

OpenCV Installation



학습목표

1. OpenCV를 설치한다.
 1. Python을 설치하고 `pip`로 OpenCV를 설치한다.
 2. Anaconda를 설치하고 `conda`로 OpenCV를 설치한다.
2. Visual Studio Code를 설치한다.
3. Visual Studio Code에서 Python 코드를 실행한다.
4. Visual Studio Code에서 OpenCV 코드를 실행한다.



Download Python

The screenshot shows the Python.org website. The top navigation bar includes links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a dark blue header with the Python logo, a 'Donate' button, a search bar, and a 'Socialize' button. A secondary navigation bar highlights the 'Downloads' section, which is also highlighted with a red rectangle. A dropdown menu is open under 'Downloads', listing options: All releases, Source code, Windows, Mac OS X, Other Platforms, License, and Alternative Implementations. The 'Windows' option is selected, leading to a 'Download for Windows' section. This section features a 'Python 3.8.5' button, a note that Python 3.5+ cannot be used on Windows XP or earlier, and a link to view the full list of downloads. On the left side of the page, there is a code snippet showing Python list operations. At the bottom, a blue banner states: 'Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)'.

```
# Python 3: List operations
>>> fruits = ['apple', 'banana', 'cherry']
>>> loud_fruits = [fruit.upper() for fruit in fruits]
>>> print(loud_fruits)
['BANANA', 'APPLE', 'CHERRY']

# List and the enumerate function
>>> list(enumerate(loud_fruits))
[(0, 'Banana'), (1, 'Apple'), (2, 'Cherry')]
```

Download for Windows

Python 3.8.5

Note that Python 3.5+ cannot be used on Windows XP or earlier.

Not the OS you are looking for? Python can be used on many operating systems and environments. [View the full list of downloads.](#)

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

<https://www.python.org/>

Install Python

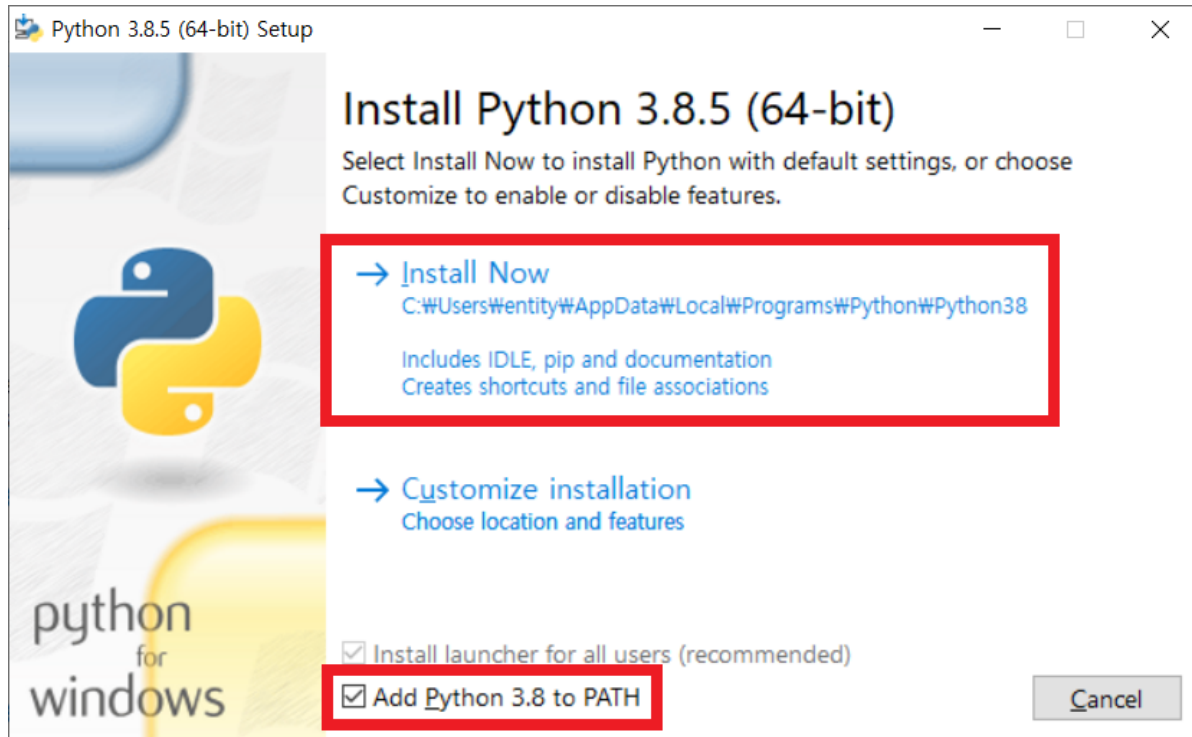
- [Python 3.8.5 - July 20, 2020](#)

Note that Python 3.8.5 *cannot* be used on Windows XP or earlier.

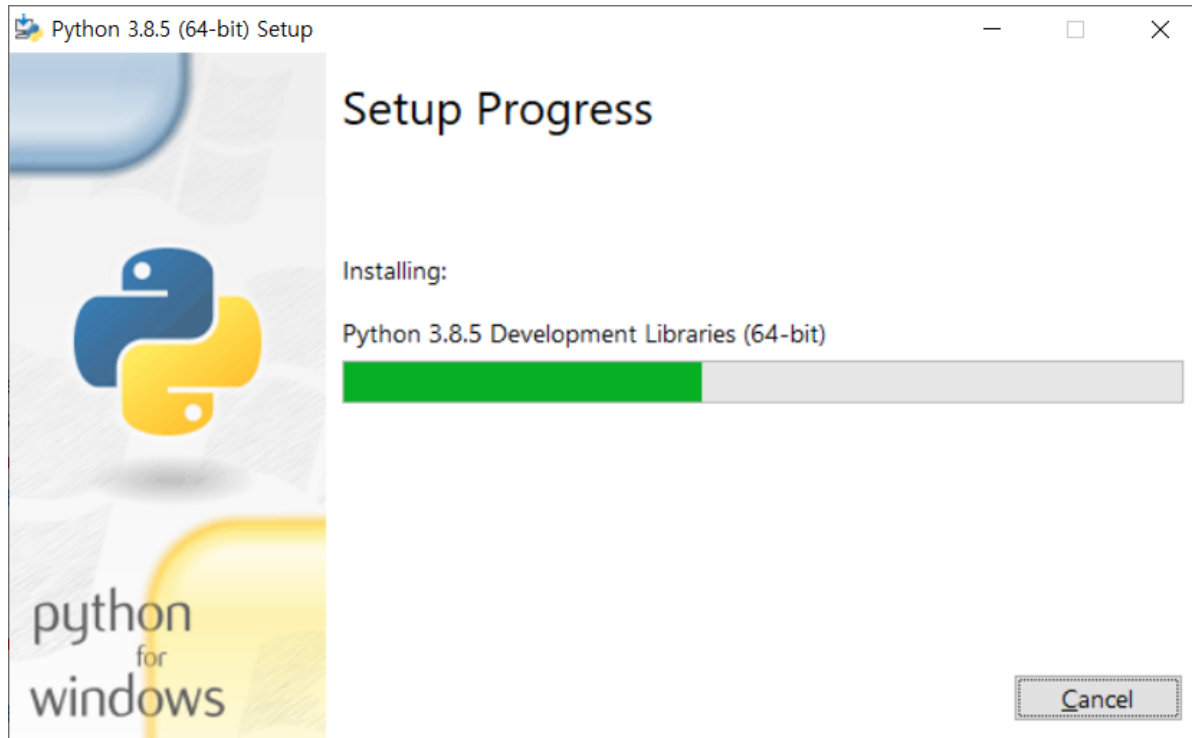
- Download [Windows help file](#)
- Download [Windows x86-64 embeddable zip file](#)
- Download [Windows x86-64 executable installer](#)
- Download [Windows x86-64 web-based installer](#)
- Download [Windows x86 embeddable zip file](#)
- Download [Windows x86 executable installer](#)
- Download [Windows x86 web-based installer](#)

<https://www.python.org/downloads/windows/>

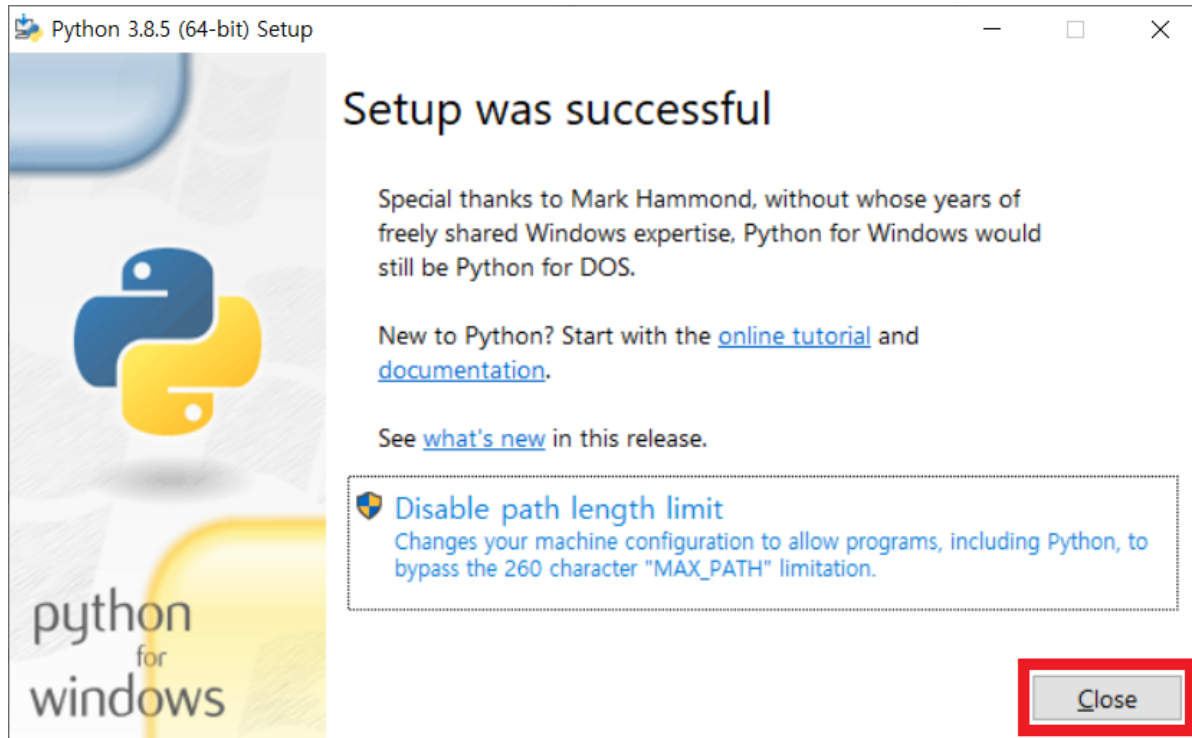
Install Python



Install Python



Install Python



Check Python

```
# Check the Python version
```

```
$ python --version
```

```
Python 3.8.5
```

```
# Check the pip version
```

```
$ pip --version
```

```
pip 20.1.1 from c:\users\
```

```
[username]\appdata\local\programs\python\python38-32\lib\site-  
packages\pip (python 3.8)
```

```
# Upgrade pip if needed
```

```
$ pip install --upgrade pip
```

