Chapter 01-2

Exercise environment

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Exercise environment

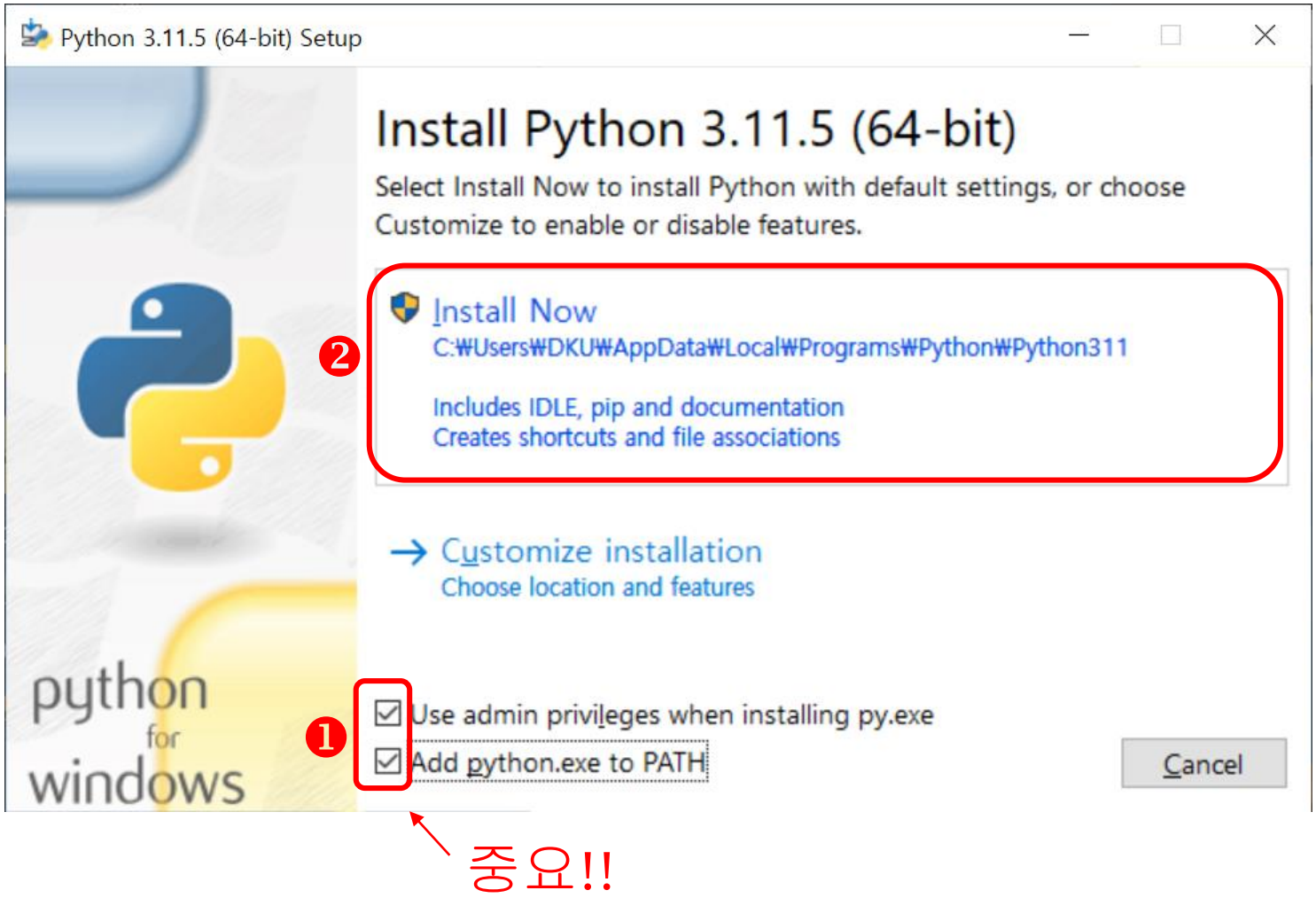
- PC
  - Pyhon
  - VS code (IDE for python)
- Cloud
  - Google colab

