

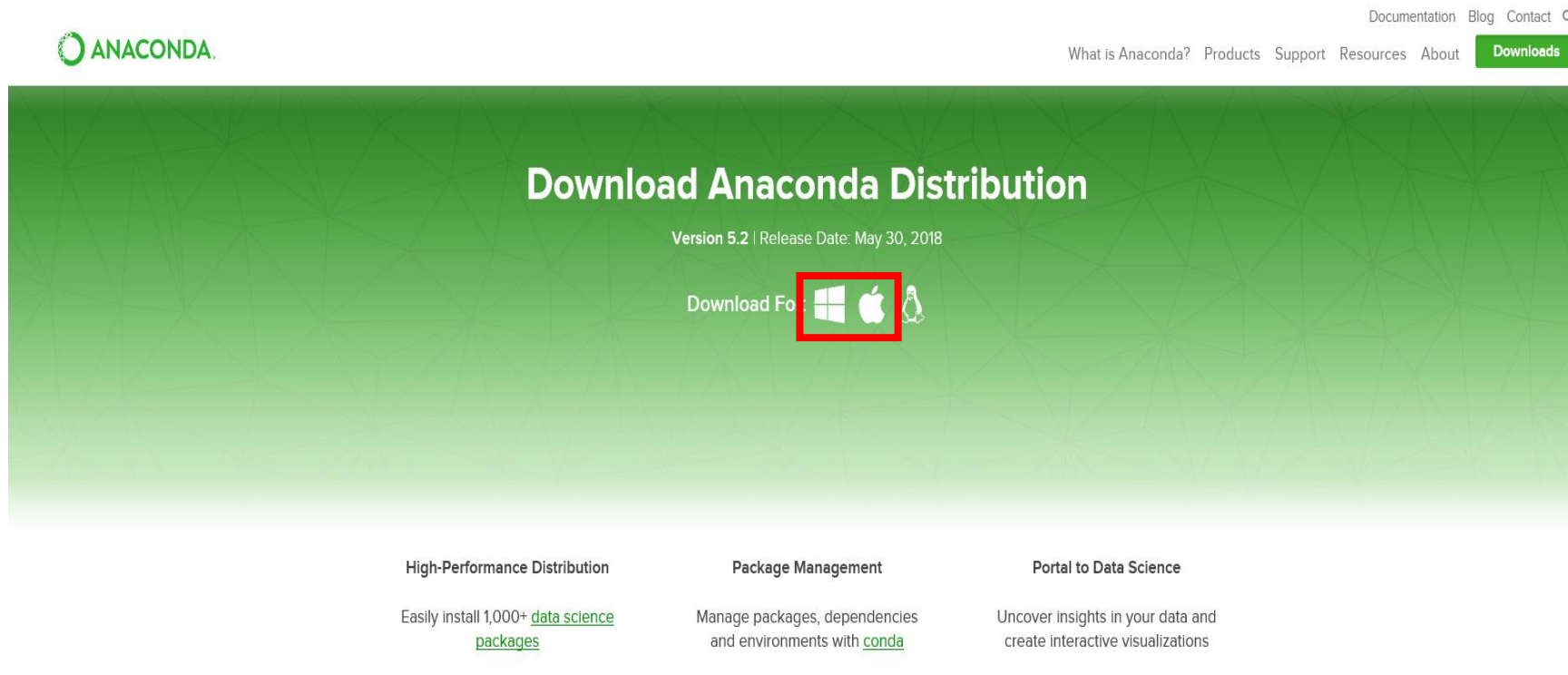
2018.09.20

JUPYTER NOTEBOOK

천용희, 최원빈

아나콘다 설치

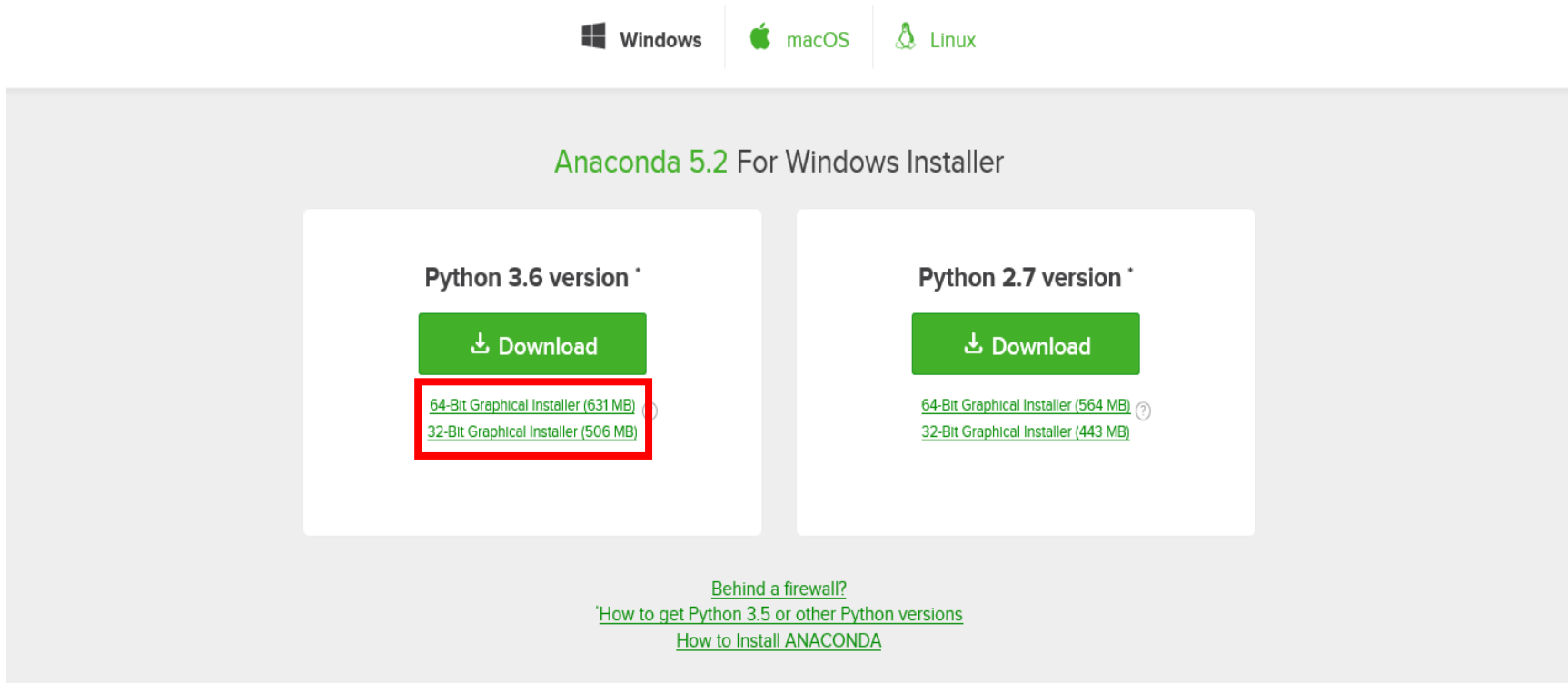
1. 아래 링크로 들어가서 본인 컴퓨터에 맞게 Windows 또는 macOS 클릭