OpenCV-Python

Install OpenCV

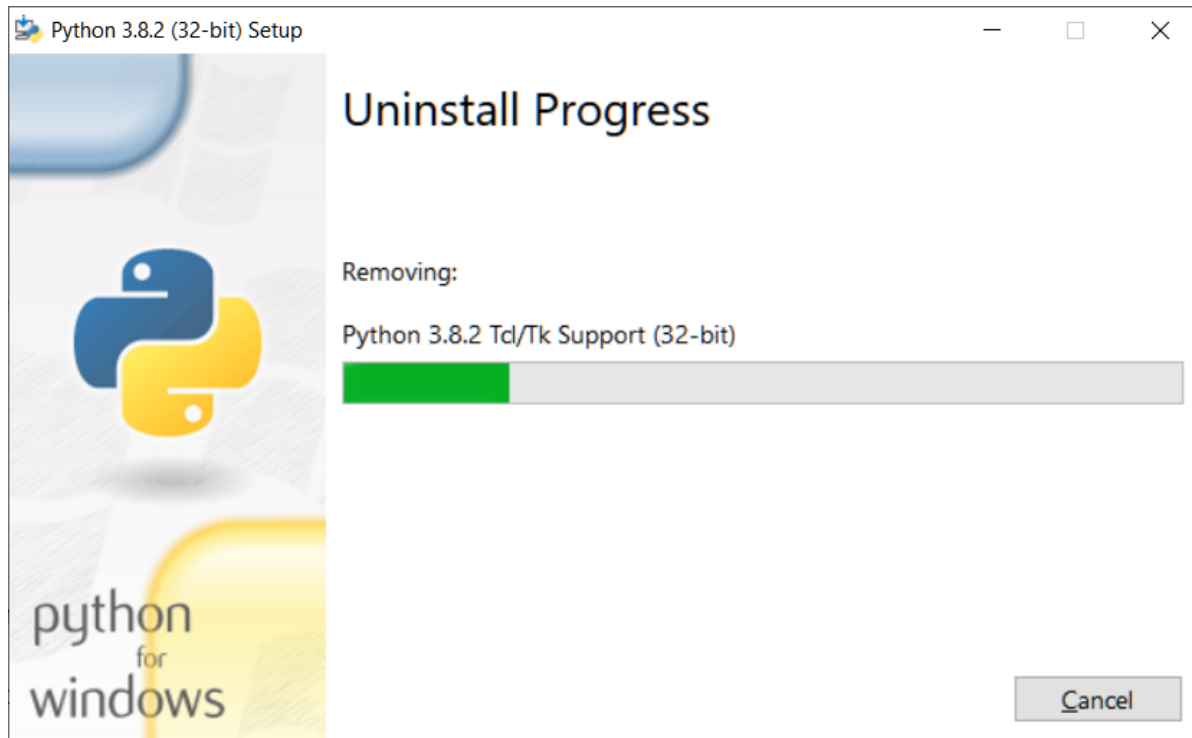
```
# Install main modules
$ pip install opencv-python

# Install both main and contrib modules
$ pip install opencv-contrib-python
...
Successfully installed numpy-1.19.1 opencv-contrib-python-4.4.0.42
```

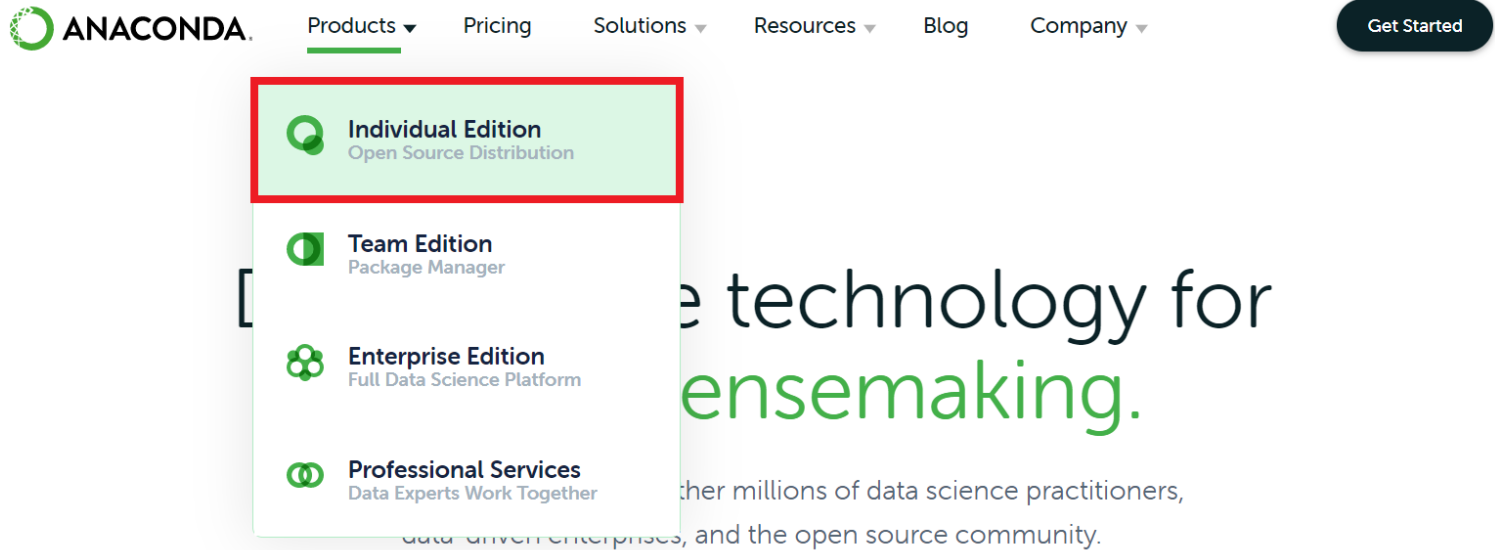
<https://pypi.org/project/opencv-python/>



① Uninstall Python 3.8



② Download Anaconda



<https://www.anaconda.com/>

② Download Anaconda



Individual Edition

Your data science toolkit




With over 20 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for solo practitioners, it is the toolkit that equips you to work with thousands of open-source packages and libraries.

Download

<https://www.anaconda.com/products/individual>

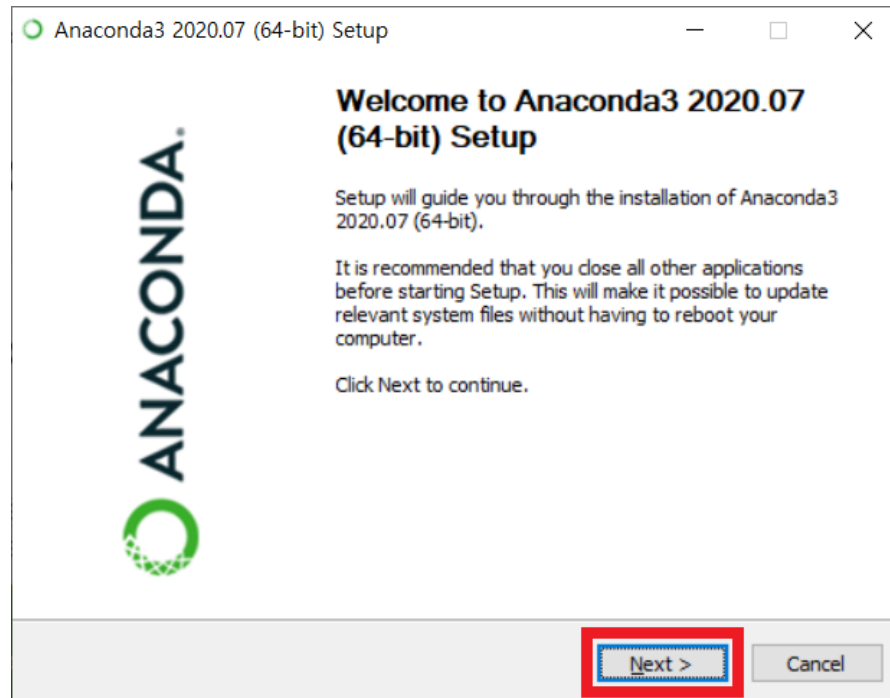
② Download Anaconda

Anaconda Installers

Windows 	MacOS 	Linux 
<p>Python 3.8</p> <p><input checked="" type="radio"/> <u>64-Bit Graphical Installer (466 MB)</u></p> <p>32-Bit Graphical Installer (397 MB)</p>	<p>Python 3.8</p> <p>64-Bit Graphical Installer (462 MB)</p> <p>64-Bit Command Line Installer (454 MB)</p>	<p>Python 3.8</p> <p>64-Bit (x86) Installer (550 MB)</p> <p>64-Bit (Power8 and Power9) Installer (290 MB)</p>