1. Install Python

- 1. Download site
- https://www.python.org/downloads/

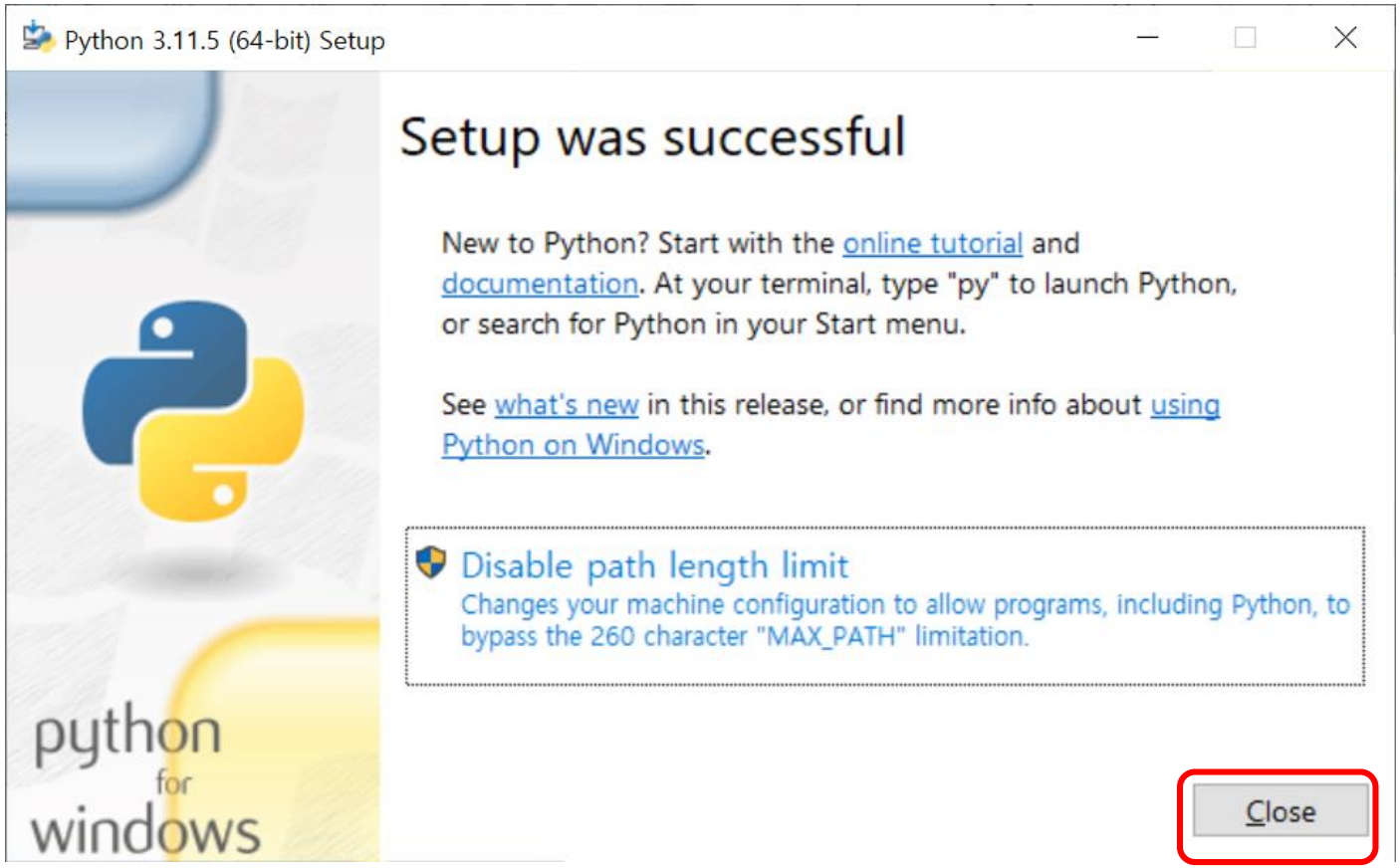
1. Install Python

- 2. 다운받은 설치 파일을 실행



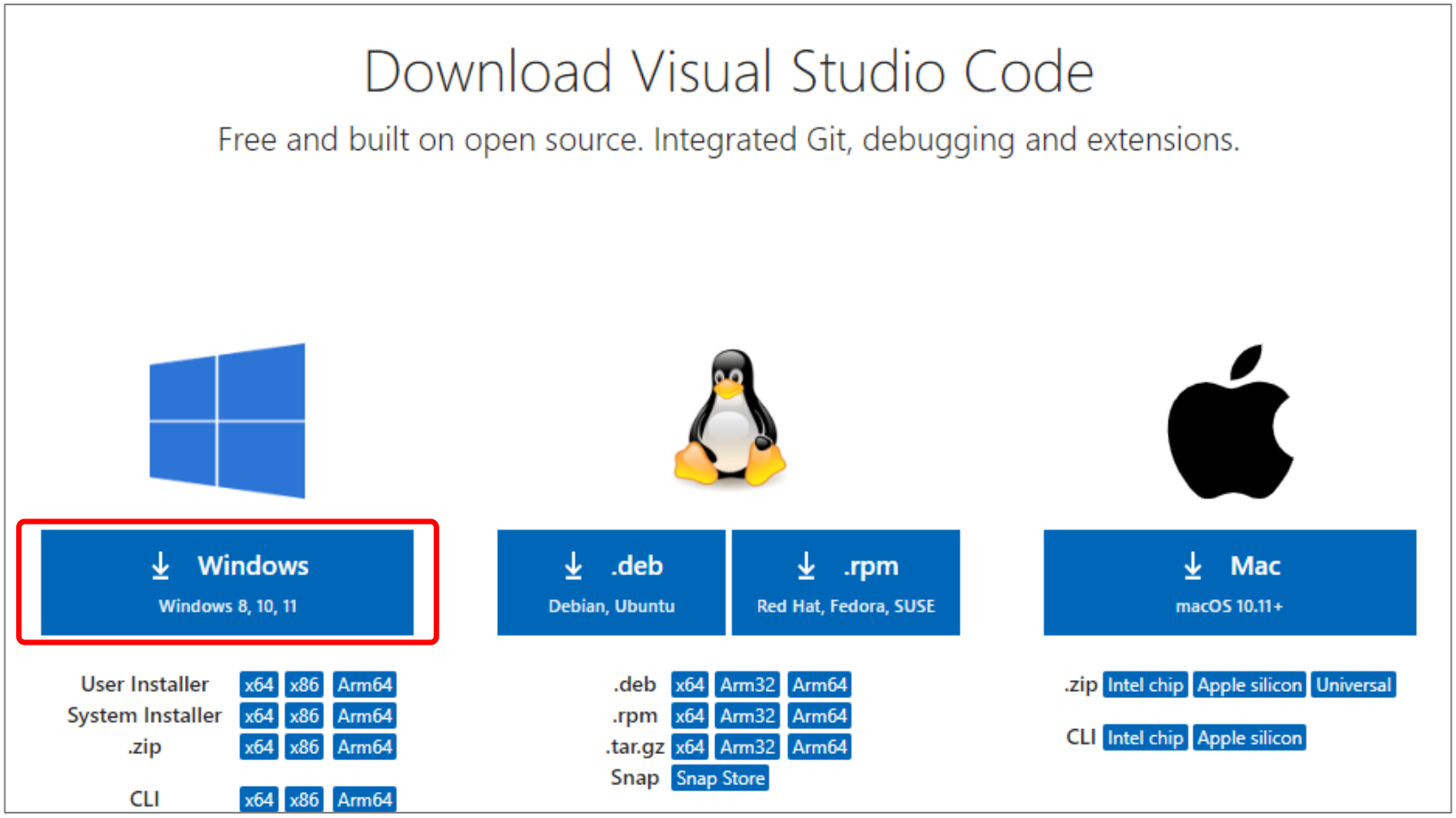
1. Install Python

- 3. 설치종료

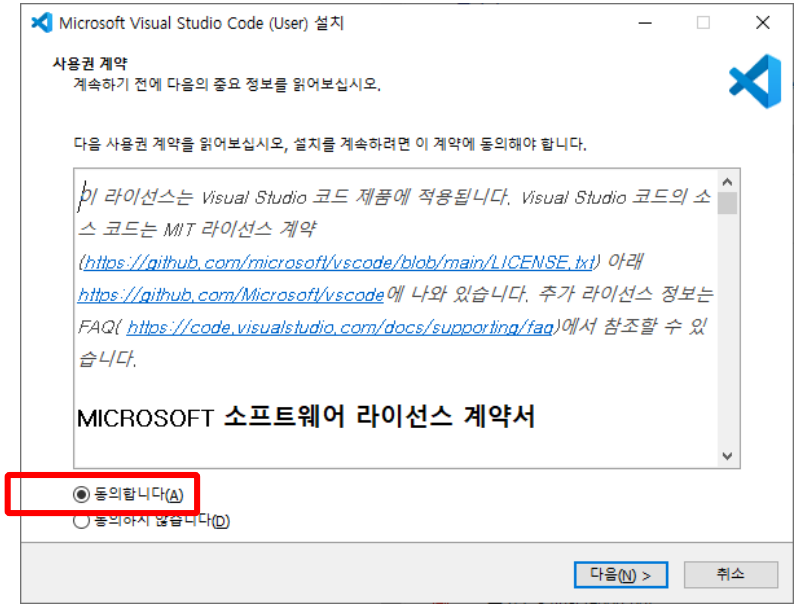


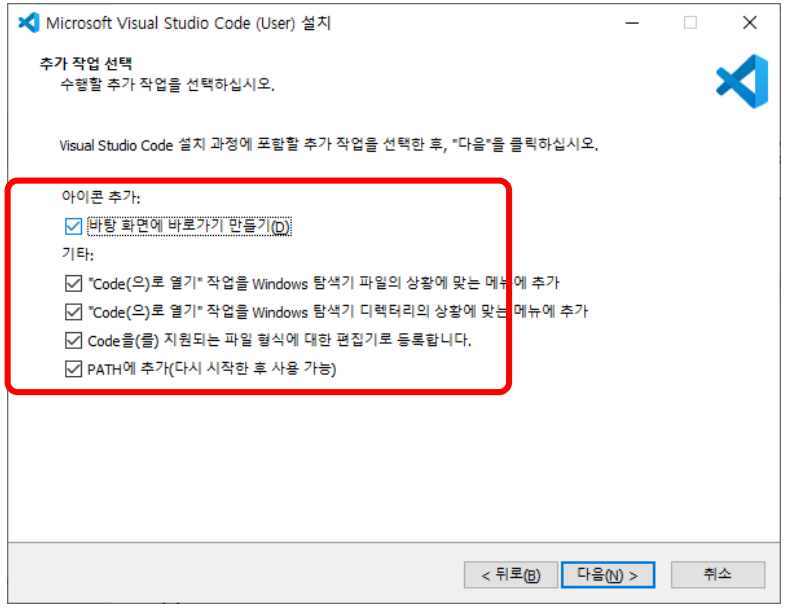
2. VS code : python IDE

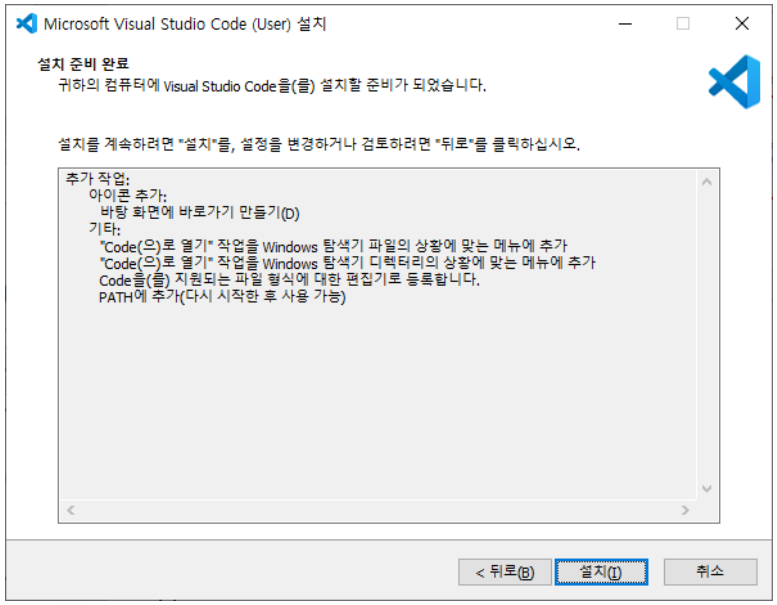
- Install
- https://code.visualstudio.com/download