다운로드 링크: <https://www.anaconda.com/download/>

아나콘다 설치

2. 본인의 컴퓨터 운영체제(32bit or 64bit)에 맞는 Python 3.6 version 설치



아나콘다 설치

Tip. 운영체제 확인 방법(제어판 > 시스템 및 보안 > 시스템)



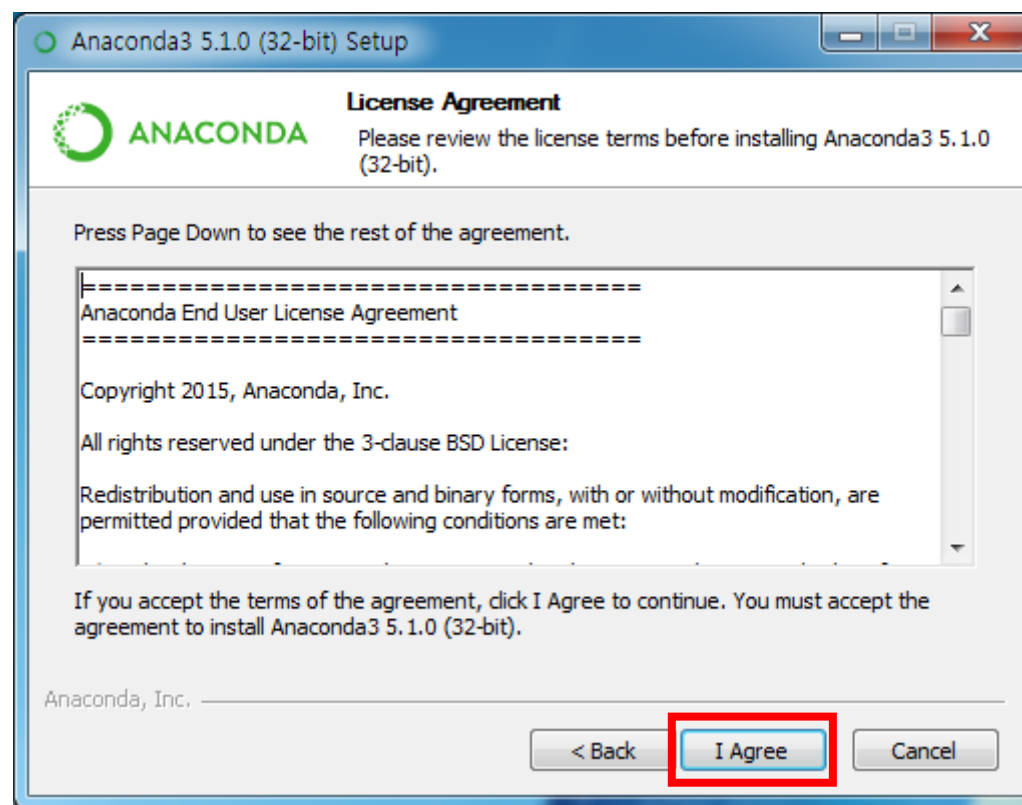
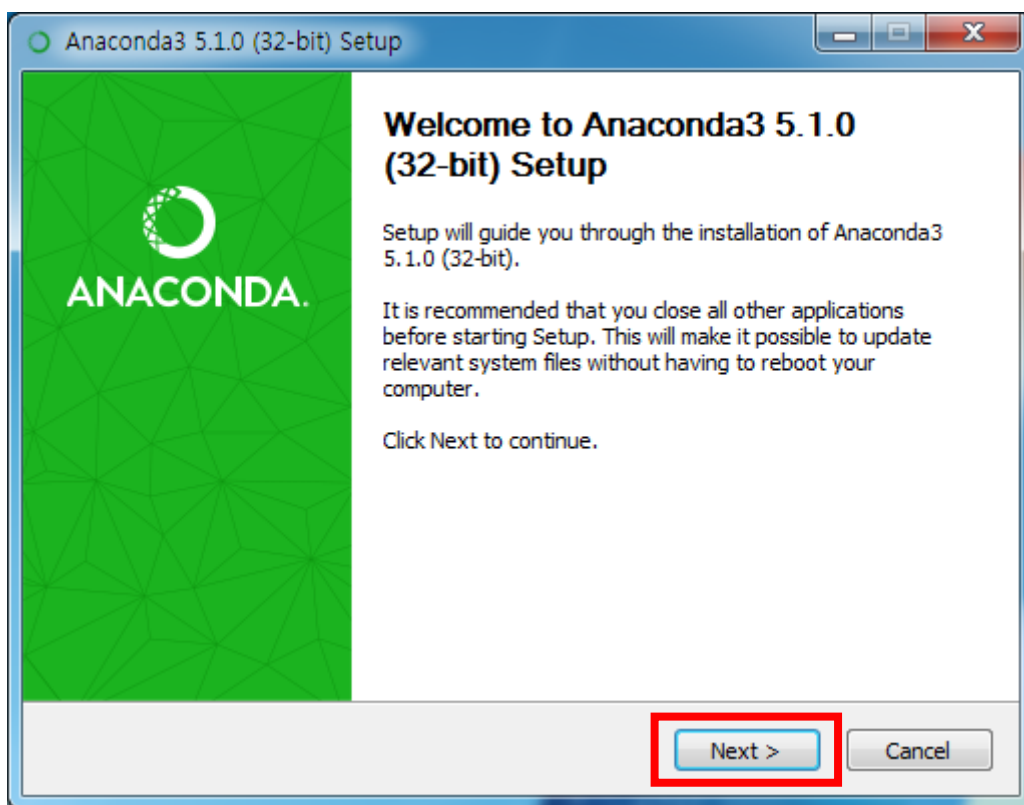
The screenshot shows the Windows 10 'System' page in the Control Panel. The breadcrumb trail at the top reads '제어판 > 시스템 및 보안 > 시스템'. The left sidebar lists '장치 관리자', '원격 설정', '시스템 보호', and '고급 시스템 설정'. The main content area is titled '컴퓨터에 대한 기본 정보 보기' and displays the following information:

- Windows 버전: Windows 10 Home
- © 2018 Microsoft Corporation. All rights reserved.
- 시스템:
 - 프로세서: Intel(R) Core(TM) i5-7200U CPU @ 2.50GHz 2.71 GHz
 - 설치된 메모리(RAM): 4.00GB(3.89GB 사용 가능)
 - 시스템 종류: 64비트 운영 체제, x64 기반 프로세서
 - 펜 및 터치: 이 디스플레이에 사용할 수 있는 펜 또는 터치식 입력이 없습니다.

The text '64비트 운영 체제, x64 기반 프로세서' is highlighted with a red box. The Windows 10 logo and the HP logo are also visible on the right side of the page.

아나콘다 설치

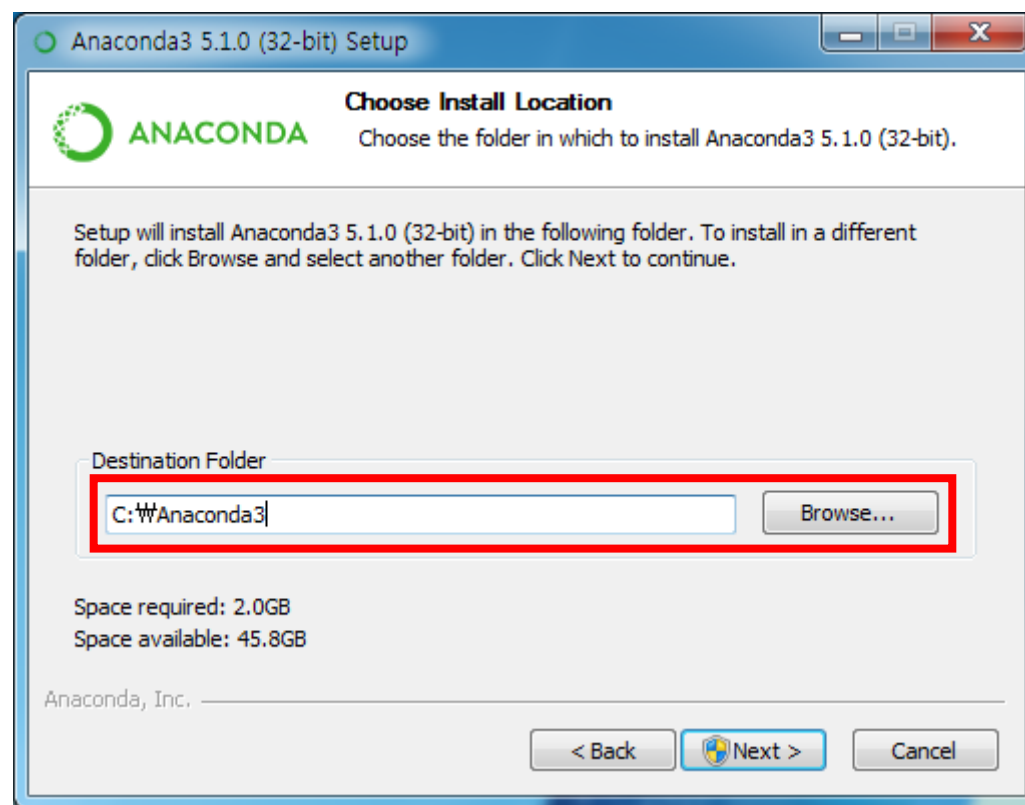
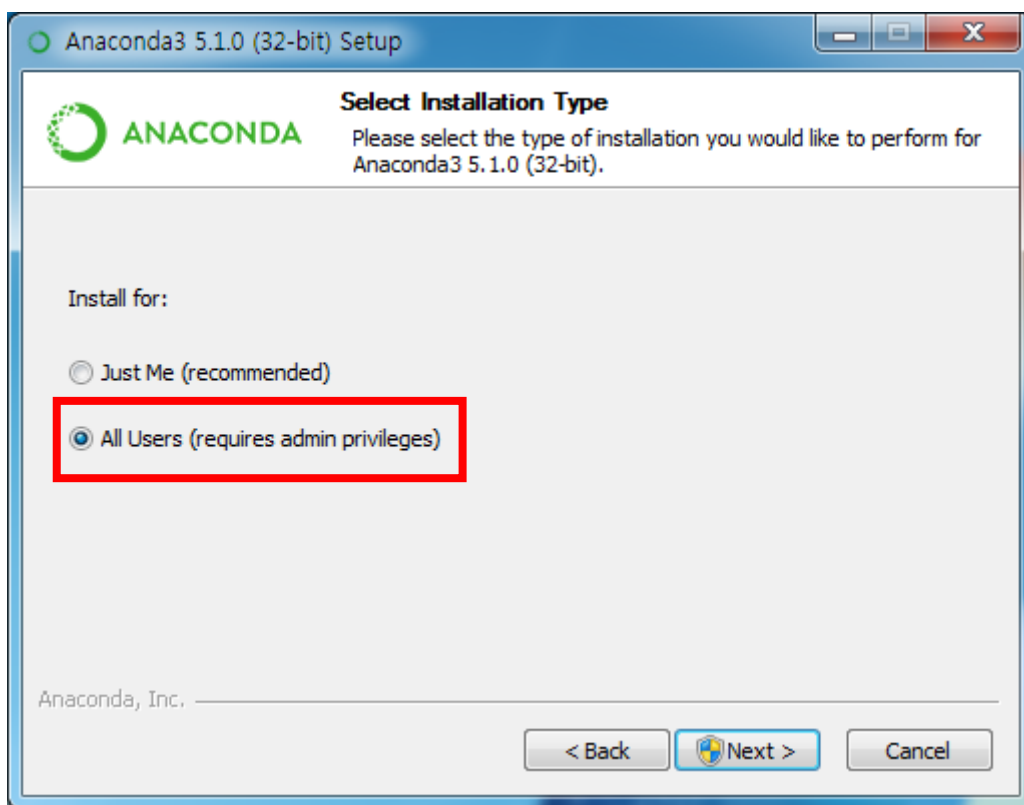
3. Next & I Agree 클릭