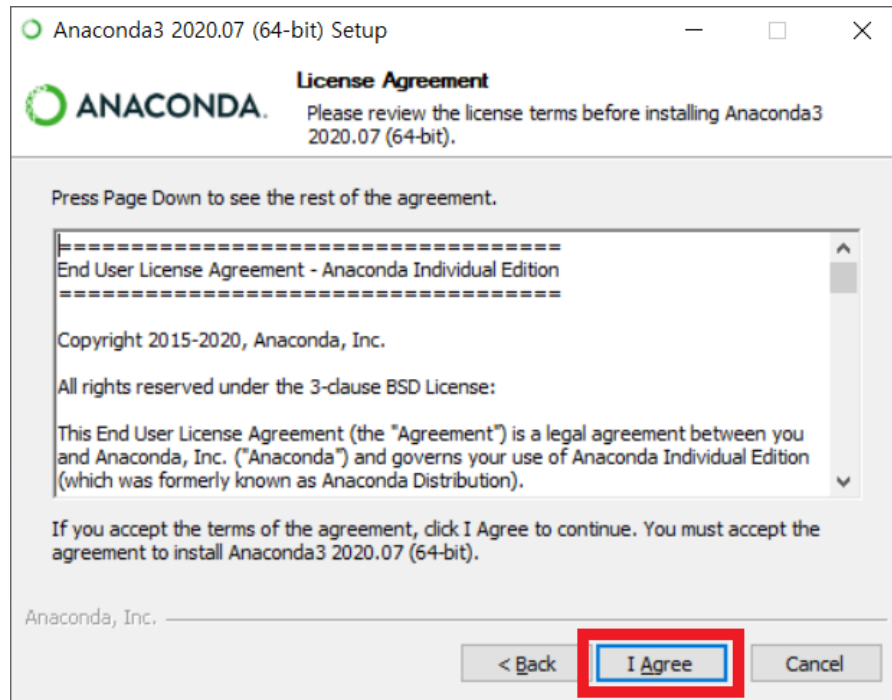
<https://www.anaconda.com/products/individual>

③ Install Anaconda

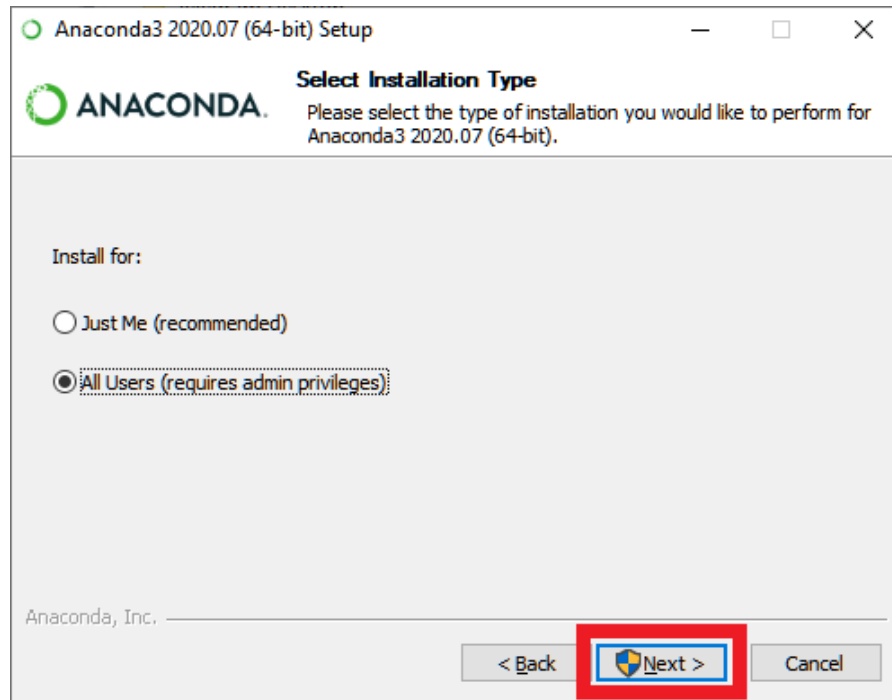


관리자 권한으로 실행 (Run as Administrator)