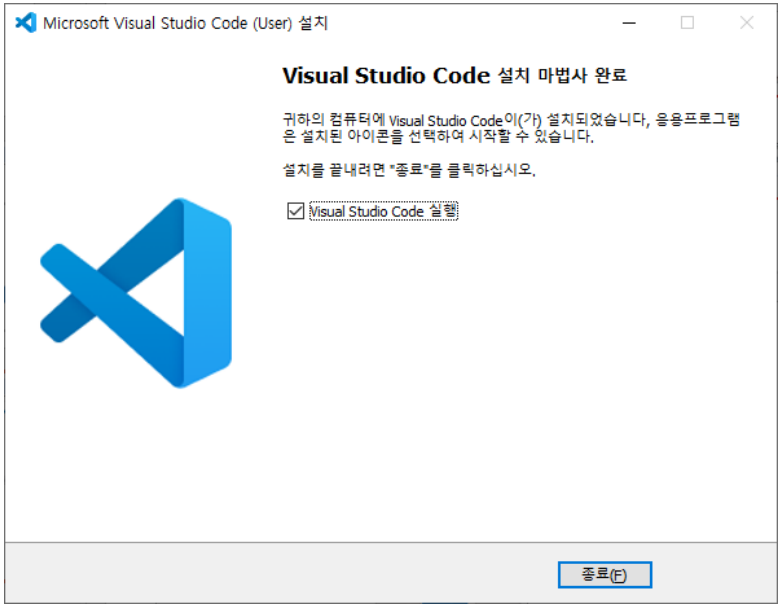


2. VS code : python IDE









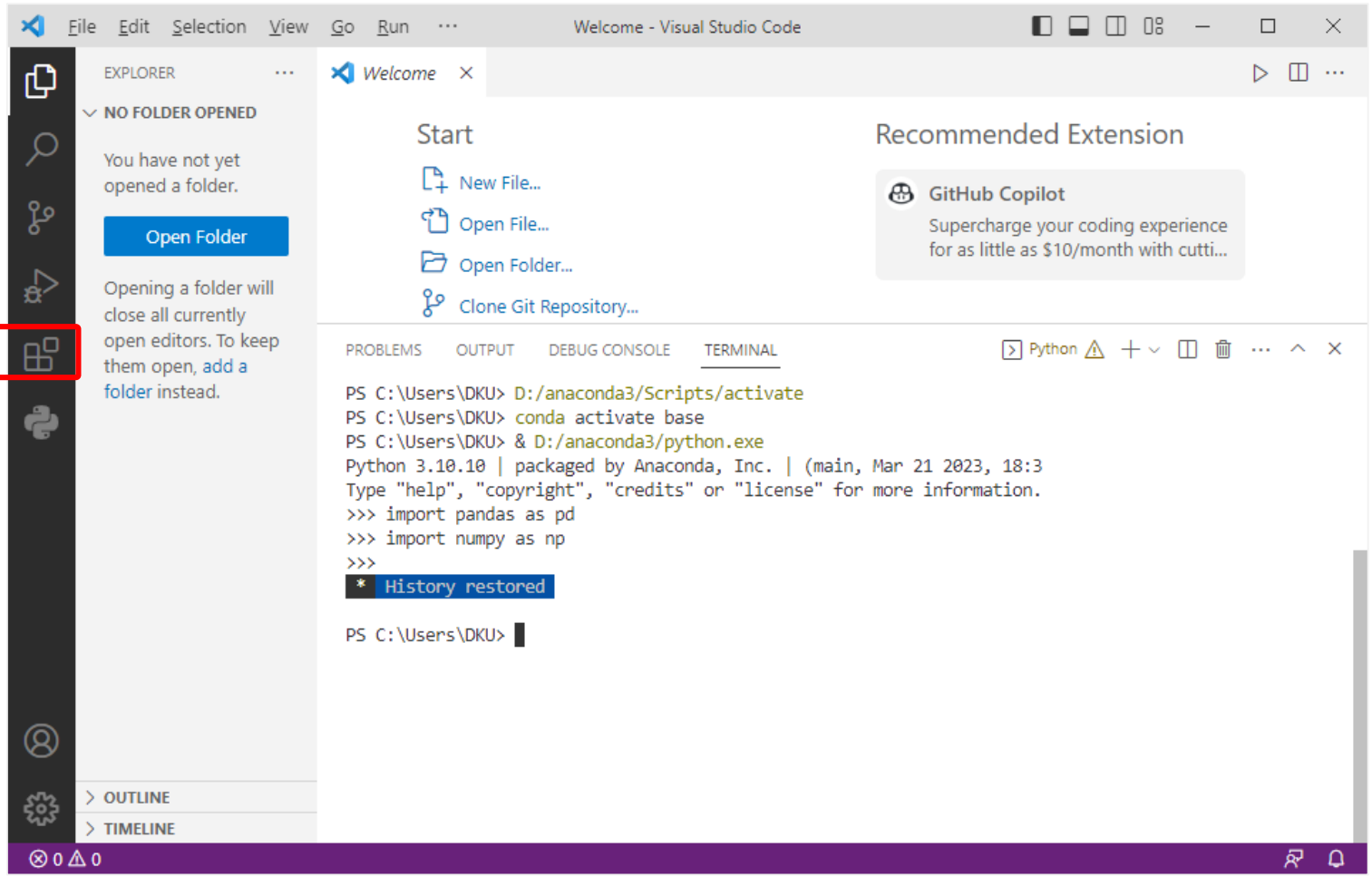
2. VS code : python IDE

- Python, VS code 설치 후 시스템을 재시작 한다

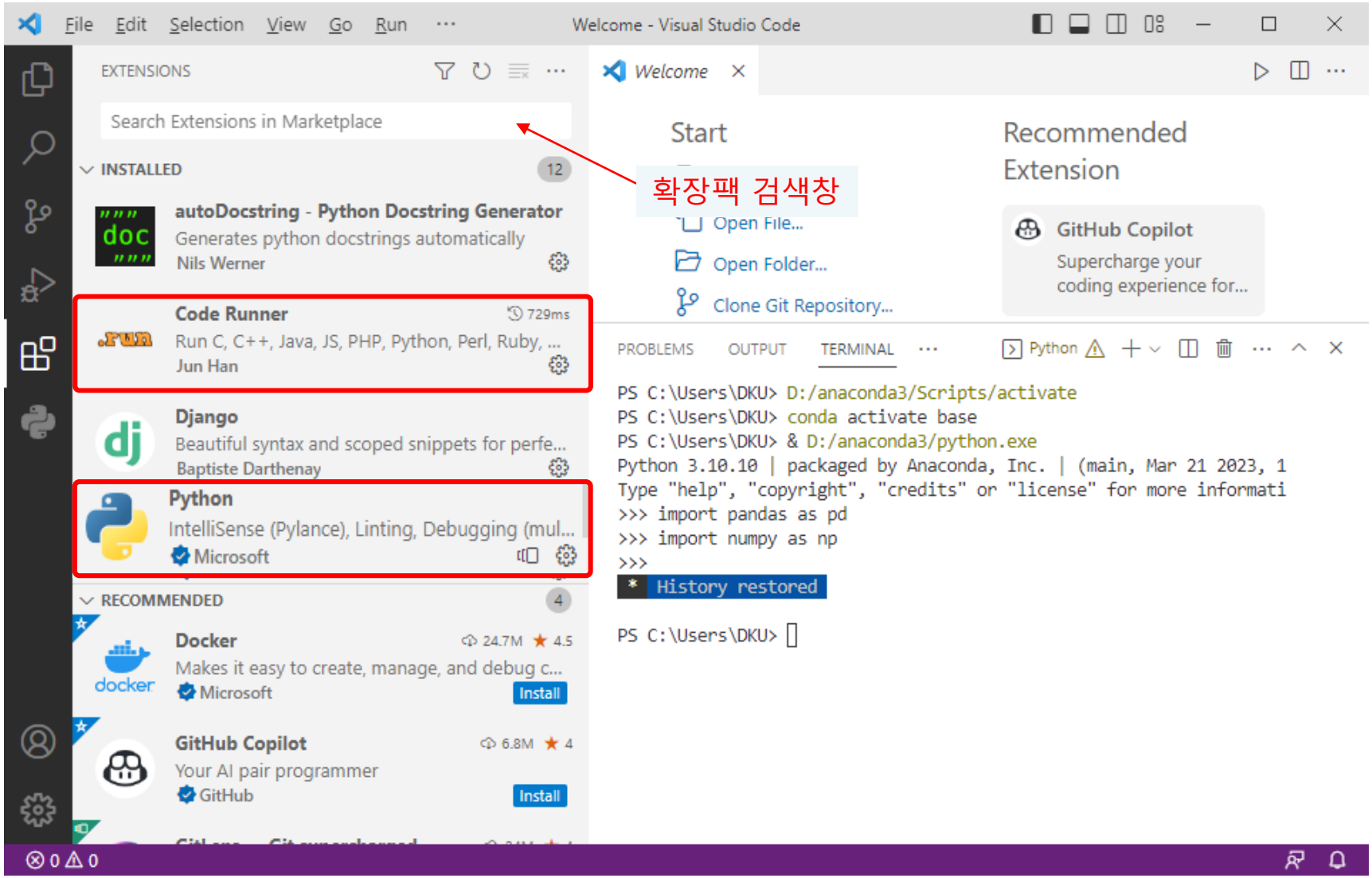
2. VS code : python IDE

- Python 을 이용하기 위한 확장 팩 설치

확장팩 관리 버튼



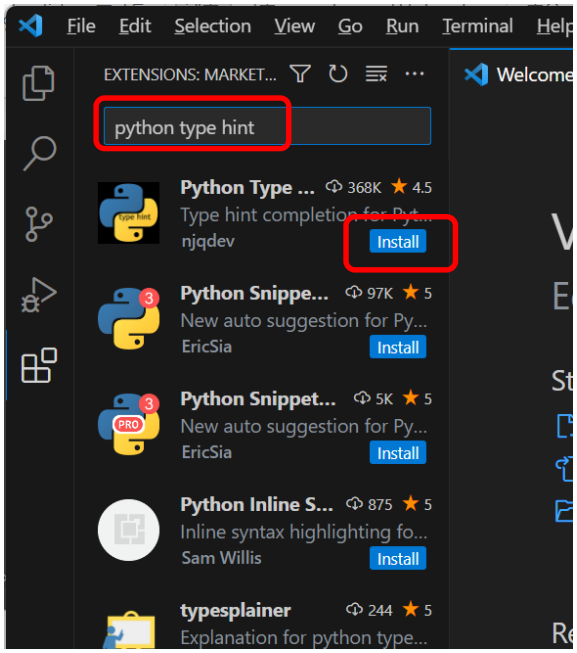
2. VS code : python IDE

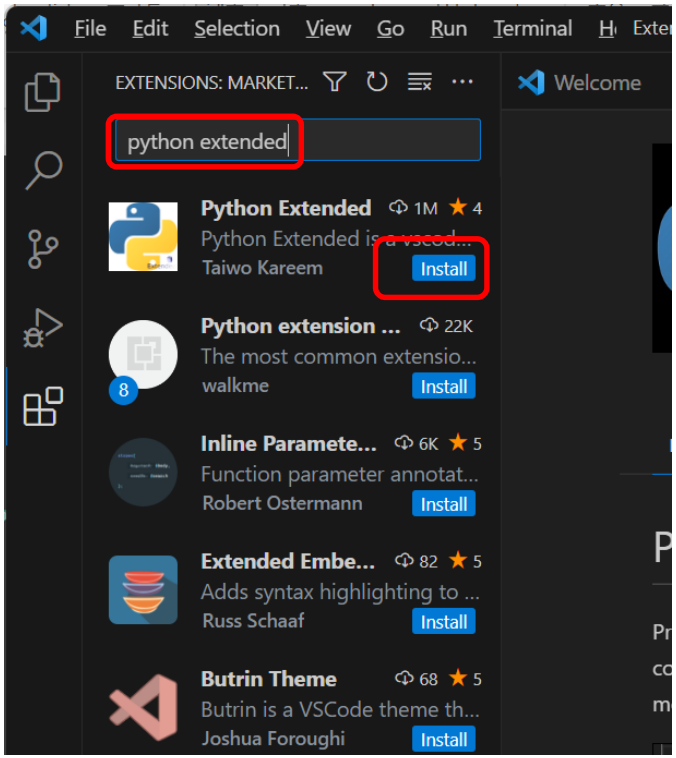


- Installed 목록에 code runner, python 이 있는지 확인
- 없으면 검색창에서 검색하여 설치 후 VS code 재시작

2. VS code : python IDE

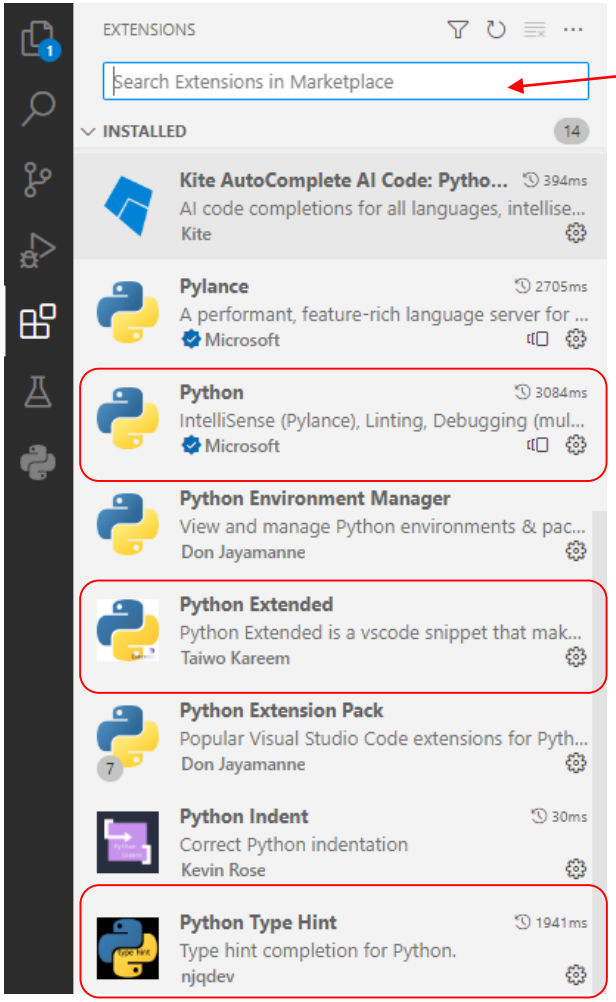
- 파이썬을 편리하게 사용하기 위한 추가 확장팩 설치
  - python type hint
  - python extended





2. VS code : python IDE

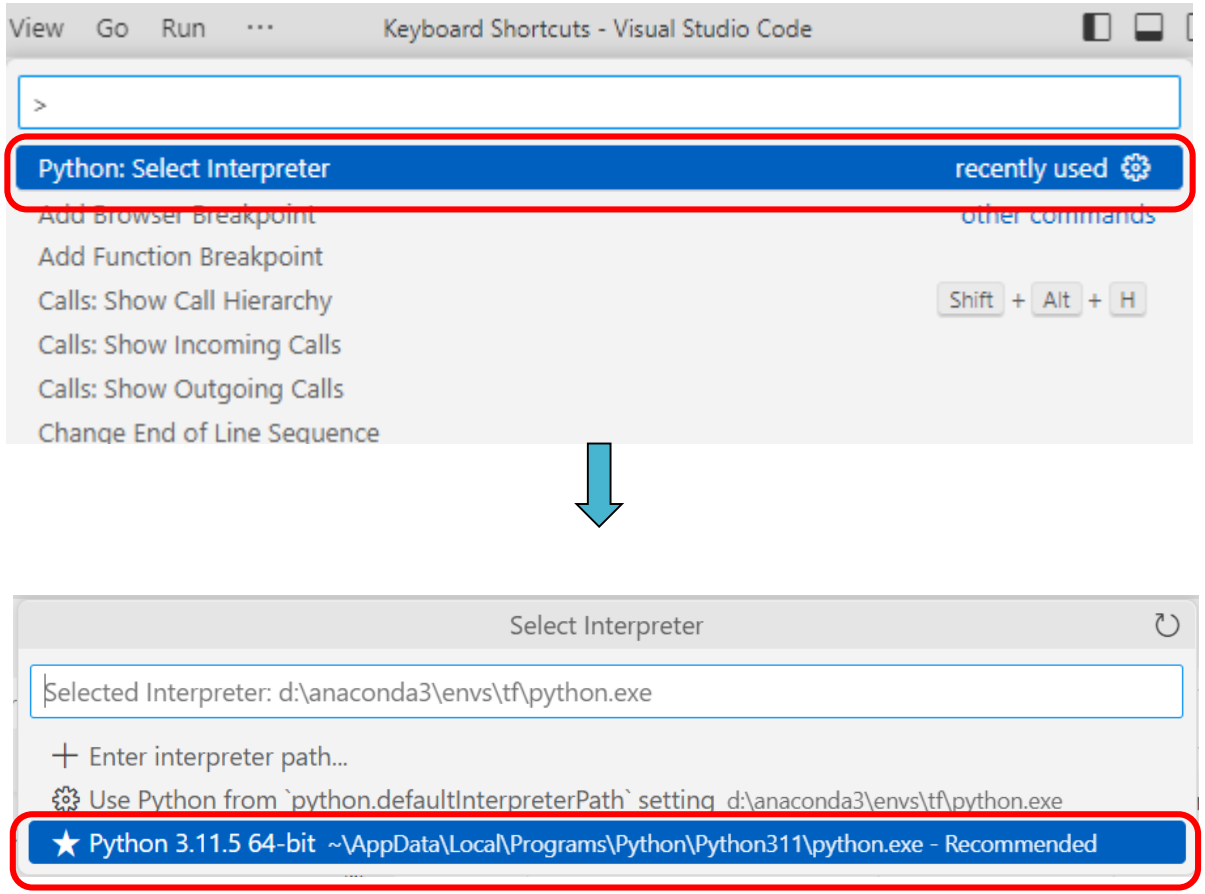
- 설치된 확장팩 확인
  - 검색어 부분을 지우면 다음과 같이 추가 설치 요소들을 확인 할수 있음



여기를 공백으로 만든다.

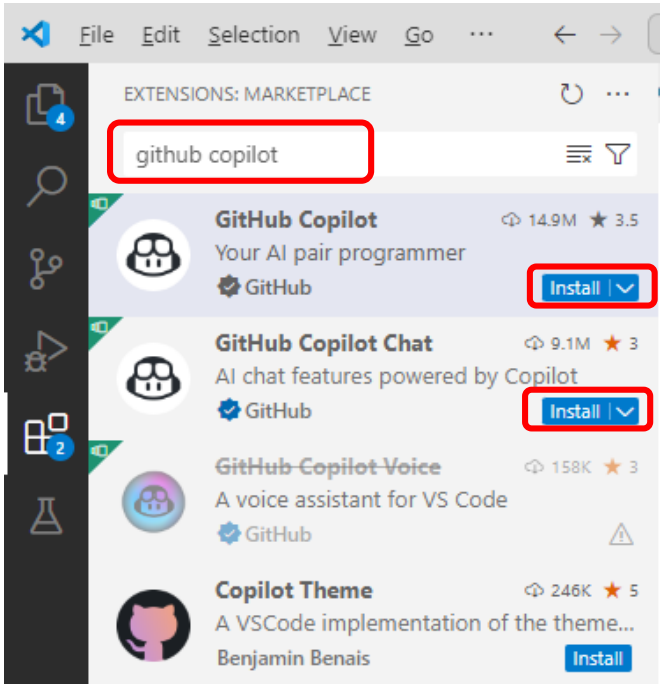
2. VS code : python IDE

- VS code를 파이썬 편집기로 설정하기
- <Ctrl>+<Shift>+<p> 후 Python: Select interpreter 클릭



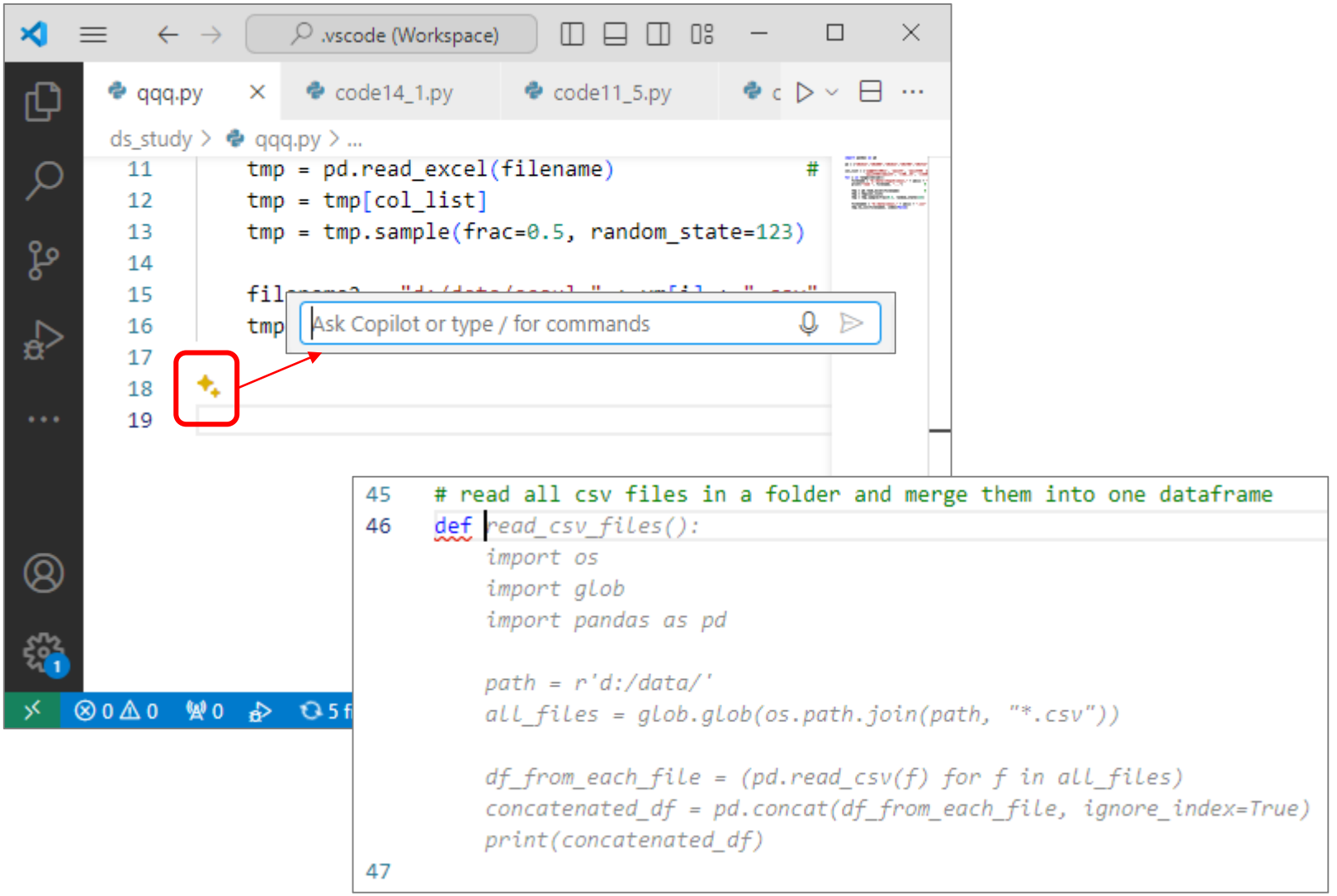
2. VS code : python IDE

- Github Copilot 확장팩
  - 깃허브(github)에서는 파이썬 코딩을 도와주는 인공지능 비서인 코파일럿(copilot)을 출시
  - 파이썬 외에도 C++, Python, Go, JS/TS Ruby, Swift, Java, Kotlin, Rust, PHP등 다양한 언어를 지원
  - 코파일럿을 잘 활용하면 개발 시간을 획기적으로 단축
  - 비용을 지불해야 하는 유료 서비스이지만 교육기관 종사자(학생, 교강사)를 위해 무료 서비스를 지원