출처: <https://wikidocs.net/2826>

아나콘다 설치

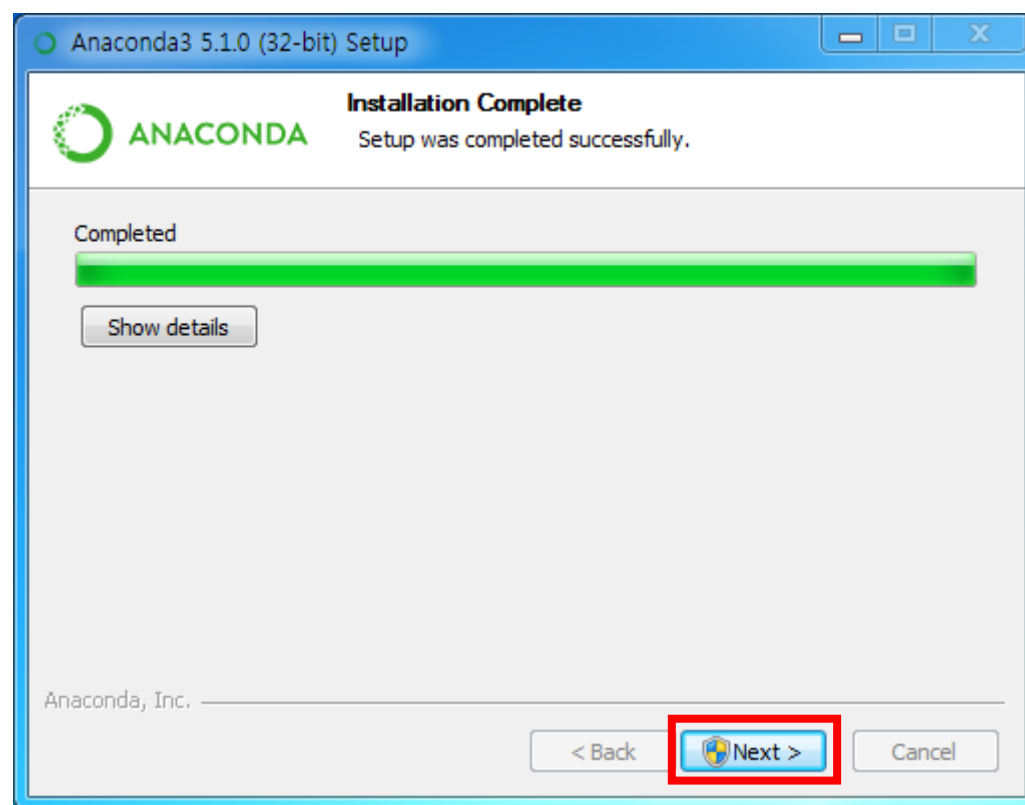
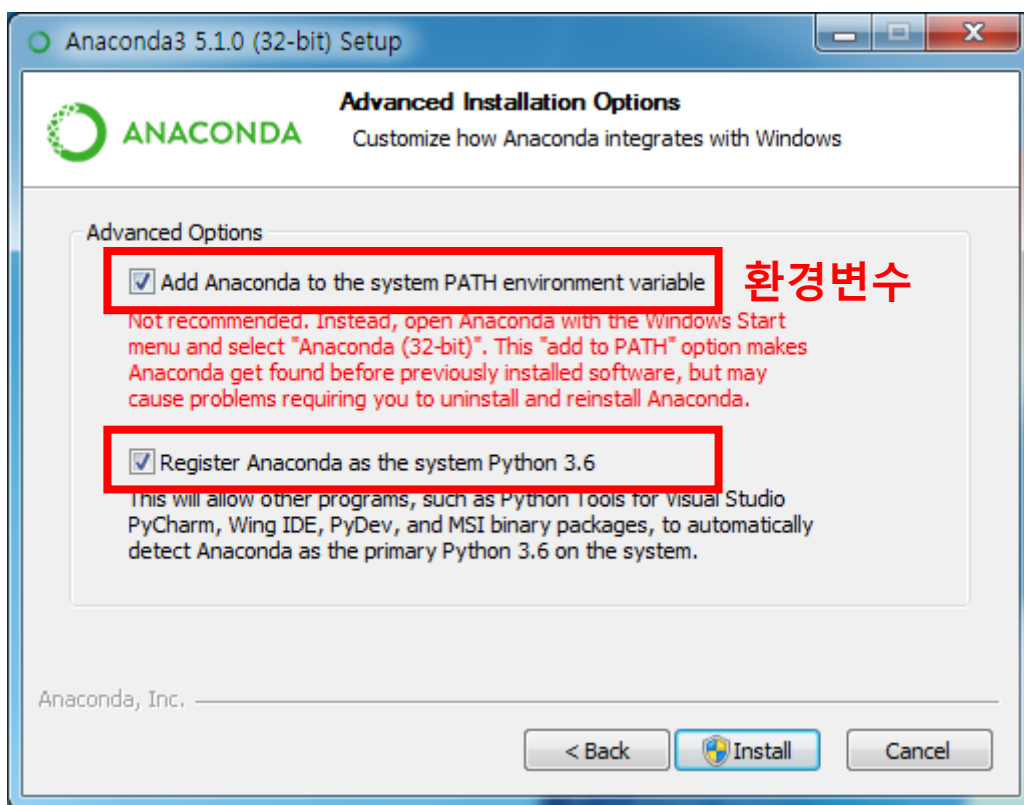
4. All Users 선택 및 설치 폴더 지정(폴더는 본인이 기억할 수 있는 경로로 자유롭게 지정)