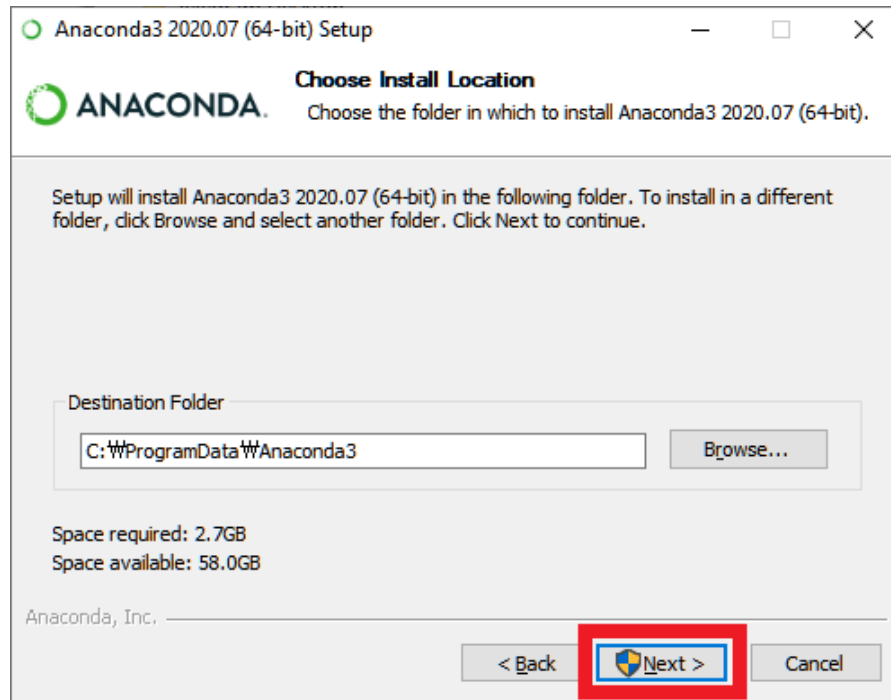
③ Install Anaconda



③ Install Anaconda

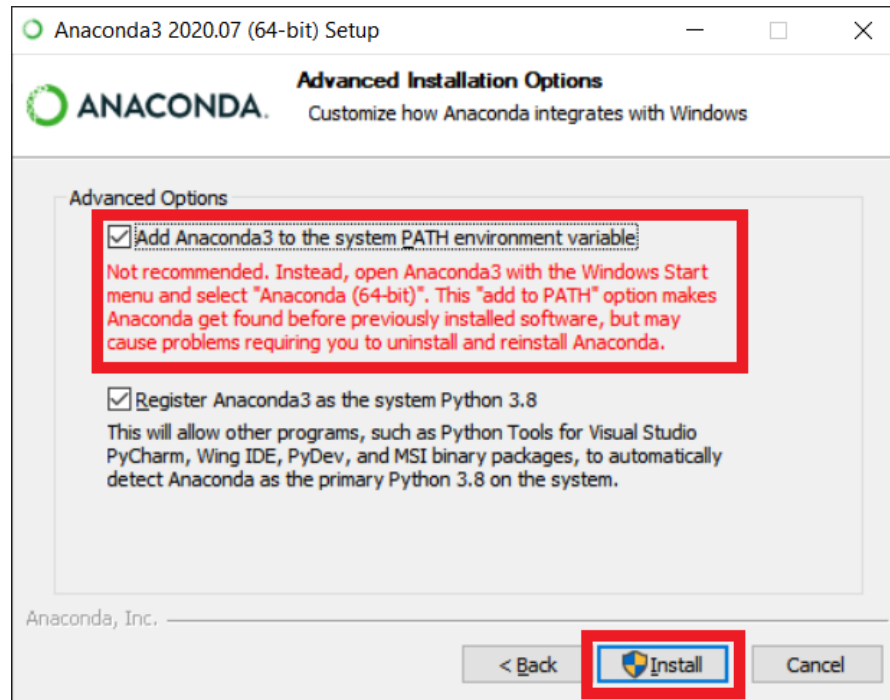


③ Install Anaconda



폴더명에 공백이 있으면 나중에 문제발생의 소지가 있음

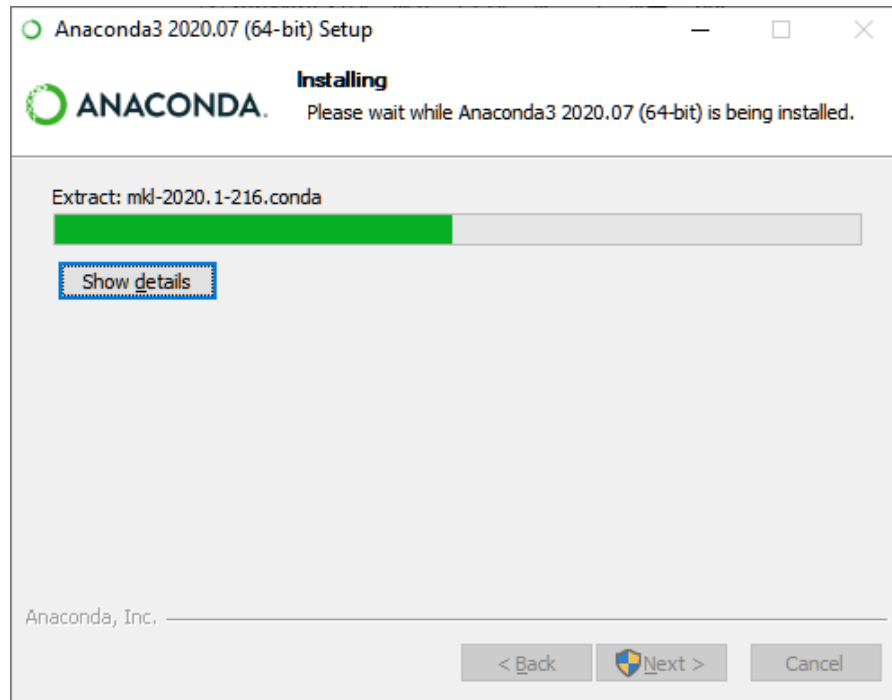
③ Install Anaconda



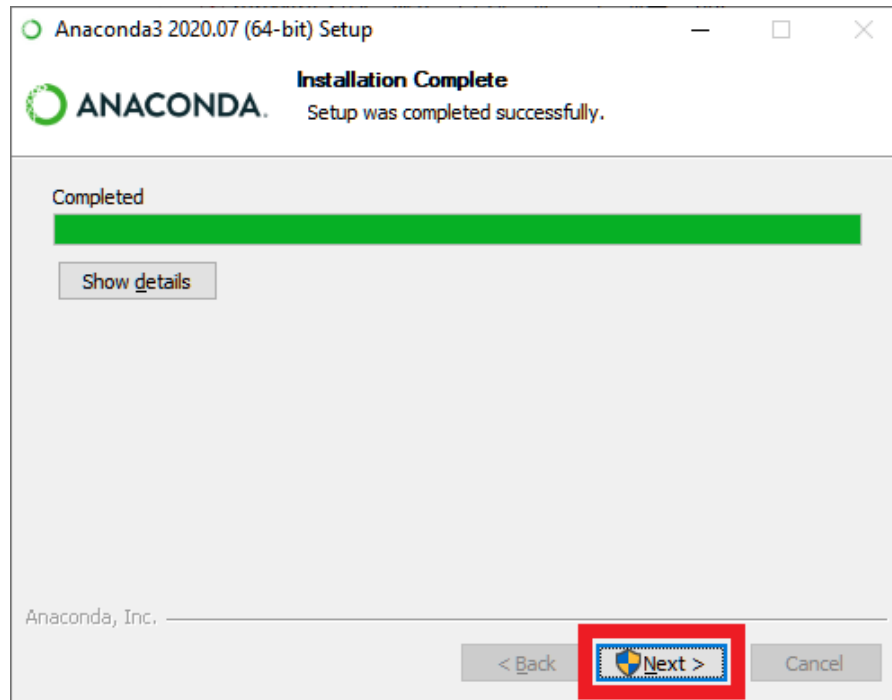
Anaconda를 한 버전만 설치할 경우 선택

<https://www.youtube.com/watch?v=dgjEUcccRwM>

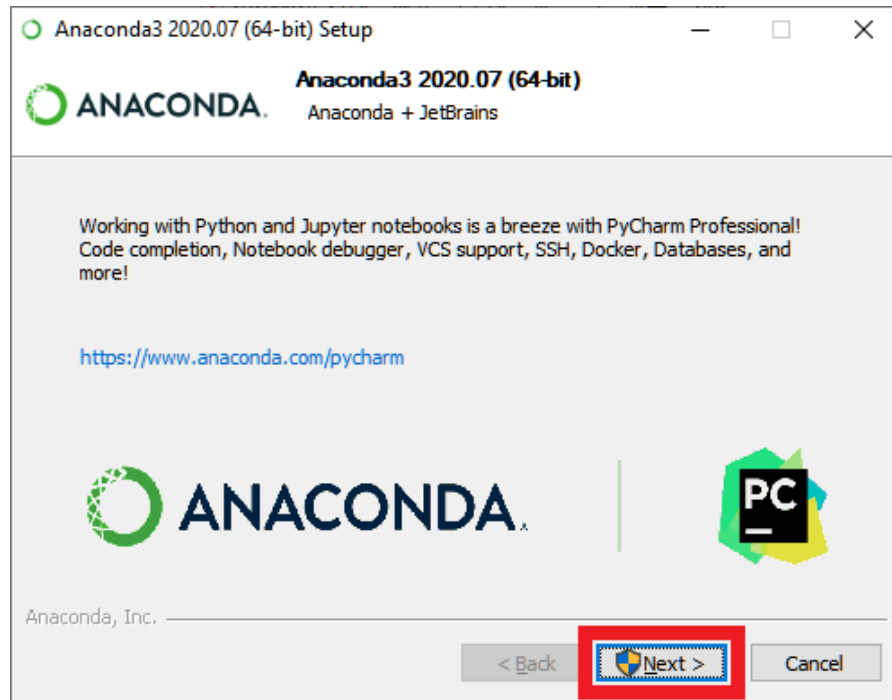
③ Install Anaconda



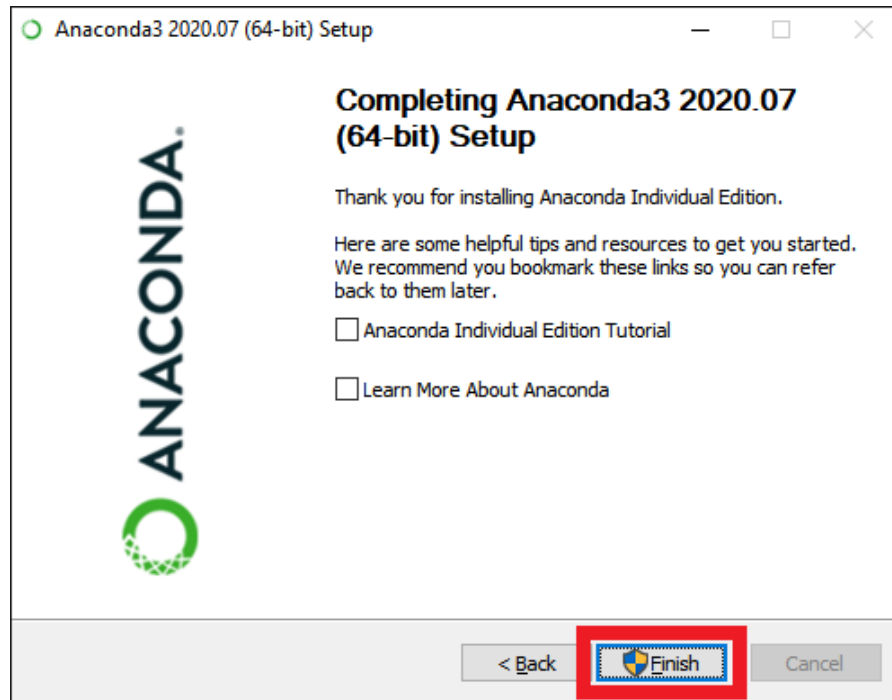
③ Install Anaconda



③ Install Anaconda



③ Install Anaconda



④ Check Anaconda and Python

```
$ where conda
C:\ProgramData\Anaconda3\Library\bin\conda.bat
C:\ProgramData\Anaconda3\Scripts\conda.exe

$ conda --version
conda 4.8.3

$ where python
C:\ProgramData\Anaconda3\python.exe
C:\Users\[username]\AppData\Local\Microsoft\WindowsApps\python.exe

$ python --version
Python 3.8.3
```

<https://www.youtube.com/watch?v=dgjEUcccRwM>







OpenCV on Anaconda

Run Anaconda Prompt as Administrator



Anaconda Prompt (Anaconda3)

App

-
-  Open
 -  Run as administrator
 -  Open file location
 -  Pin to Start
 -  Pin to taskbar
 -  Uninstall

Install OpenCV on Anaconda

1. Install OpenCV directly¹

```
$ conda install -c conda-forge opencv
py-opencv-4.0.1      | 1.5 MB |
openssl-1.1.1g      | 5.7 MB |
opencv-4.0.1        | 22 KB  |
libopencv-4.0.1     | 28.6 MB|
python_abi-3.8      | 4 KB   |
conda-4.8.4         | 3.1 MB |
```

2. Add the `conda-forge` channel and Install OpenCV²

```
$ conda config --add channels conda-forge
$ conda install libopencv opencv py-opencv
```

1. <https://anaconda.org/conda-forge/opencv>
2. <https://github.com/conda-forge/opencv-feedstock>



① Download VSCODE

The image shows the Visual Studio Code website and the application interface. The website header includes links for Docs, Updates, Blog, API, Extensions, and FAQ, along with a Download button. A banner for Version 1.48 is visible. The main content area features the text "Code editing. Redefined." and "Free. Built on open source. Runs everywhere." Below this is a "Download for Windows" button with a dropdown arrow, and a link to "Other platforms and Insiders Edition". A footer note states: "By using VS Code, you agree to its license and privacy statement."

The application interface shows the Extensions Marketplace on the left with a list of installed and available extensions. The main editor displays a JavaScript file named `index.js` with the following code:

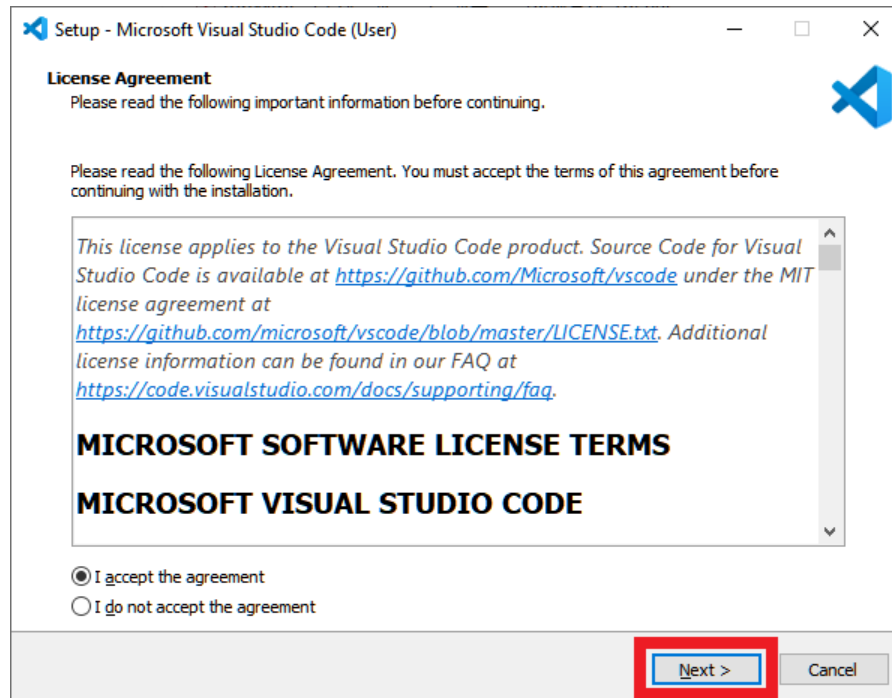
```
src > .serviceWorker.js > register > window.addEventListener('load') callback
checkValidServiceWorker(swUrl, config);

// Add some additional logging to localhost, pointing developers
// service worker/PWA documentation.
navigator.serviceWorker.ready.then(() => {
  console.log('This is not a service worker (property) Navigator.serviceWorker...');
  // This is not a service worker
  // removeSiteSpecificTrackingException
  // removeWebWideTrackingException
  // requestMediaKeySystemAccess
  // sendBeacon
  // Is not a service worker (property) Navigator.serviceWorker...
  // registerVa
  // storage
  // stoneSiteSpecificTrackingException
  // stoneWebWideTrackingException
  // userAgent
  // vendor
});

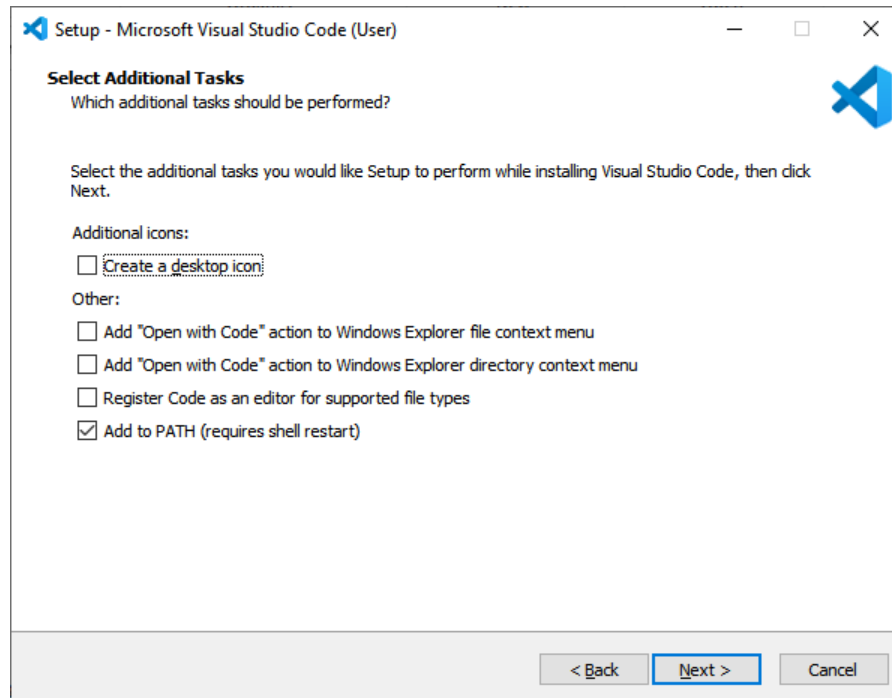
function registerValidSW(swUrl, config) {
  navigator.serviceWorker
    .register(swUrl)
    .then(registration => {
```

The bottom status bar shows the file path `Ln 43, Col 19` and the file type `JavaScript`.