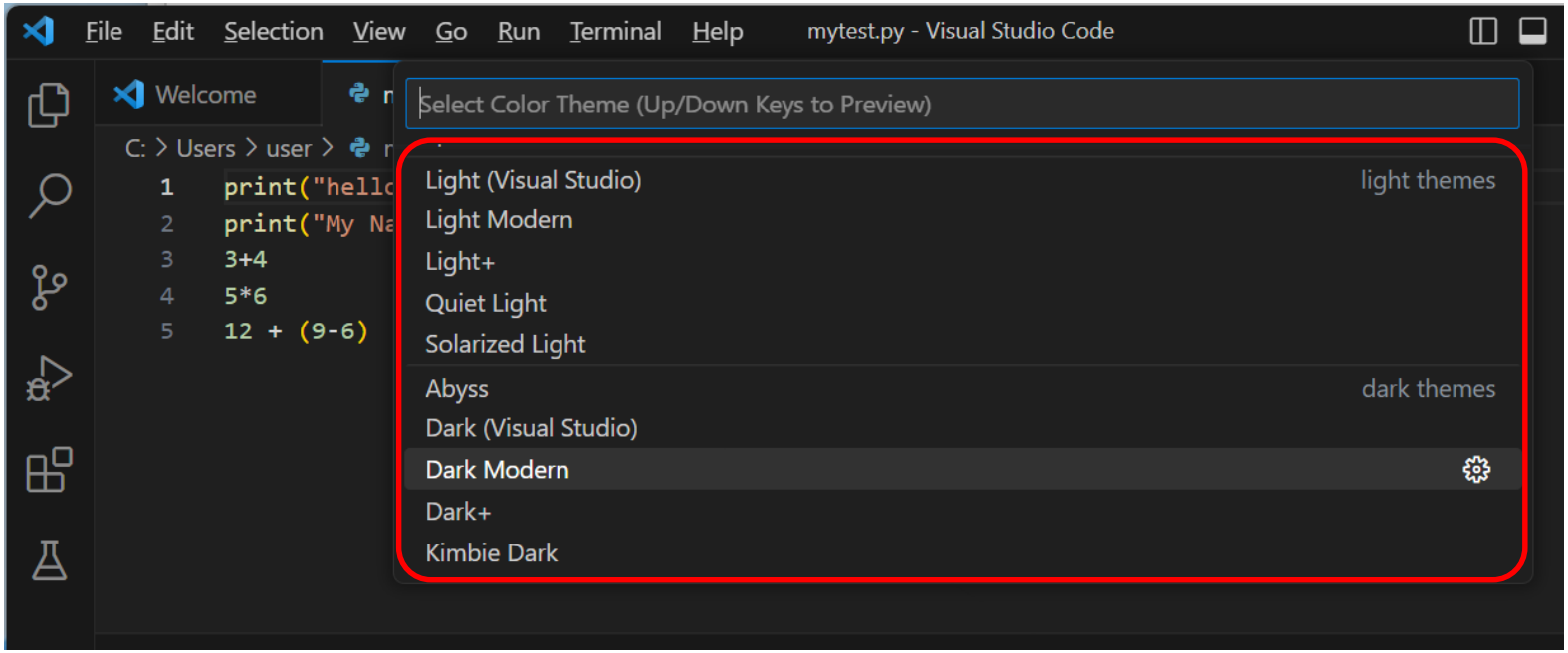
2. VS code : python IDE

- Github Copilot 확장팩



2. VS code : python IDE

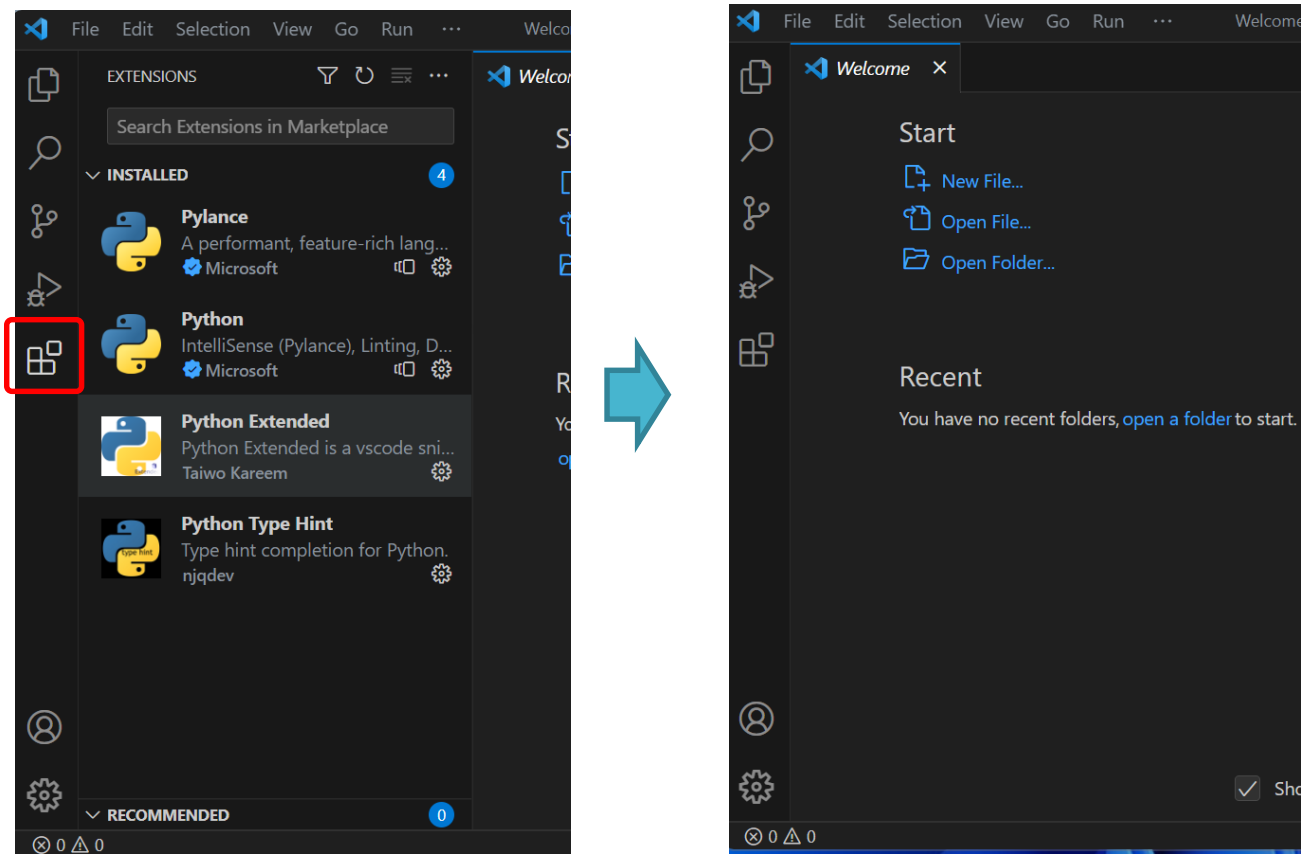
- <Note> 배경 테마 바꾸기
  - [File]→[Preferences] →[Theme] →[Color Themes]



기본 테마는 Dark Modern
흰색 바탕 테마는 Light (Visual Studio) 추천

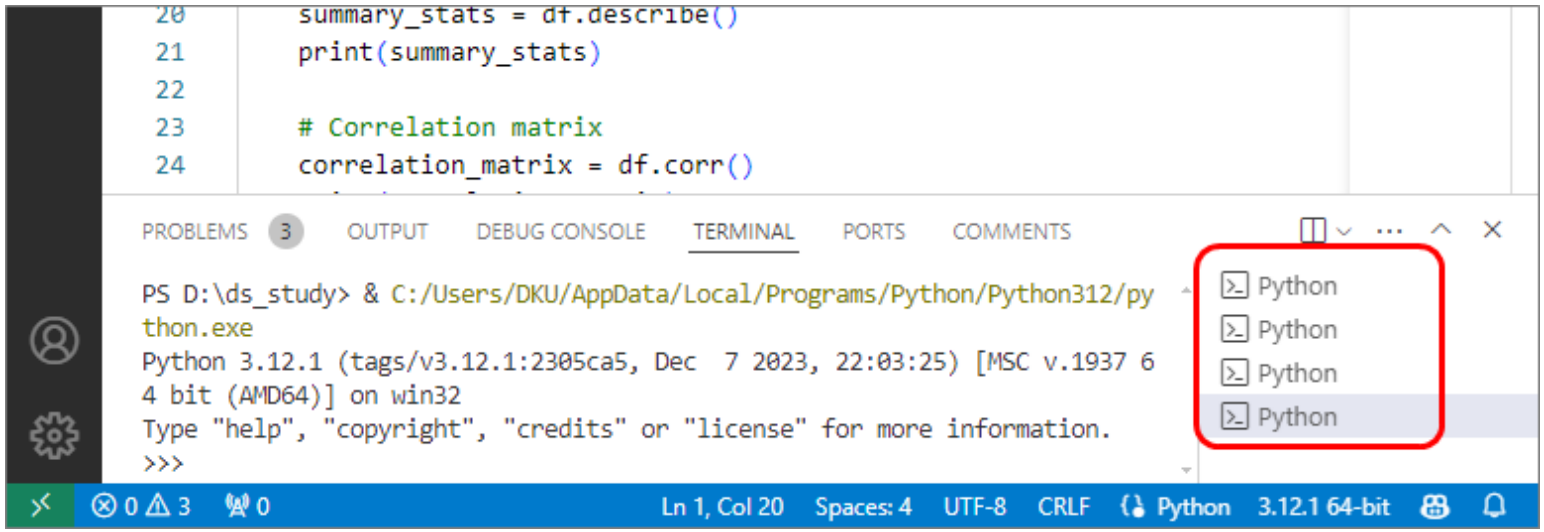
2. VS code : python IDE

- 모든 확장 팩 설치및 환경 설정을 마쳤으므로 아래 버튼을 클릭하여 확장 팩 설치창 부분을 닫는다



2. VS code : python IDE

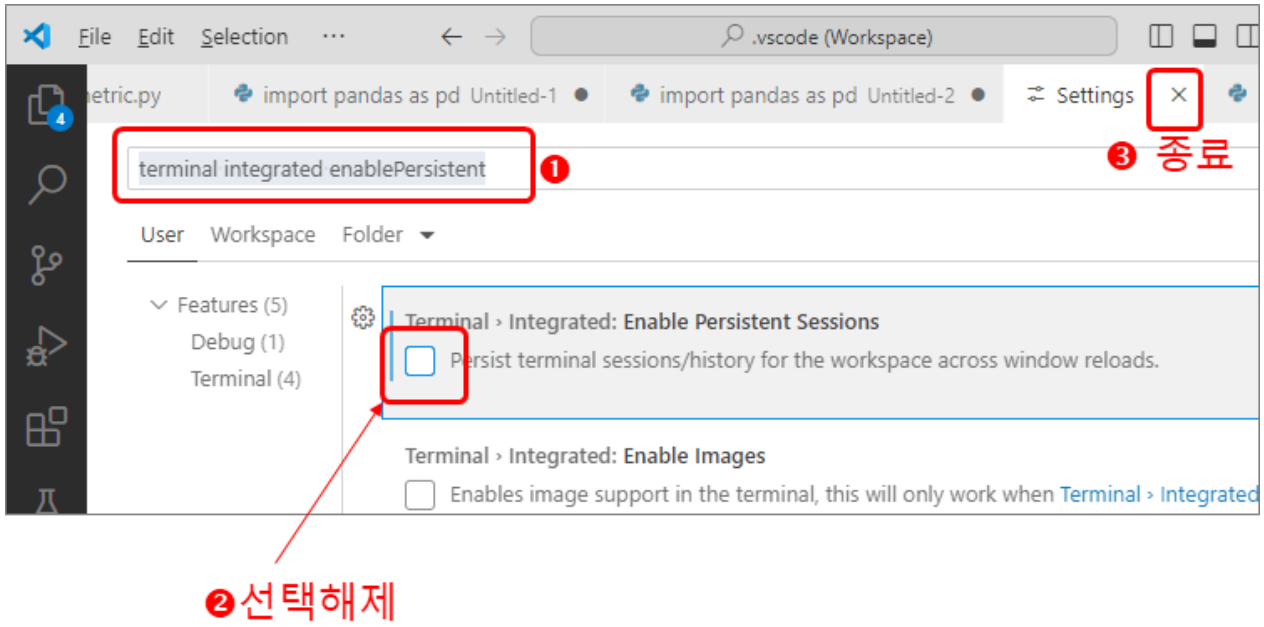
- VS Code의 이전 세션 연결 끊기
  - VS Code 는 작업을 종료하여도 이전 작업에서 생성한 세션정보를 계속 유지
  - 그런데 VS Code 를 재시작하면 이전 세션을 이용하지 않고 새로운 세션을 생성
  - 따라서 VS Code 의 종료와 재시작을 반복하다 보면 아래와 같이 터미널 세션이 여러 개 생겨난다.
  - 이를 방지하기 위해 설정 변경 필요



