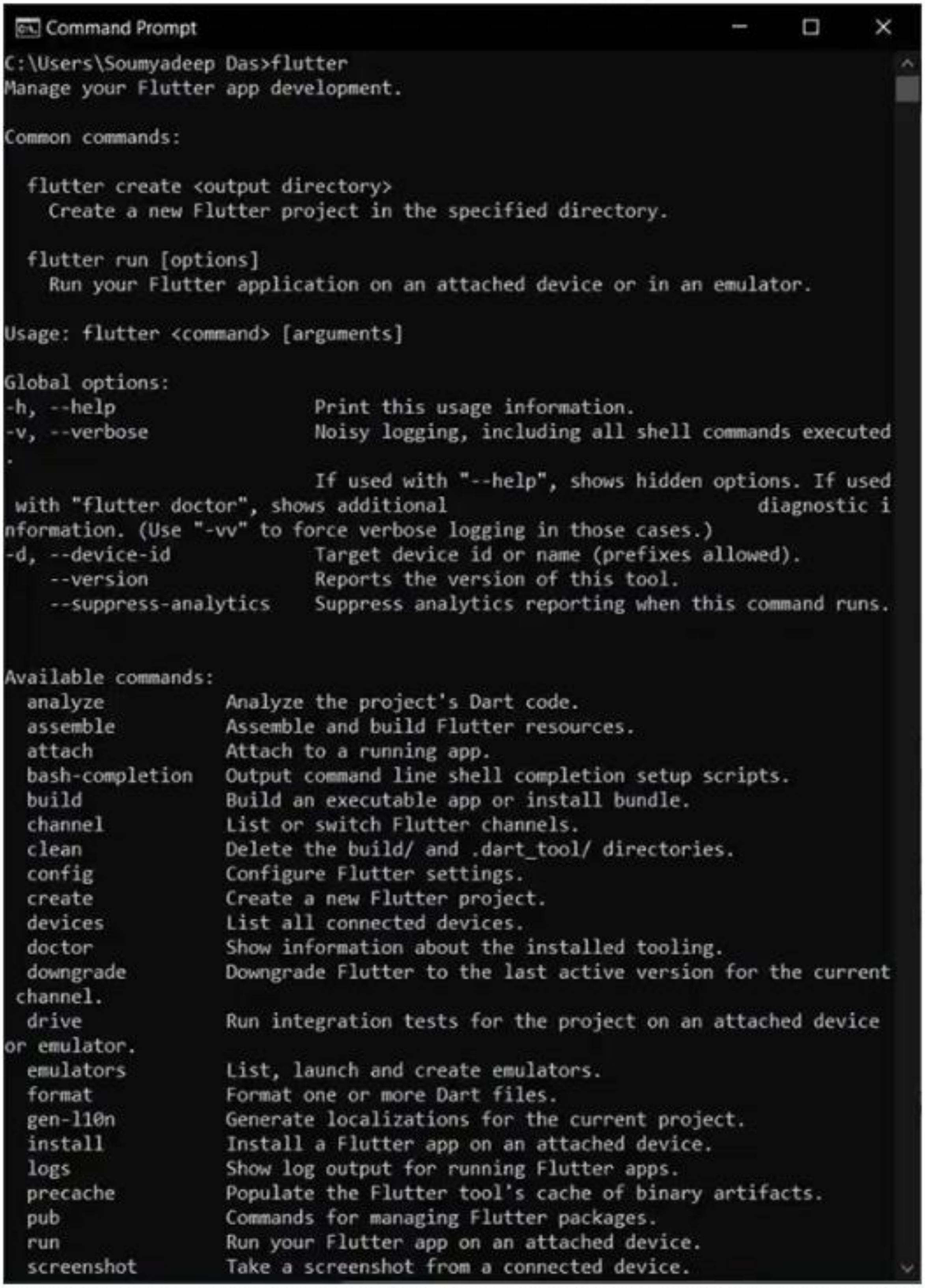


Edit environment variable

%USERPROFILE%\AppData\Local\Microsoft\WindowsApps
D:\Microsoft VS Code\bin
D:\Development\flutter\bin
D:\HyperT\resources\bin
C:\Program Files\heroku\bin

- In the path, copy the entire directory of **flutter\bin** folder and paste it. Click **‘Ok’** twice to complete the setup. Now, make sure that you have closed any existing Command Prompt/Windows PowerShell windows that are open.

Now, check whether your flutter framework can be accessed globally. To do this, open any terminal (say Command Prompt) and type in ‘**flutter**‘ and see whether you get the same list of commands as you did get earlier from the .bat terminal. If yes, you have successfully completed setting up flutter on the root level in your system. If not, you might as well consider re-running the setup again



```
C:\Users\Soumyadeep Das>flutter
Manage your Flutter app development.

Common commands:

  flutter create <output directory>
    Create a new Flutter project in the specified directory.

  flutter run [options]
    Run your Flutter application on an attached device or in an emulator.

Usage: flutter <command> [arguments]

Global options:
-h, --help                  Print this usage information.
-v, --verbose               Noisy logging, including all shell commands executed
.
                            If used with "--help", shows hidden options. If used
 with "flutter doctor", shows additional                            diagnostic i
nformation. (Use "-vv" to force verbose logging in those cases.)
-d, --device-id             Target device id or name (prefixes allowed).
    --version               Reports the version of this tool.
    --suppress-analytics    Suppress analytics reporting when this command runs.


Available commands:
  analyze            Analyze the project's Dart code.
  assemble           Assemble and build Flutter resources.
  attach             Attach to a running app.
  bash-completion    Output command line shell completion setup scripts.
  build              Build an executable app or install bundle.
  channel            List or switch Flutter channels.
  clean              Delete the build/ and .dart_tool/ directories.
  config             Configure Flutter settings.
  create             Create a new Flutter project.
  devices            List all connected devices.
  doctor             Show information about the installed tooling.
  downgrade          Downgrade Flutter to the last active version for the current
 channel.
  drive              Run integration tests for the project on an attached device
or emulator.
  emulators          List, launch and create emulators.
  format             Format one or more Dart files.
  gen-l10n           Generate localizations for the current project.
  install            Install a Flutter app on an attached device.
  logs               Show log output for running Flutter apps.
  precache           Populate the Flutter tool's cache of binary artifacts.
  pub                Commands for managing Flutter packages.
  run                Run your Flutter app on an attached device.
  screenshot         Take a screenshot from a connected device.
```

Ensure a Proper Environment for Successful Application Development!