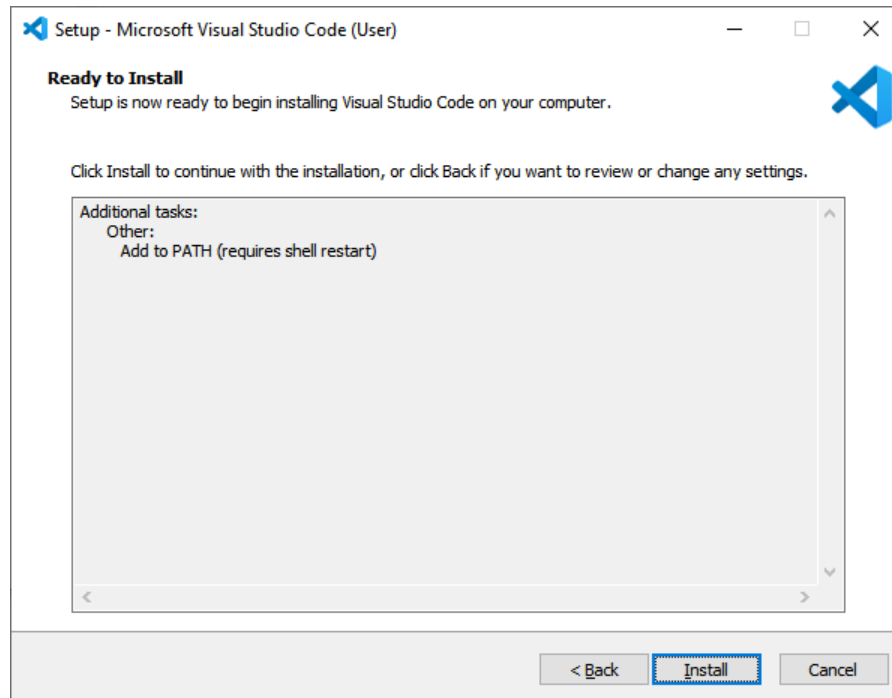
② Install VSCODE



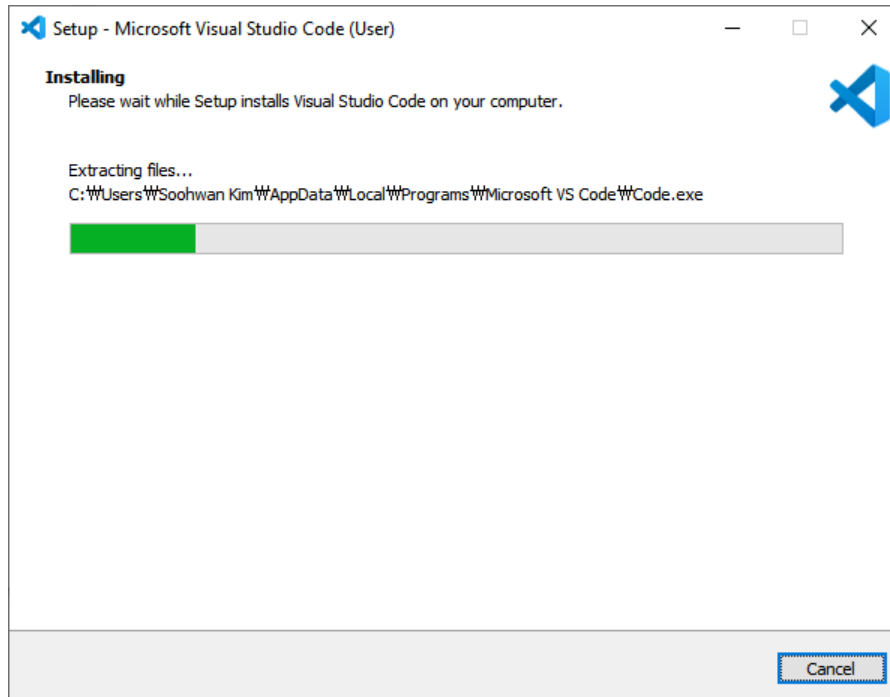
② Install VSCODE



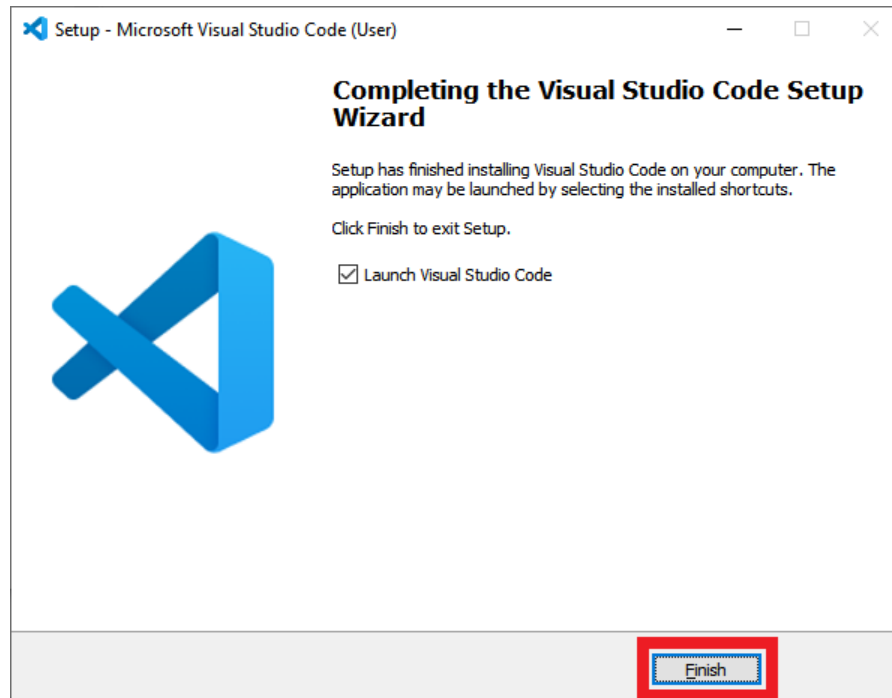
② Install VSCODE



② Install VSCODE



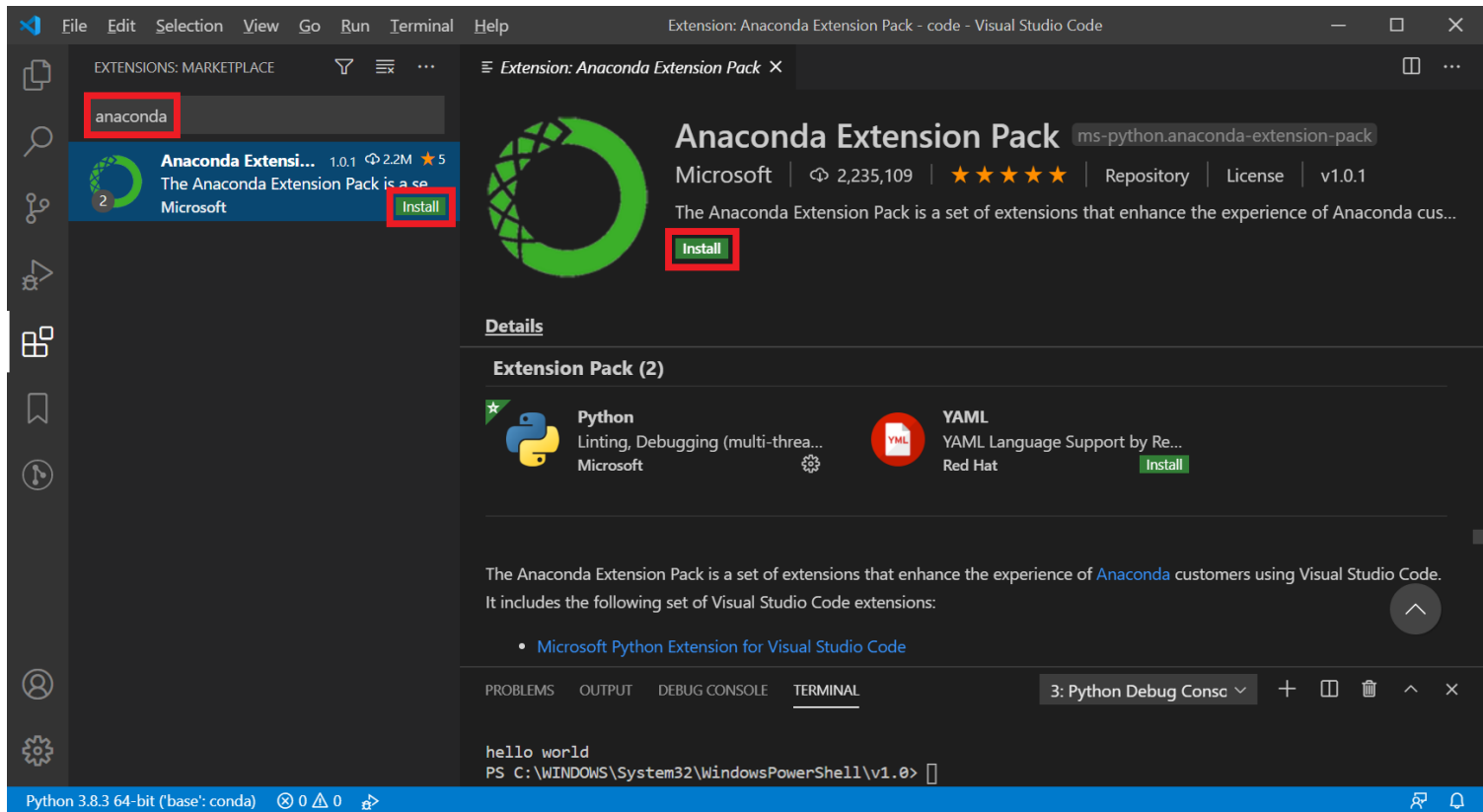
② Install VSCODE



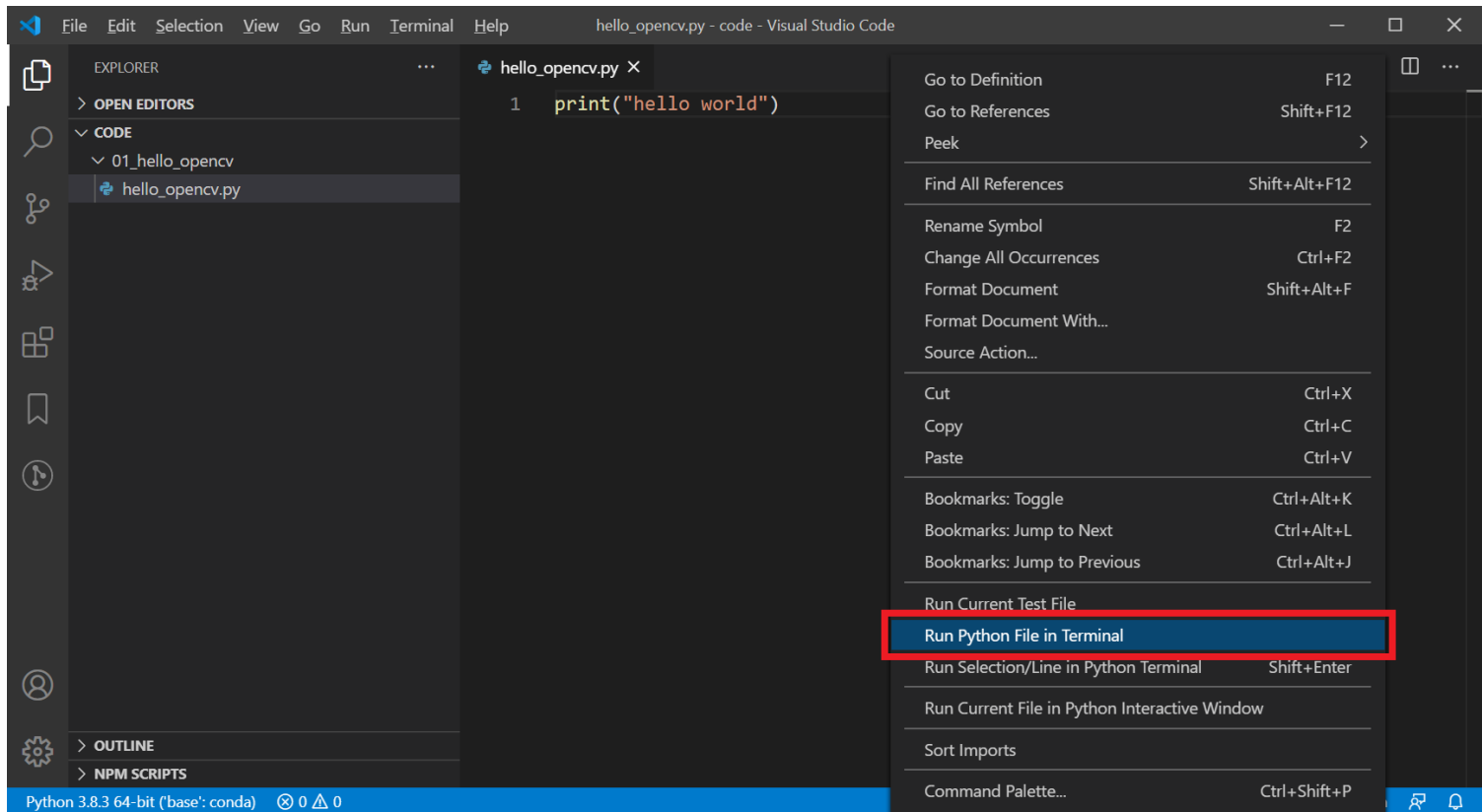
③ Install Python Extension on VSCODE



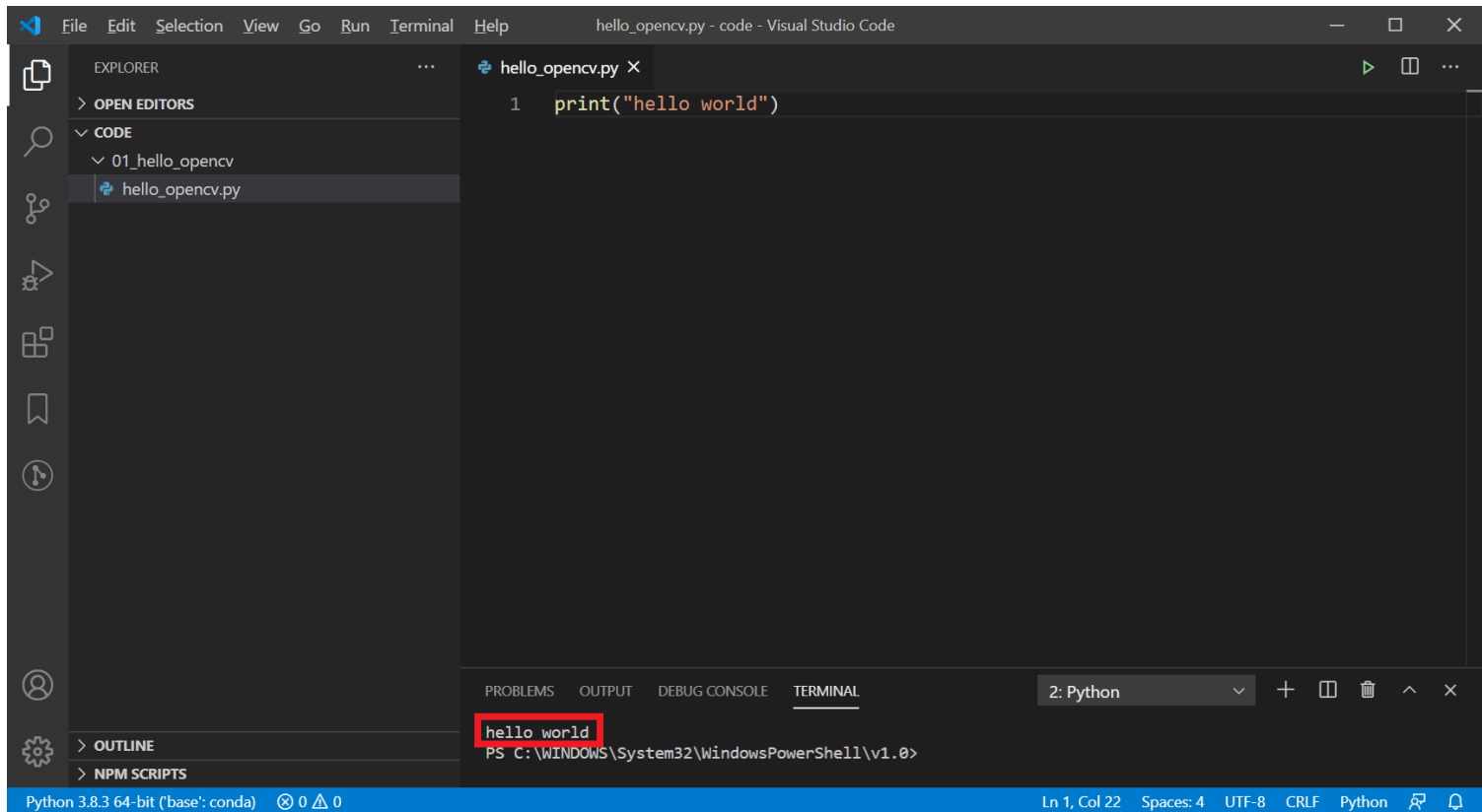
③ Install Anaconda Extension on VSCODE



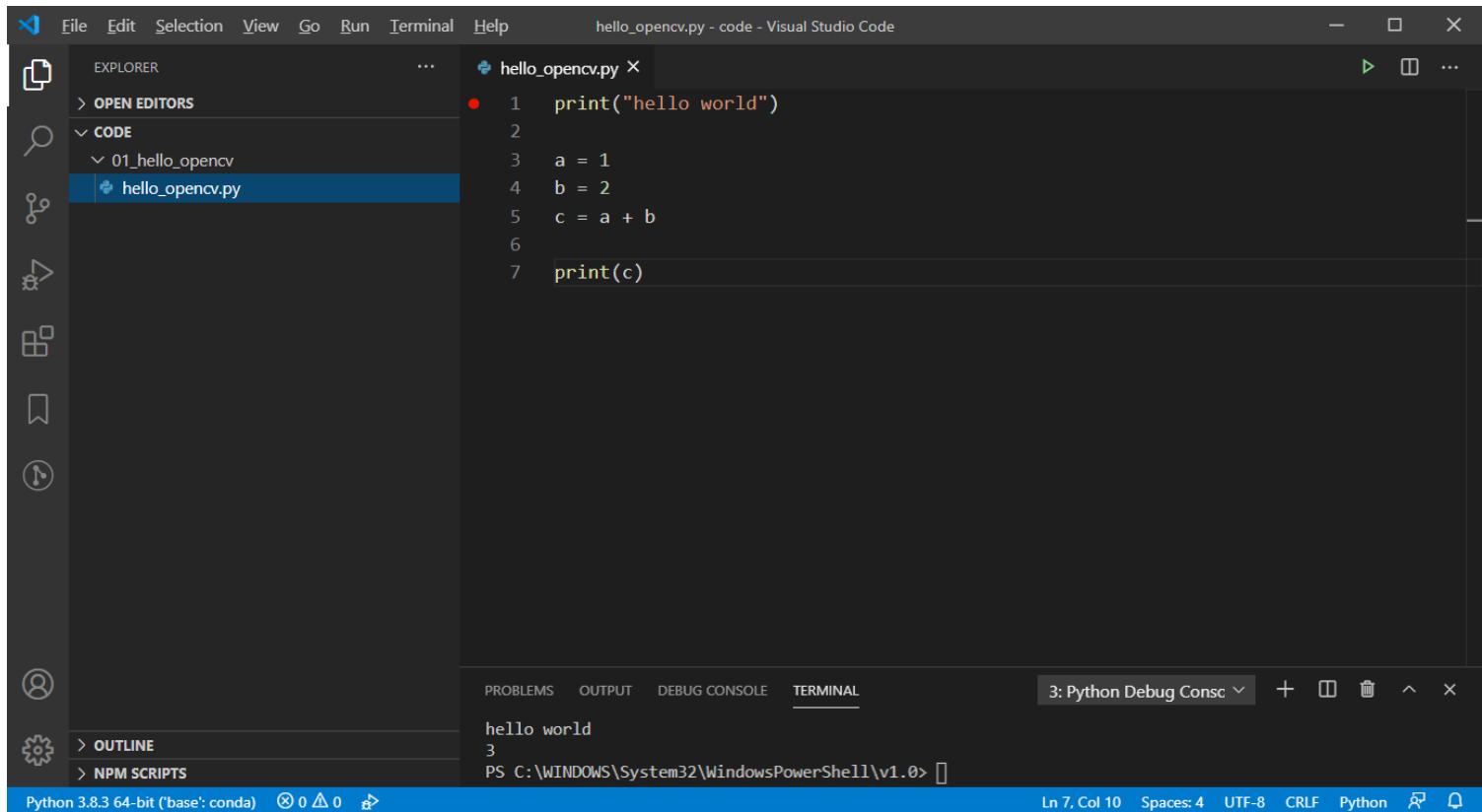
⑤ Run Python Code