2. VS code : python IDE

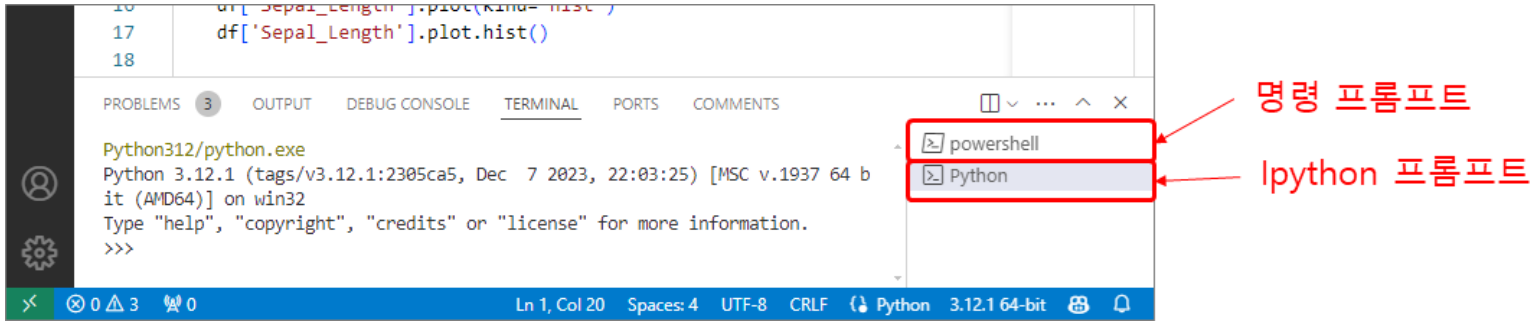
- VS Code의 이전 세션 연결 끊기

① 메인 메뉴에서 [File] → [Preferences] → [Settings]를 선택한다.
② 검색창에서 'terminal integrated enable persistent'를 입력하면 나오는 Terminal Integrated Enable Persistent Sessions 항목의 선택을 해제한다.
③ 설정값 변경 작업을 종료한다.



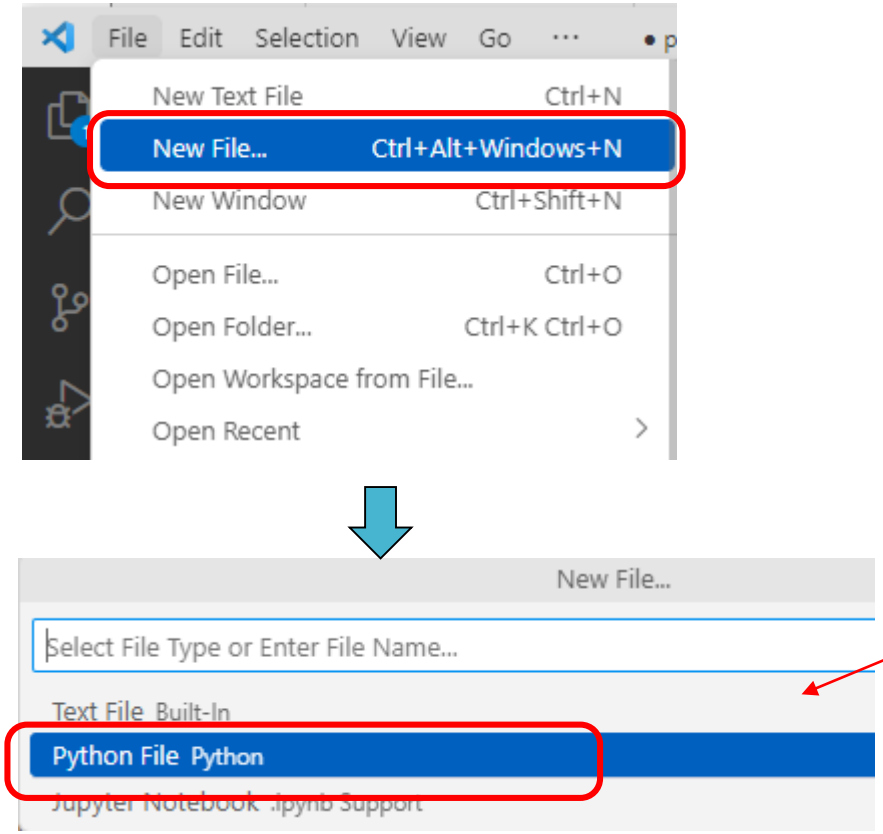
2. VS code : python IDE

- [note]
  - 결과창의 터미널 모드는 윈도우 명령 프롬프트 모드와 ipython 모드의 상호 변환이 가능
  - 파이썬 명령문의 아무 곳에서나 <Shift>+<Enter>를 누르면 아래와 같이 명령 프롬프트 모드와 ipython 프롬프트가 표시되는데, 이곳을 클릭하면 원하는 모드로의 변경이 가능



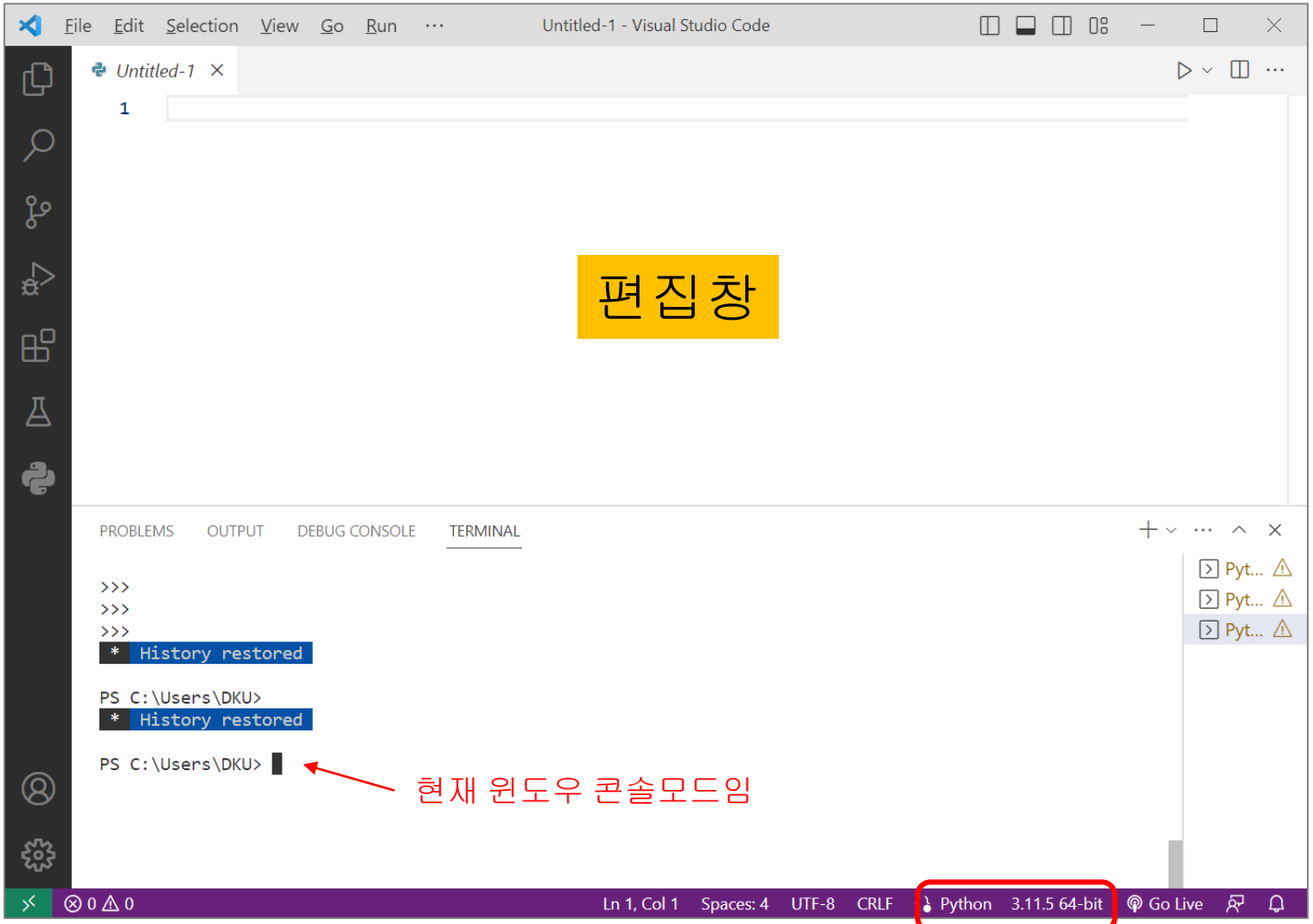
2. VS code : python IDE

- 편집 창 열기



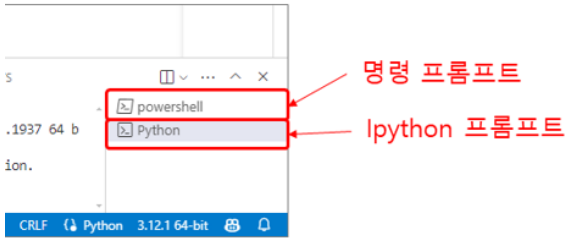
<주의>
Text File 을 선택하면
파이썬 명령문이
실행되지 않음

2. VS code : python IDE



2. VS code : python IDE

- 터미널 모드 변환




```
PS C:\Users\DKU> python
Python 3.10.10 | packaged by Anaconda, Inc. |
Type "help", "copyright", "credits" or "licens
>>> print("Good morning")
Good morning
>>>
>>> quit()
PS C:\Users\DKU>
PS C:\Users\DKU>
```

편집창에서 아무 명령문이나 실행

윈도우 콘솔 모드

python

quit()

파이썬 콘솔 모드

```
PS C:\Users\user>
```

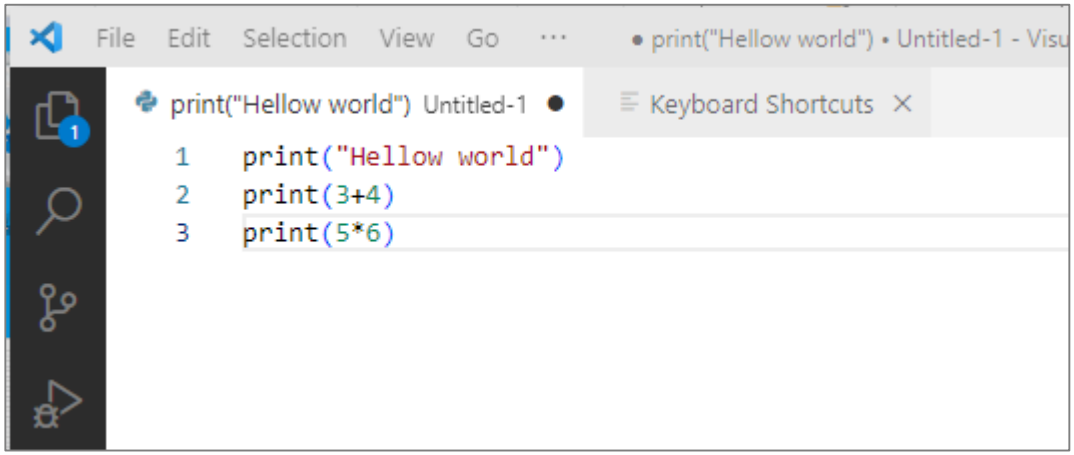
파이썬에 필요한 패키지를 설치할 수 있다. (pip install)

```
>>> print('Who are you')
Who are you
>>>
```

파이썬 명령문을 실행할 수 있다.