출처: <https://wikidocs.net/2826>

아나콘다 설치

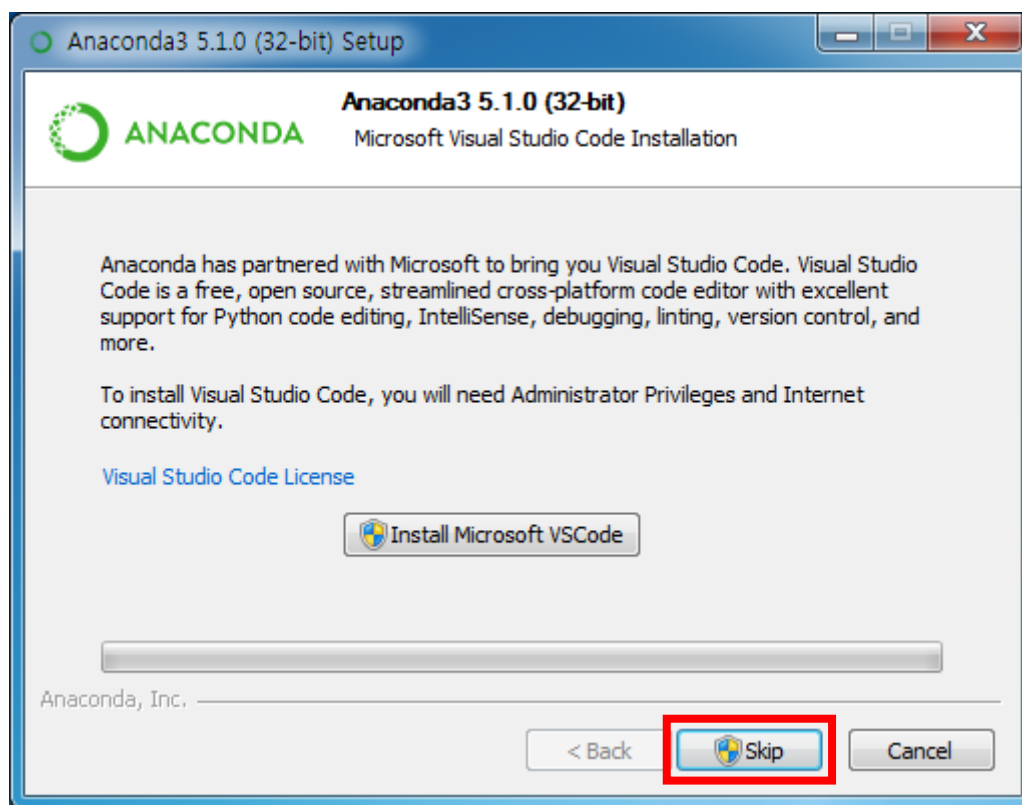
5. 두 가지 Options 모두 선택 및 설치 진행



출처: <https://wikidocs.net/2826>

아나콘다 설치

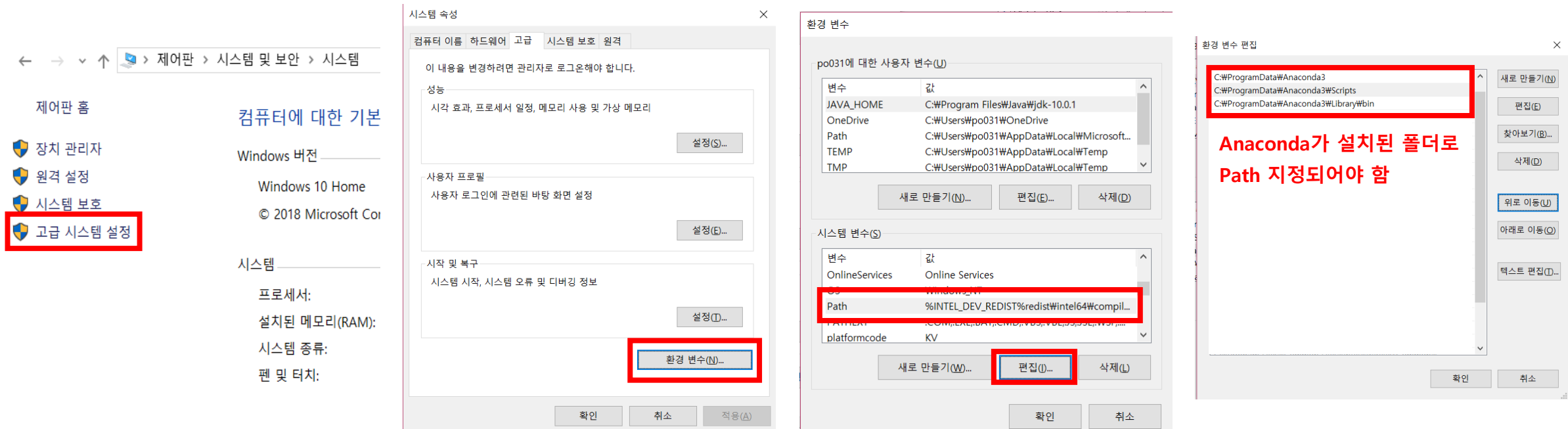
6. Skip 및 설치 완료



출처: <https://wikidocs.net/2826>

아나콘다 설치

Tip. 환경 변수 확인 방법(제어판 > 시스템 및 보안 > 시스템 > 고급 시스템 설정 > 고급 > 환경 변수 > 시스템 변수 > Path > 편집)