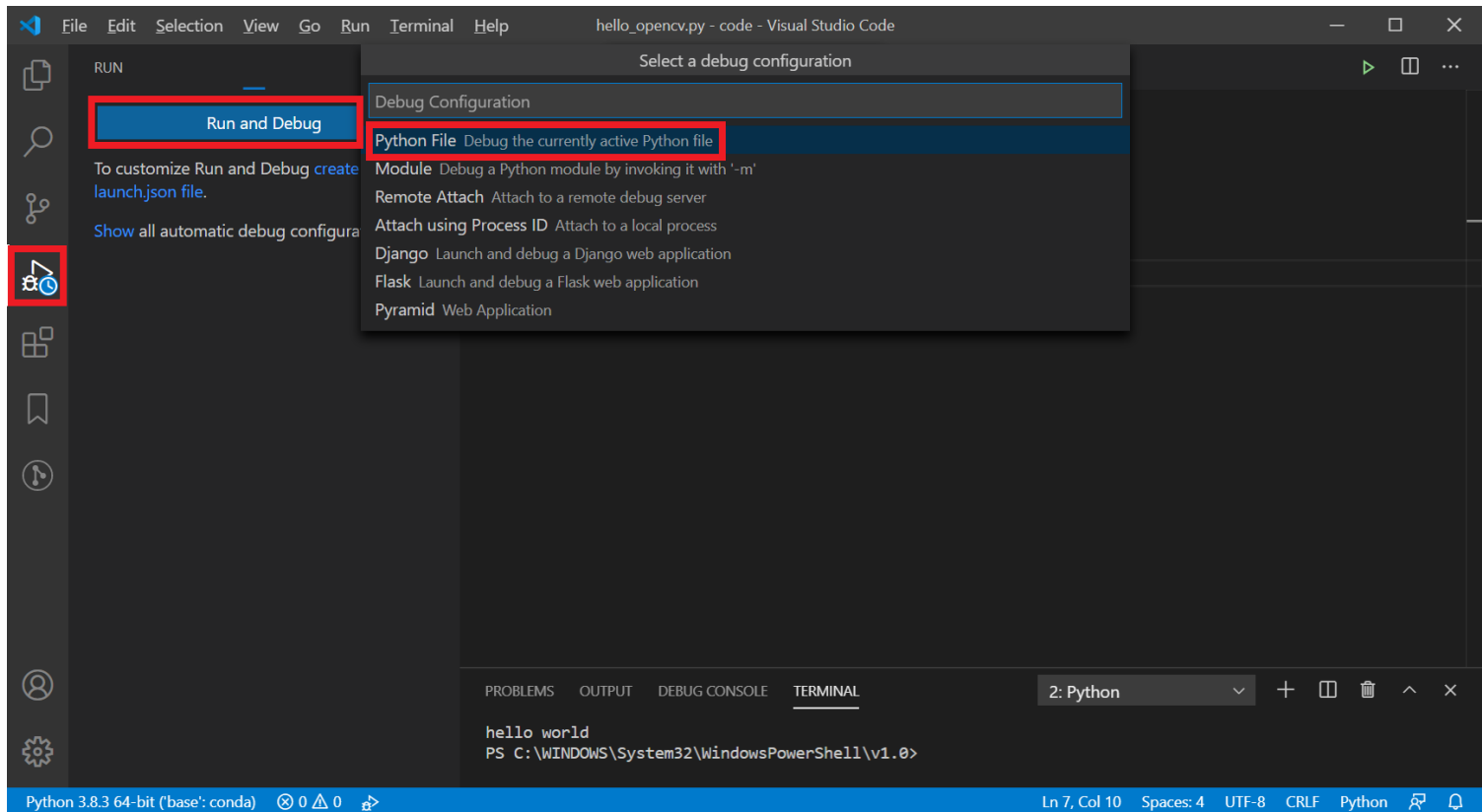
⑤ Run Python Code



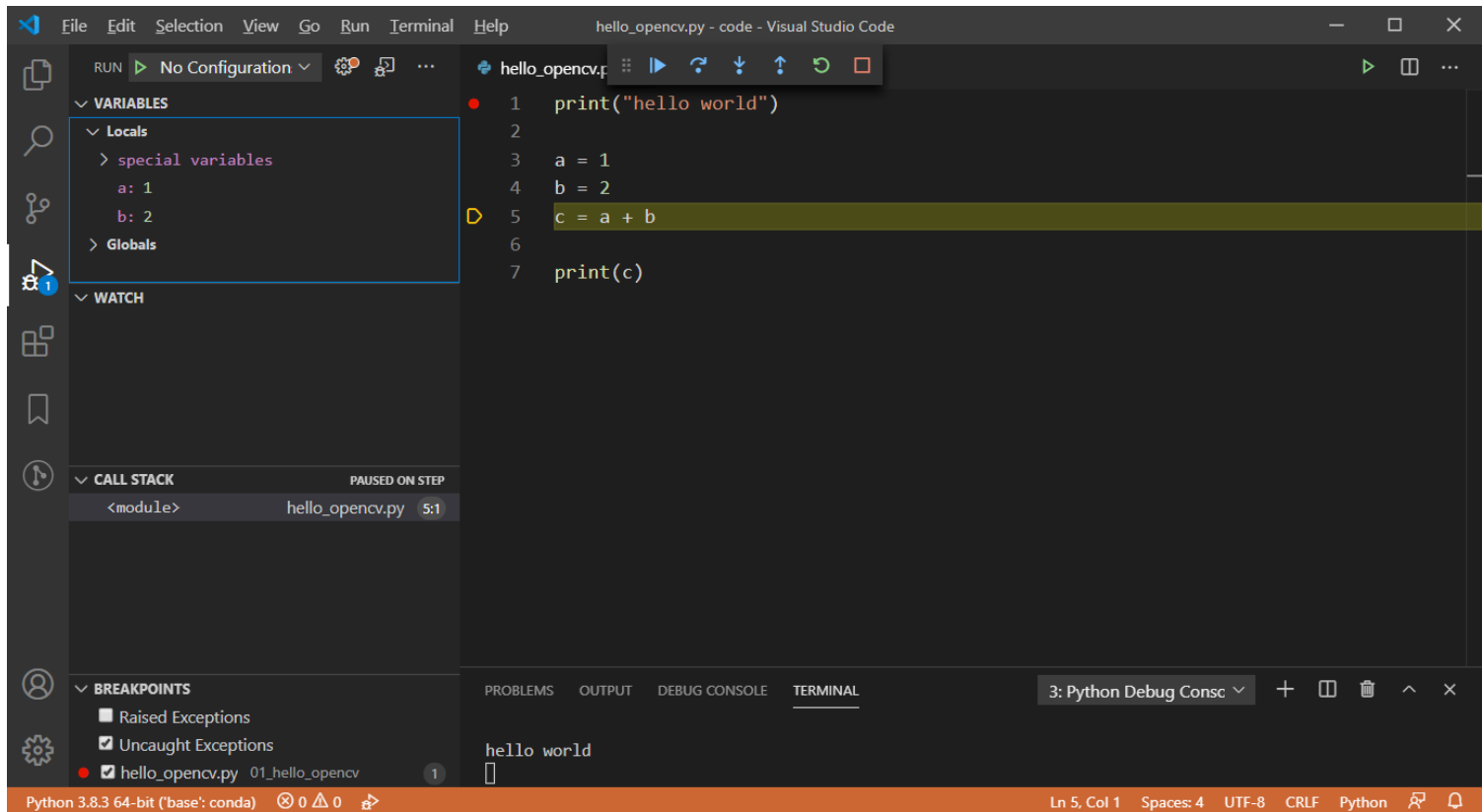
⑥ Debug Python Code



⑥ Debug Python Code

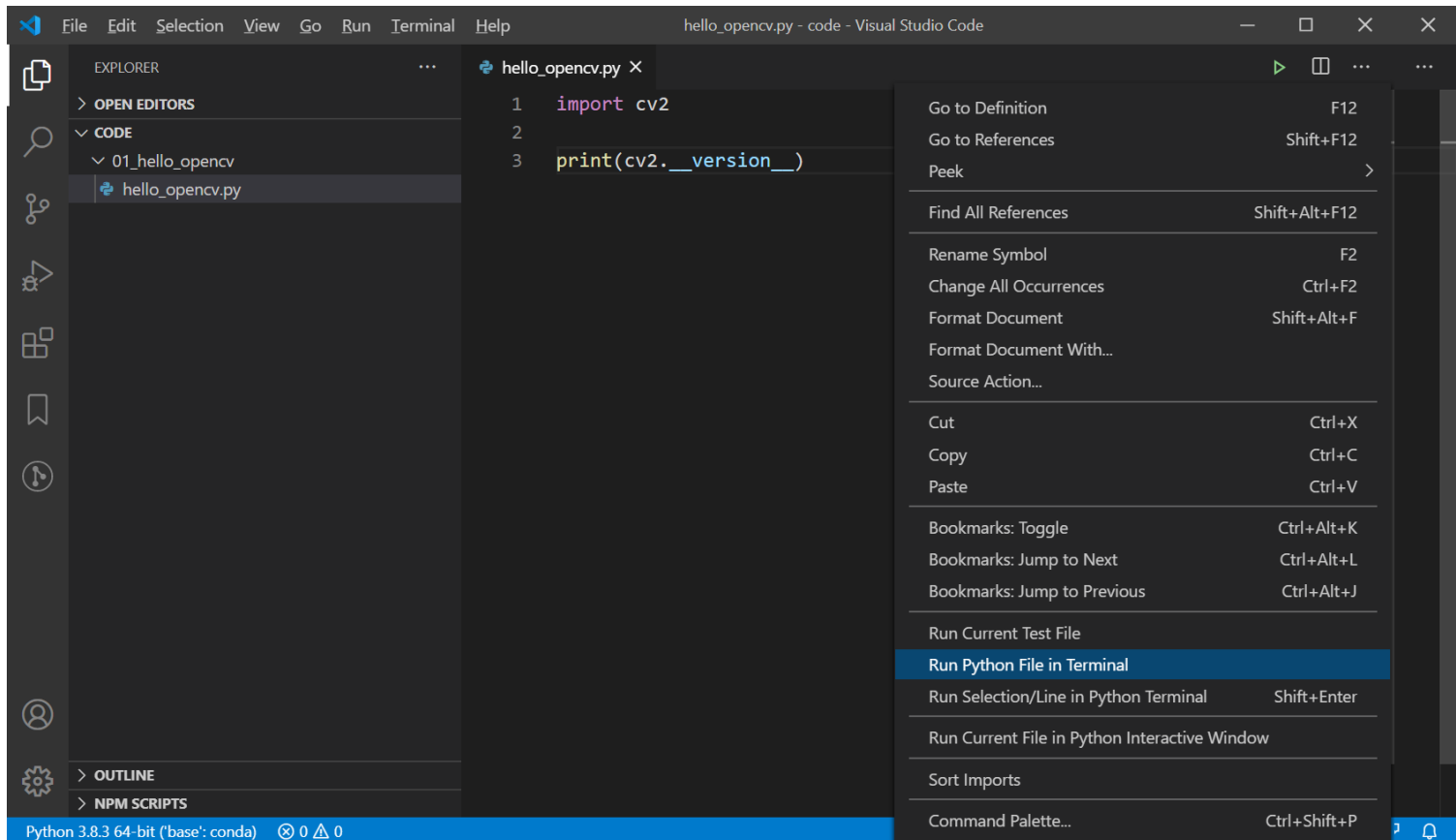


⑥ Debug Python Code

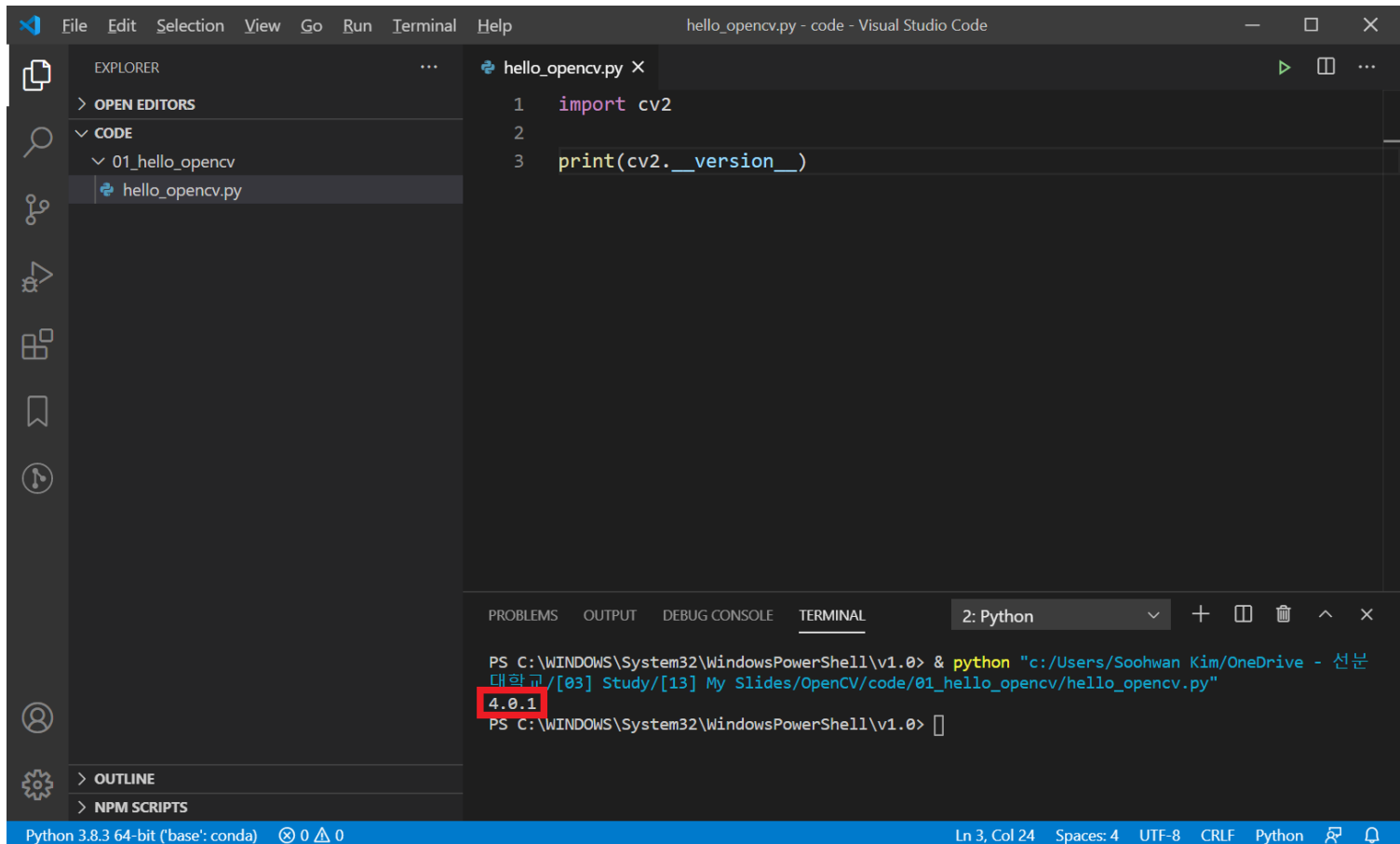


F5: Continue / F10: Step Over / F11: Step Into / F12: Step Out / Shift+F5: Stop

⑦ Hello OpenCV



⑦ Hello OpenCV



The screenshot shows the Visual Studio Code interface with a Python file named `hello_opencv.py` open. The file contains the following code:

```
1 import cv2
2
3 print(cv2.__version__)
```

The bottom panel shows the terminal output after running the script:

```
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0> & python "c:/Users/Soohwan Kim/OneDrive - 선분대학교/[03] Study/[13] My Slides/OpenCV/code/01_hello_opencv/hello_opencv.py"
4.0.1
PS C:\WINDOWS\System32\WindowsPowerShell\v1.0>
```

The status bar at the bottom indicates the Python 3.8.3 64-bit environment is active, and the file is encoded in UTF-8 with CRLF line endings.

Push Code to GitHub