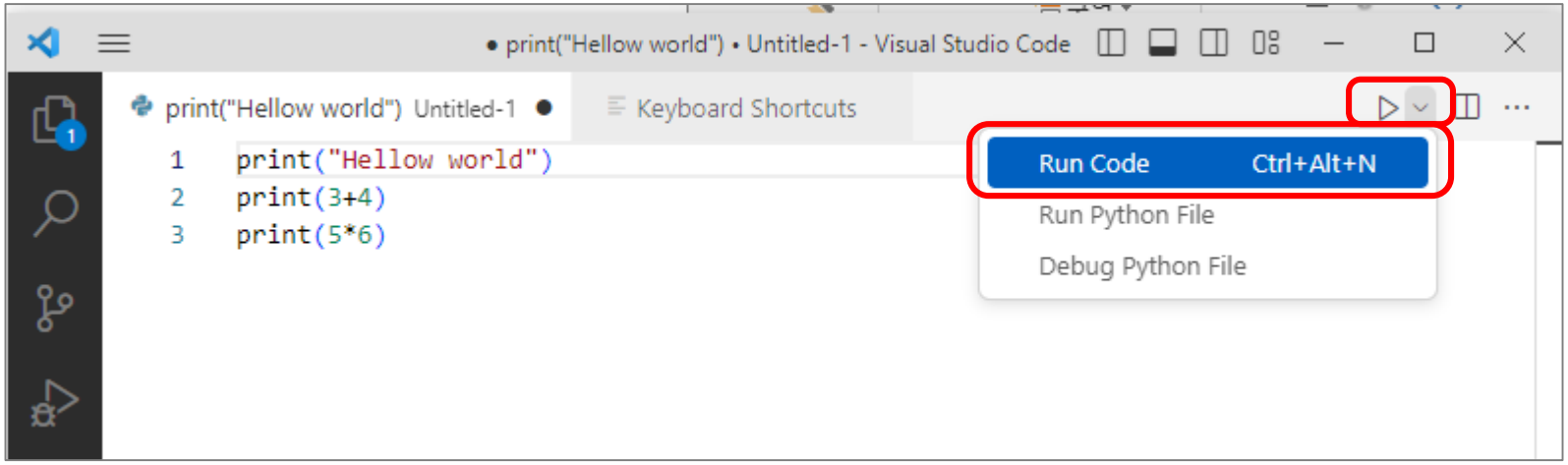
2. VS code : python IDE

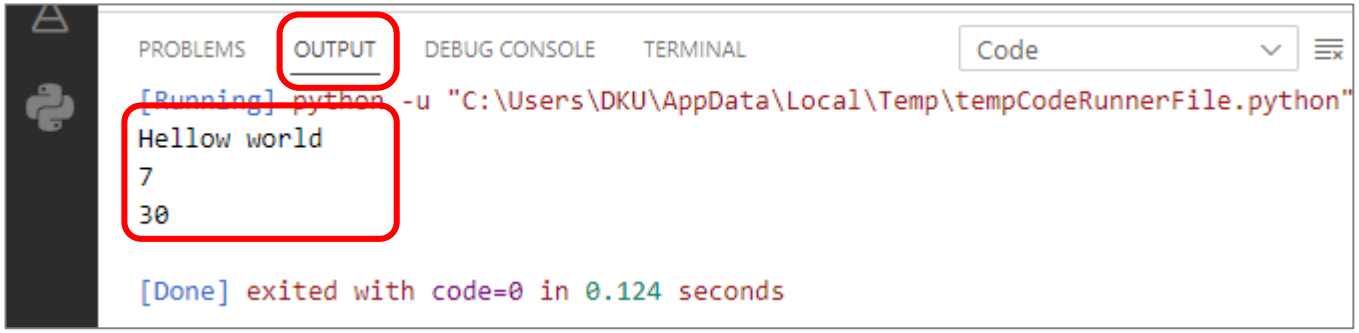
- 프로그램의 작성



2. VS code : python IDE

- 프로그램의 실행
  - 현재 편집창에 작성한 **전체** 명령문 실행 (<ctrl>+<Alt>+<N>)

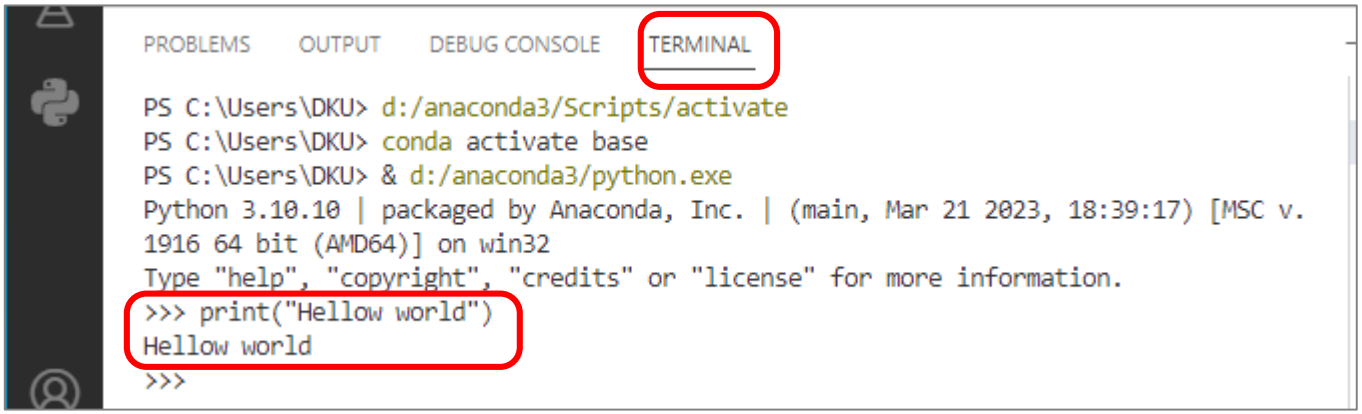




실행 결과가 output 탭에 표시됨

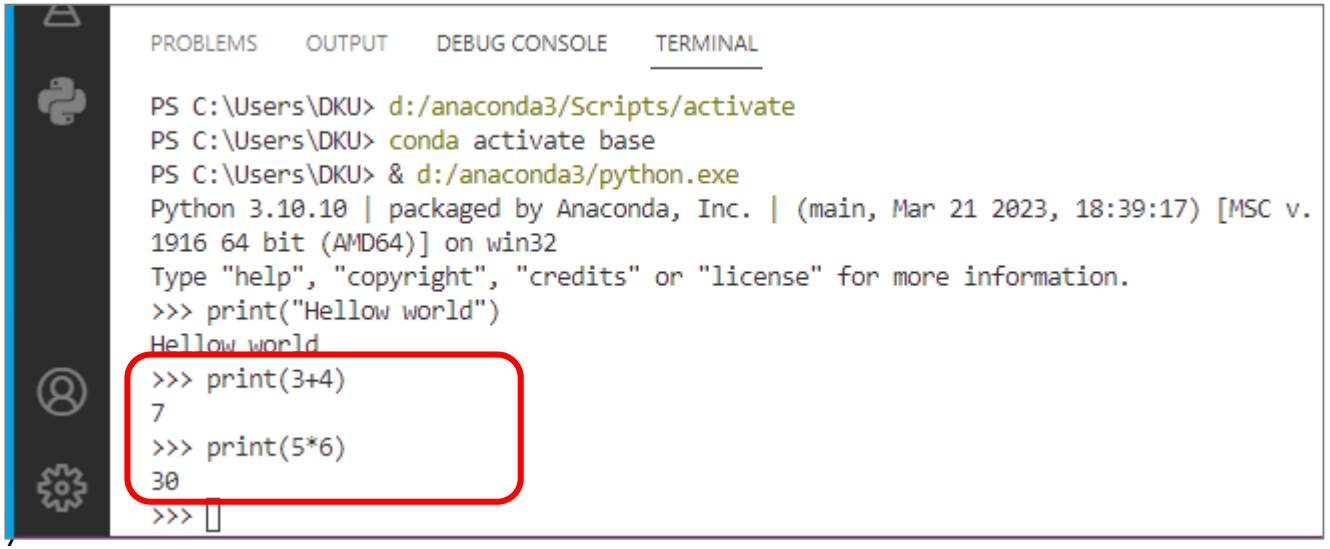
2. VS code : python IDE

- 프로그램의 실행
  - 한번에 **한줄씩** 실행하기(<Shift>+<Enter>)



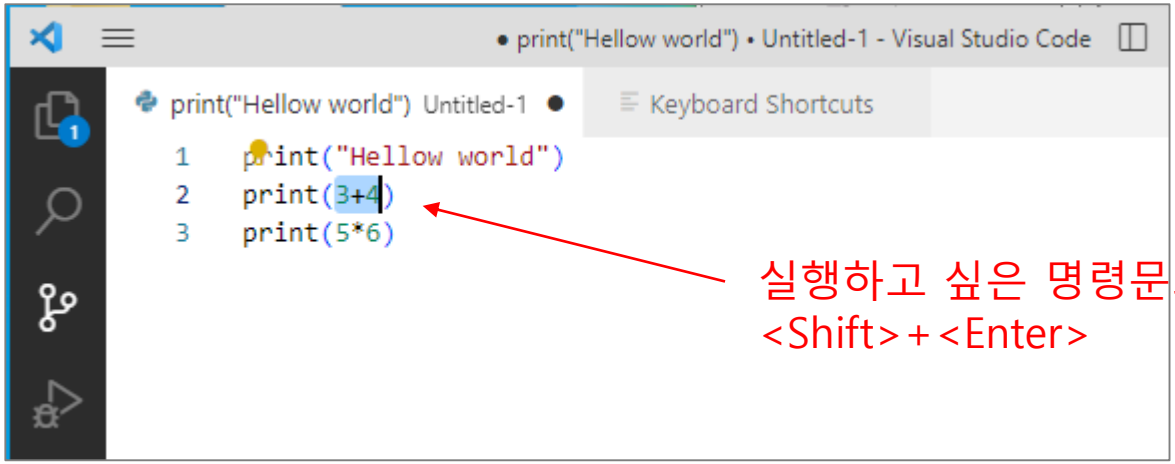
2. VS code : python IDE

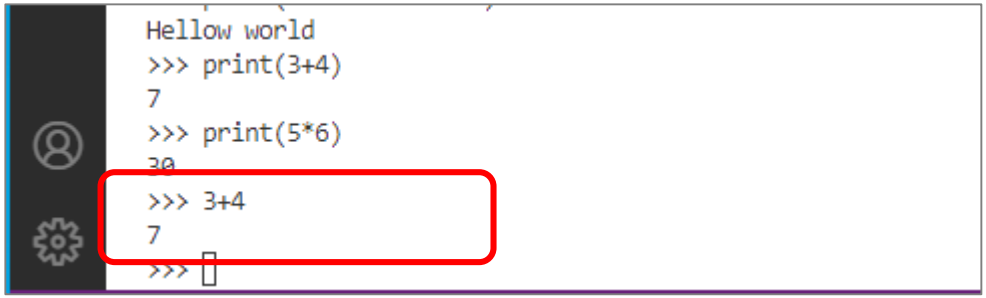
- 프로그램의 실행
  - 한번에 **여러 줄(블록)** 실행하기(<Shift>+<Enter>)



2. VS code : python IDE

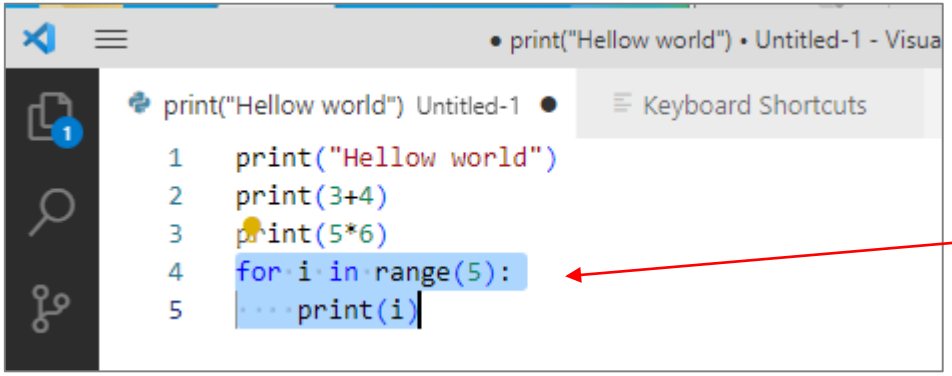
- 프로그램의 실행
  - 명령문의 **일부분** 실행(<Shift>+<Enter>)



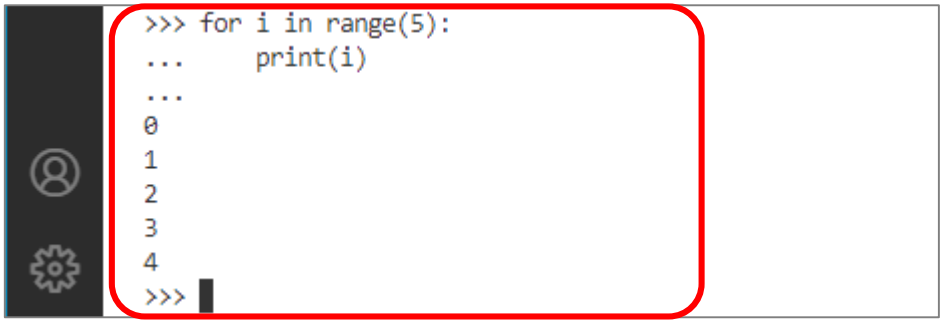


2. VS code : python IDE

- 프로그램의 실행
  - 주의: 하나의 명령문이 여러줄에 걸쳐 작성된 경우 (ex: if문, for문) 전체 명령문을 모두 선택 후 실행해야 에러가 발생하지 않는다.