아나콘다 실행

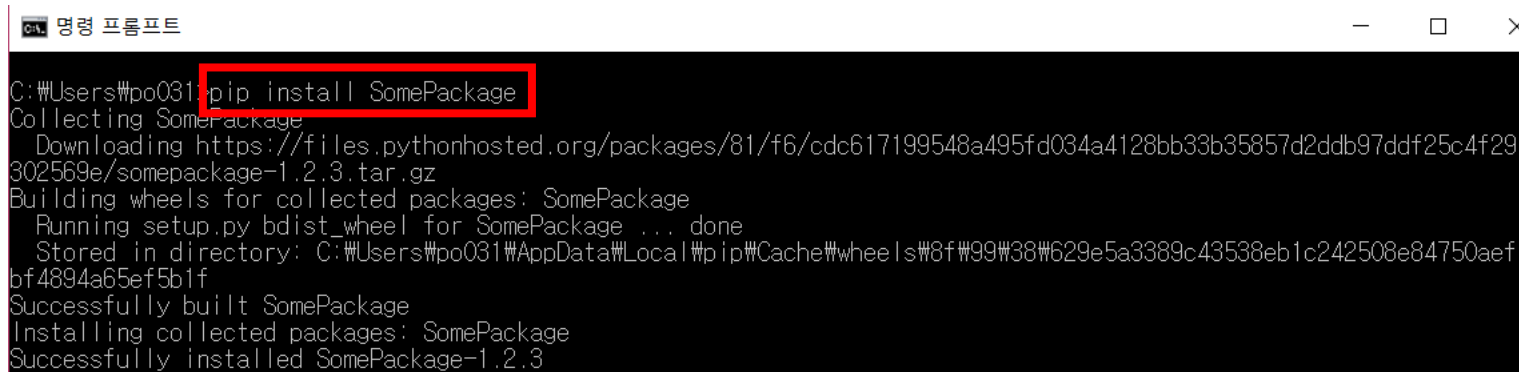
- **cmd VS anaconda prompt**

- cmd: command의 줄임말로 Windows에 대한 명령 프롬프트
cmd에서 아나콘다를 사용하려면 환경 변수 설정 필요
- Anaconda Prompt: Anaconda에 대한 명령 프롬프트
환경 변수 설정 필요 X

아나콘다 실행

• pip 사용하기

- 파이썬 모듈이나 패키지를 쉽게 설치할 수 있도록 도와주는 도구
- pip를 이용해서 파이썬 프로그램을 설치하면 의존성 있는 모듈이나 패키지를 함께 설치해주기 때문에 매우 편리함
- 패키지 설치 (pip install)



```
C:\Users\po031> pip install SomePackage
Collecting SomePackage
  Downloading https://files.pythonhosted.org/packages/81/f6/cdc617199548a495fd034a4128bb33b35857d2ddb97ddf25c4f29302569e/somepackage-1.2.3.tar.gz
Building wheels for collected packages: SomePackage
  Running setup.py bdist_wheel for SomePackage ... done
  Stored in directory: C:\Users\po031\AppData\Local\pip\Cache\wheels\8f\99\38\629e5a3389c43538eb1c242508e84750aefbf4894a65ef5b1f
Successfully built SomePackage
Installing collected packages: SomePackage
Successfully installed SomePackage-1.2.3
```

- 패키지 삭제 (pip uninstall)



```
C:\Users\po031> pip uninstall SomePackage
Uninstalling somepackage-1.2.3:
Would remove:
  c:\programdata\anaconda3\lib\site-packages\somepackage-1.2.3.dist-info\*
  c:\programdata\anaconda3\lib\site-packages\somepackage\*
Proceed (y/n)? y
Successfully uninstalled somepackage-1.2.3
```

아나콘다 실행

- pip 사용하기

- 특정 버전으로 패키지 설치 (pip install SomePackage==1.2.3)

```
명령 프롬프트
C:\Users\wpo031> pip install SomePackage==1.2.3
Collecting SomePackage==1.2.3
Installing collected packages: SomePackage
Successfully installed SomePackage-1.2.3
```

- 최신 버전으로 업그레이드 (pip install --upgrade SomePackage)

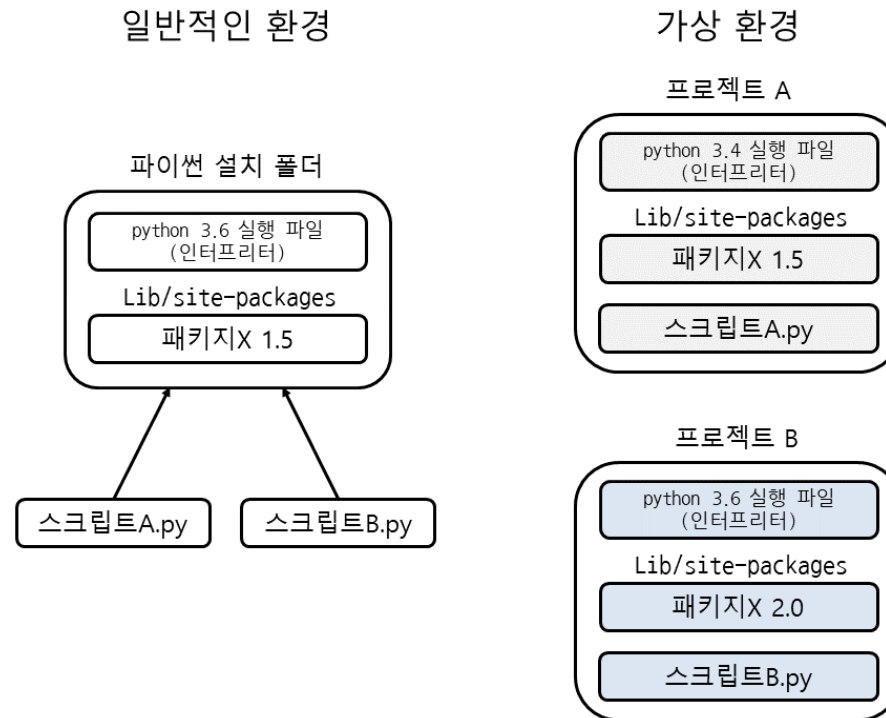
```
명령 프롬프트
C:\Users\wpo031> pip install --upgrade SomePackage
Collecting SomePackage
Installing collected packages: SomePackage
Successfully installed SomePackage-1.2.3
```

- 설치된 패키지 확인 (pip list)

```
선택 명령 프롬프트
C:\Users\wpo031> pip list
Package            Version
-----
abs1-py            0.2.2
alabaster           0.7.10
anaconda-client    1.6.9
anaconda-navigator 1.7.0
anaconda-project   0.8.2
asn1crypto         0.24.0
```

아나콘다 실행

- 가상 환경



출처: <https://dojang.io/mod/page/view.php?id=1168>

아나콘다 실행

• 가상 환경

① Virtualenv 설치 (pip install virtualenv)

```
명령 프롬프트
C:\Users\po031>pip install virtualenv
Collecting virtualenv
  Downloading https://files.pythonhosted.org/packages/b6/30/96a02b2287098b23b875bc8c2f58071c35d2efe84f747b64d523721dc2b5/virtualenv-16.0.0-py2.py3-none-any.whl (1.9MB)
    100% |#####| 1.9MB 3.8MB/s
Installing collected packages: virtualenv
Successfully installed virtualenv-16.0.0
```