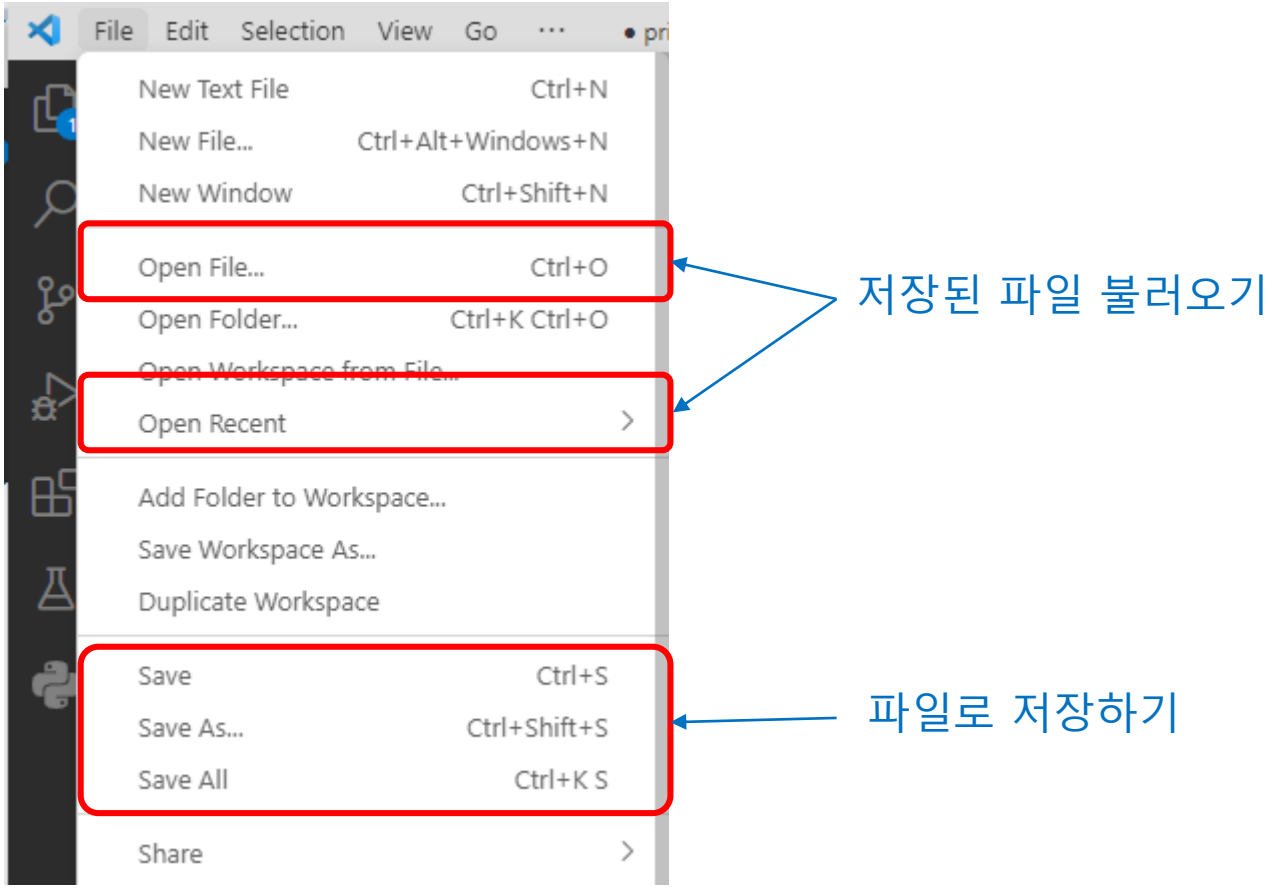


한번에 한줄씩 실행할 수 없음



2. VS code : python IDE

- 프로그램의 저장& 불러오기



2. VS code : python IDE

- VS code의 재설치
  - 정상적으로 작동되던 VS code에 문제가 생기는 경우가 종종 있음
  - 단순히 SW 를 uninstall 한 후 다시 install 하는 것으로는 문제가 해결되지 않음
  - 재설치 필요시 다음의 게시글 참조.
    - https://citylock77.tistory.com/142
  - 수업 도중 문제가 생기면 일단 colab으로 실습을 하고 수업후 문제를 해결한다.

2. VS code : python IDE

- pip 실행 오류시

보통은 이렇게 하면 정상 실행

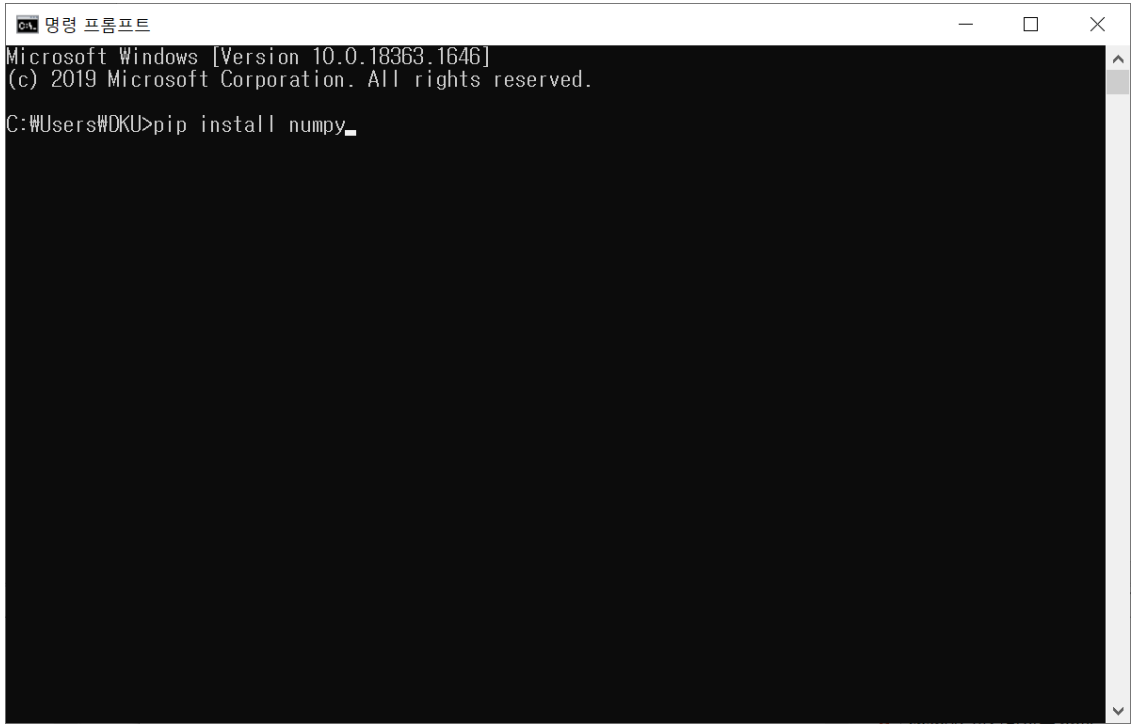
```
PS C:\Users\DKU> pip list
Fatal error in launcher: Unable to create process using '"c:\users\dku\python37\py
thon.exe"  "c:\users\dku\python37\Scripts\pip.exe" list': ??? ??? ?? ? ????.

PS C:\Users\DKU> python -m pip list
Package    Version
---------- -------
pip        23.2.1
setuptools 65.5.0
PS C:\Users\DKU> _
```

오류 발생시 pip 앞에 python -m 을 붙인다.

2. VS code : python IDE

- VS code 외부에서 package 설치하기
  - Window 명령 프롬프트에서도 설치 가능



2. VS code : python IDE

- 사전에 설치할 패키지 리스트
  - numpy
  - pandas
  - mathplotlib
  - Seaborn
  - scikit-learn

3. Google colab (cloud)

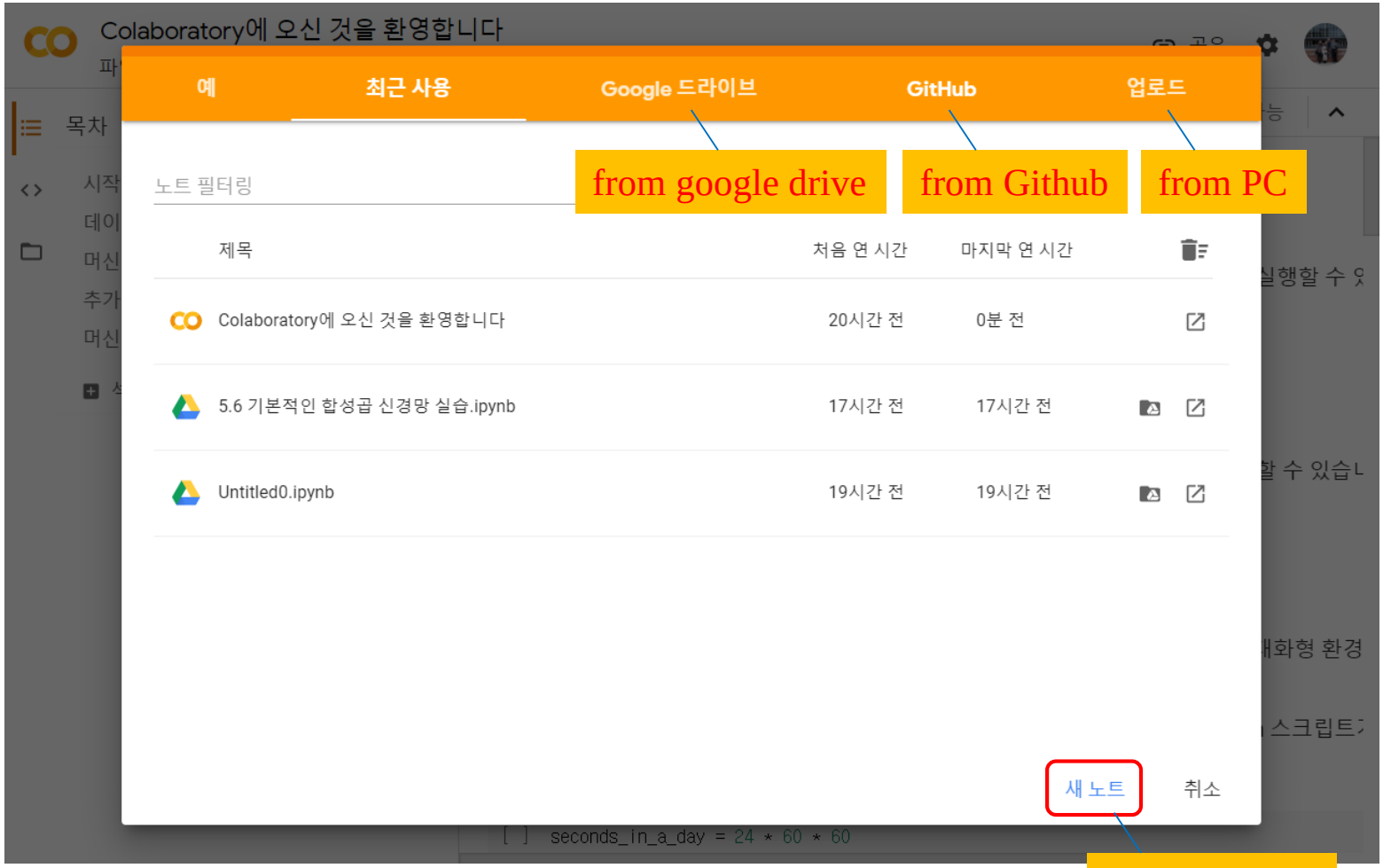
- Google product
- provide Jupyter Notebooks in the browser — albeit with their own unique flavors
- offer free GPUs
- are designed to foster collaboration for machine learning.
- are imperfect, but are pretty useful in many situations — particularly when you are starting out in deep learning.
- don't provide great info on their hardware specs