② ghstudy 가상환경 설치 (virtualenv ghstudy)

```
명령 프롬프트
C:\Users\po031>virtualenv ghstudy
Using base prefix 'c:\programdata\anaconda3'
New python executable in C:\Users\po031\ghstudy\Scripts\python.exe
Installing setuptools, pip, wheel...done.
```

③ ghstudy 가상환경 실행 (call ghstudy\scripts\activate)

```
선택 명령 프롬프트
C:\Users\po031>call ghstudy\scripts\activate
(ghstudy) C:\Users\po031>
```

아나콘다 실행

• 가상 환경

④ 설치된 패키지 확인 (pip list)

A terminal window titled '명령 프롬프트' (Command Prompt) with standard window controls. The prompt is '(ghstudy) C:\Users\po031>'. The command 'pip list' is entered and highlighted with a red box. The output shows a table of installed packages: pip (18.0), setuptools (40.4.1), and wheel (0.31.1).

```
(ghstudy) C:\Users\po031>pip list
Package      Version
-----
pip          18.0
setuptools   40.4.1
wheel        0.31.1
```

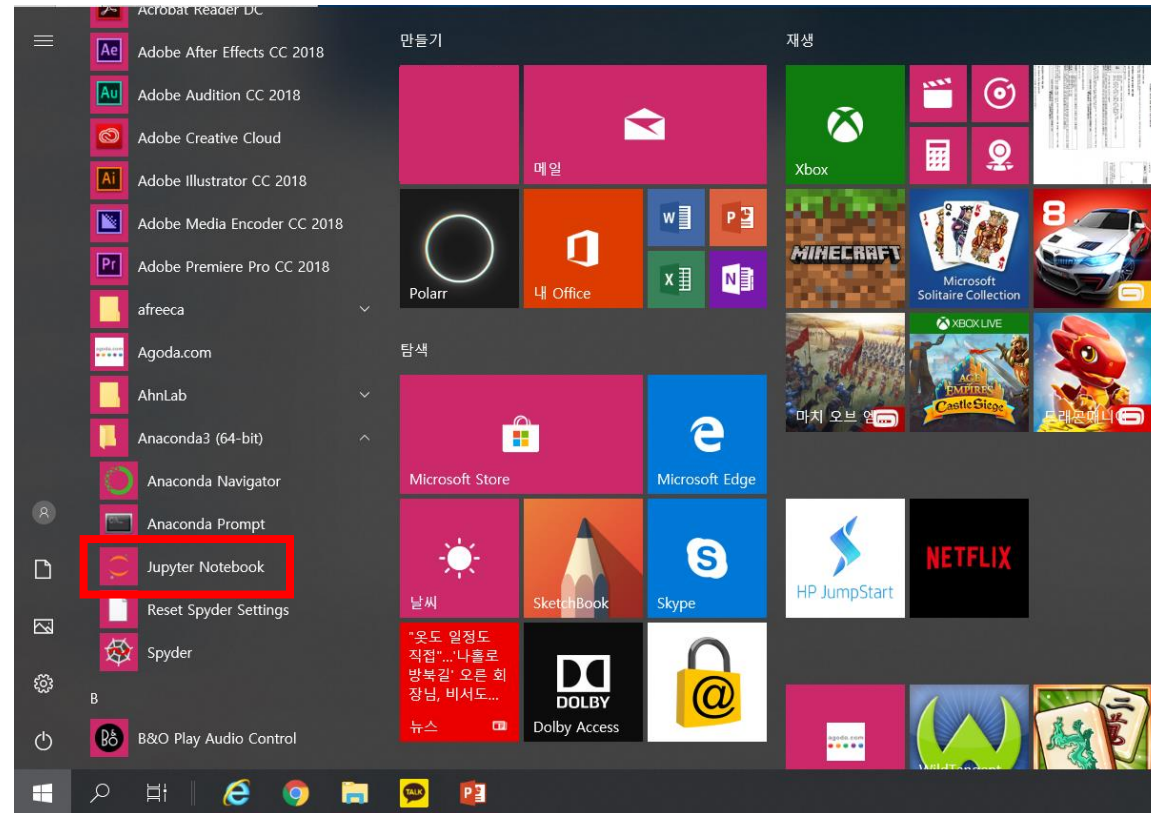
⑤ ghstudy 가상환경 비활성화 (deactivate)

A terminal window titled '명령 프롬프트' (Command Prompt) with standard window controls. The prompt is '(ghstudy) C:\Users\po031>'. The command 'deactivate' is entered and highlighted with a red box. The prompt changes to 'C:\Users\po031>'.

```
(ghstudy) C:\Users\po031>deactivate
C:\Users\po031>
```