- Kaggle supports similar service

Cloud Service	NVIDIA GPU	CUDA Version	GPU RAM (GB)	CPU Chip	Chip Speed (GHz)	CPU Cores	CPU RAM (Total GB)	L3 Cache (MB)	Disk Space (Total GB)	Max Idle Time (hrs)	Max Session Time (hrs)	Max Commit Time (hrs)
Colab	Tesla K80	10.0	12.0	Intel Xeon CPU	2.2 or 2.3	2	13.3	56	359	1.5	12	n/a
Kaggle	Tesla P100	9.2	17.1	Intel Xeon CPU	2.2 or 2.3	2	16.4	46	220	1	9	6
Command	!nvidia-smi	!cat /usr/local/cuda/version.txt	!nvidia-smi	!cat /proc/cpuinfo	!cat /proc/cpuinfo	multiprocessing.cpu_count()	!cat /proc/meminfo	!cat /proc/cpuinfo	!df -h	docs	docs	docs

3. Google colab

- https://colab.research.google.com/

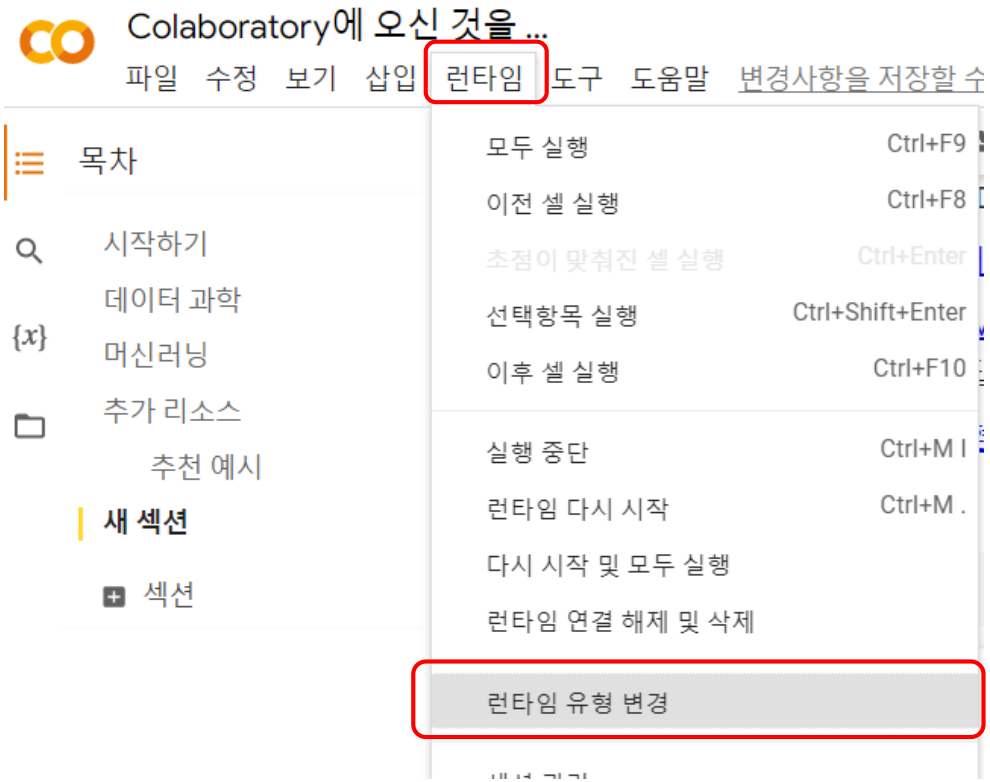


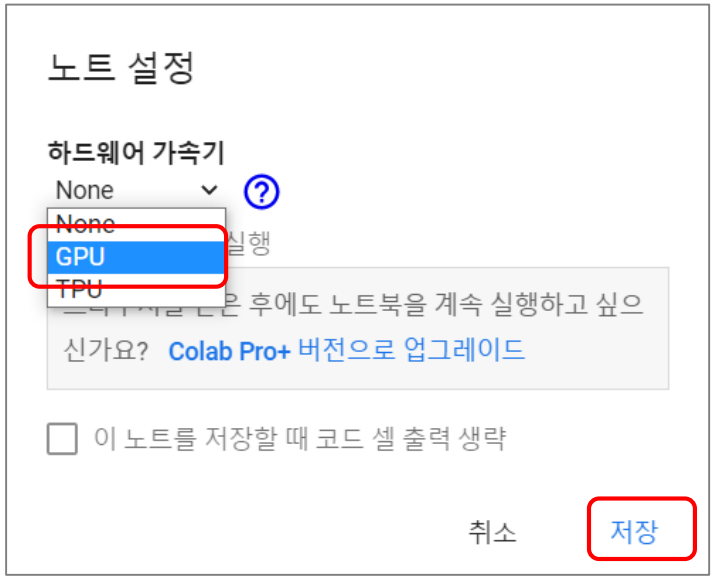
Requires google account !

3. Google colab

3. Google colab

- GPU 사용 설정





3. Google colab

- Colab 에서 패키지 설치

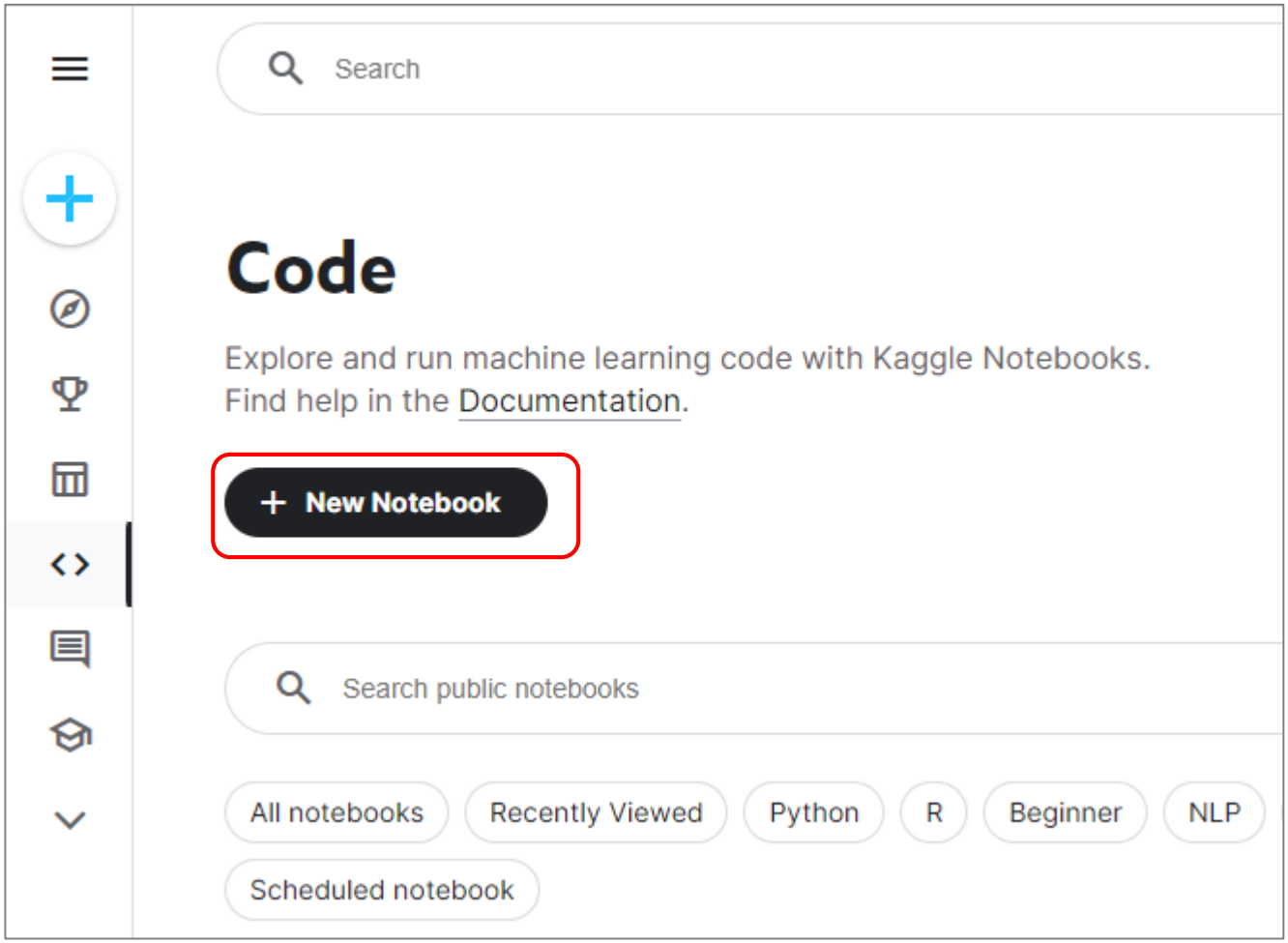
```
!pip install pandas
```

  - 자주 사용되는 패키지 들은 대부분 설치되어 있다.

- Colab 에서 데이터 파일 읽기
  - (1) 데이터 파일을 Colab 으로 업로드
  - (2) 업로드한 파일을 읽는다.

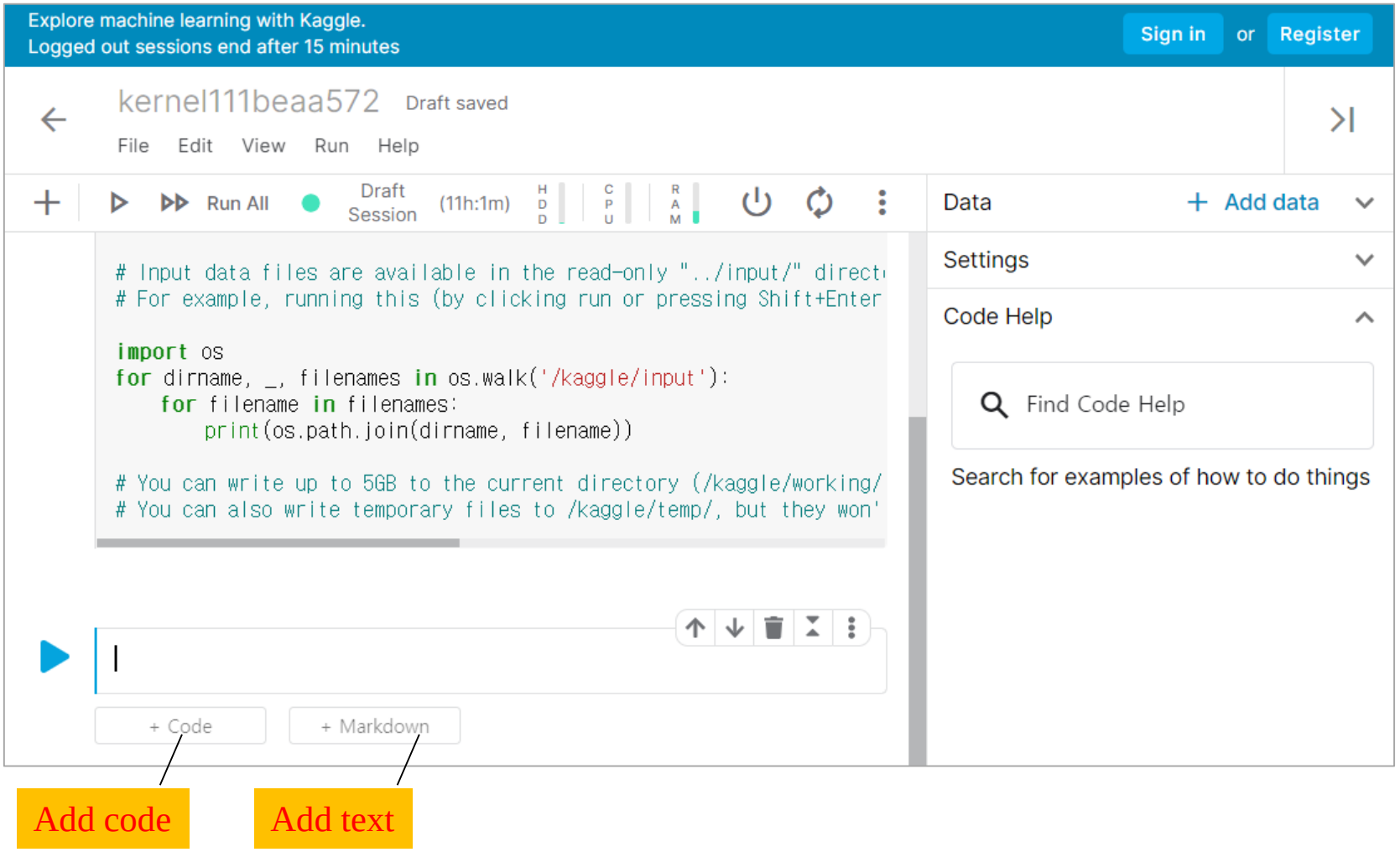
3. Google colab

- Kaggle notebook
- https://www.kaggle.com/code



3. Google colab

- Kaggle notebook



3. Google colab

- Reference
- Colab vs Kaggle notebook
  - https://towardsdatascience.com/kaggle-vs-colab-faceoff-which-free-gpu-provider-is-tops-d4f0cd625029
- Keras in colab
  - http://corazzon.github.io/keras-gpu
- Escape colab idle time check
  - https://teddylee777.github.io/colab/google-colab-%EB%9F%B0%ED%83%80%EC%9E%84-%EC%97%B0%EA%B2%B0%EB%81%8A%EA%B9%80%EB%B0%A9%EC%A7%80