JUPYTER NOTEBOOK 실행

1-1. Windows > Anaconda3 > Jupyter Notebook



JUPYTER NOTEBOOK 실행

1-2. Anaconda Prompt > 'jupyter notebook' 입력

```
Anaconda Prompt - jupyter notebook
(base) C:\Users\po01>jupyter notebook
[I 21:02:58.496 NotebookApp] JupyterLab beta preview extension loaded from C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab
[I 21:02:58.496 NotebookApp] JupyterLab application directory is C:\ProgramData\Anaconda3\share\jupyter\lab
[W 21:02:58.539 NotebookApp] Error loading server extension jupyterlab
Traceback (most recent call last):
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\commands.py", line 321, in __init__
    self._run(['node', 'node-version-check.js'], cwd=HERE, quiet=True)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\commands.py", line 1165, in _run
    proc = Process(cmd, **kwargs)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\process.py", line 73, in __init__
    self.proc = self._create_process(cwd=cwd, env=env)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\process.py", line 131, in _create_process
    cmd[0] = which(cmd[0], kwargs.get('env'))
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\jupyterlab.py", line 59, in which
    raise ValueError(msg)
ValueError: Please install nodejs 5+ and npm before continuing installation. nodejs may be installed using conda or directly from the nodejs website.

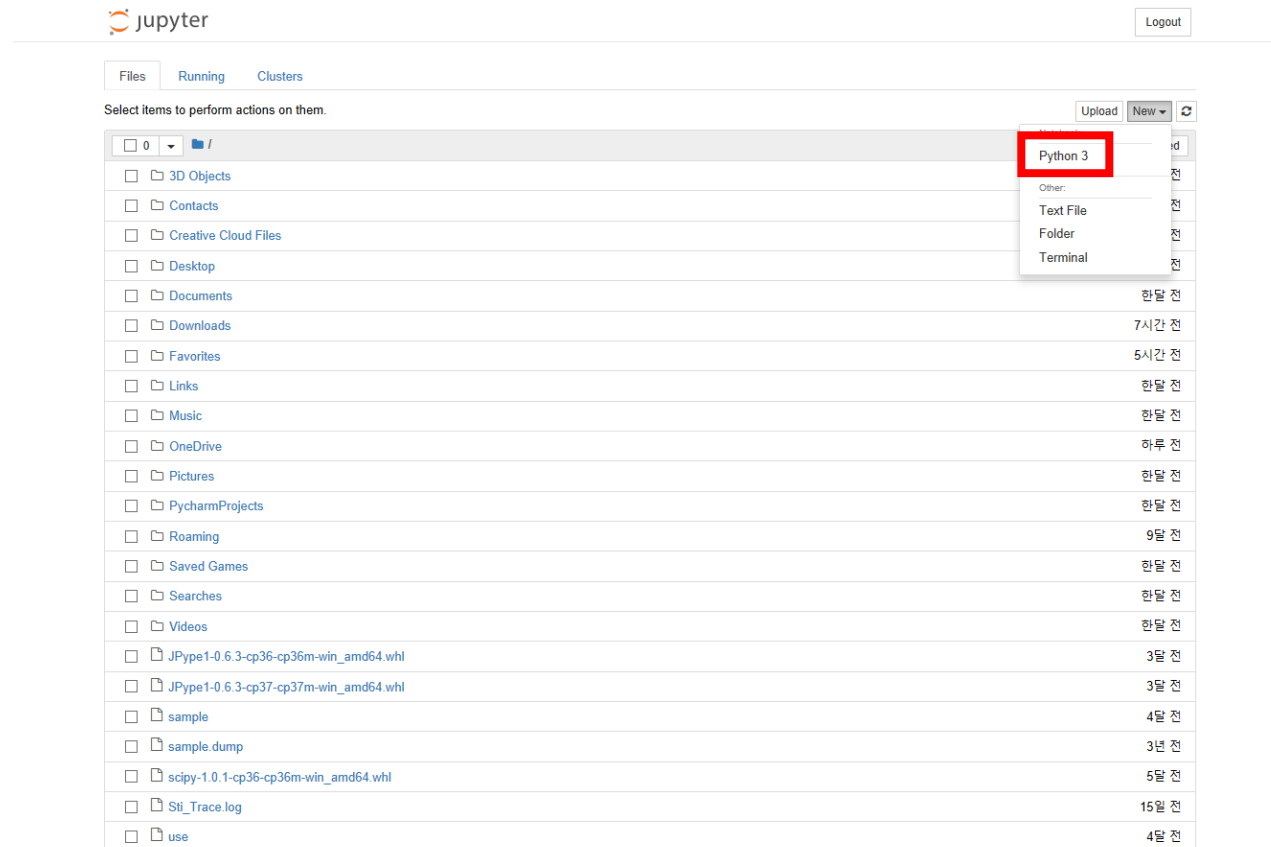
During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "C:\ProgramData\Anaconda3\lib\site-packages\notebook\notebookapp.py", line 1454, in init_server_extensions
    func(self)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\extension.py", line 111, in load_jupyter_server_extension
    info = get_app_info(app_dir)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\commands.py", line 244, in get_app_info
    handler = _AppHandler(app_dir, logger)
  File "C:\ProgramData\Anaconda3\lib\site-packages\jupyterlab\commands.py", line 324, in __init__
    raise ValueError(msg)
ValueError: Please install nodejs 5+ and npm before continuing installation. nodejs may be installed using conda or directly from the nodejs website.
[I 21:02:59.324 NotebookApp] Serving notebooks from local directory: C:\Users\po01
[I 21:02:59.325 NotebookApp] 0 active kernels
[I 21:02:59.326 NotebookApp] The Jupyter Notebook is running at:
[I 21:02:59.329 NotebookApp] http://localhost:8888/?token=8cebe525b622230149bba5eea9c43c48a2b7779154a0ddbc
[I 21:02:59.330 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 21:02:59.333 NotebookApp]

Copy/paste this URL into your browser when you connect for the first time,
to login with a token:
http://localhost:8888/?token=8cebe525b622230149bba5eea9c43c48a2b7779154a0ddbc
[I 21:03:00.018 NotebookApp] Accepting one-time-token-authenticated connection from ::1
```

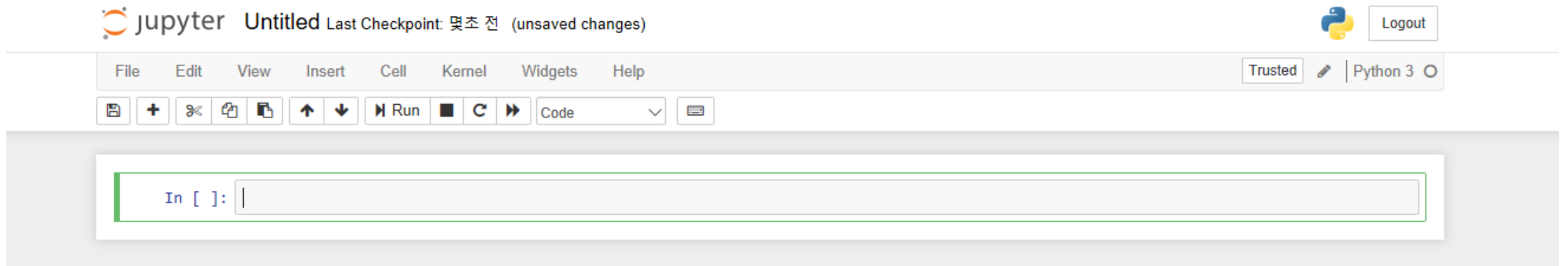
JUPYTER NOTEBOOK 실행

2. 오른쪽 상단의 New > Python 3



JUPYTER NOTEBOOK 실행

3. Jupyter Notebook 실행 완료



가상환경에서 JUPYTER NOTEBOOK 실행

1. 가상환경 활성화 (call ghstudy\scripts\activate)

C:\ 명령 프롬프트 - jupyter notebook

```
C:\Users\po031>call ghstudy\scripts\activate
```

```
(ghstudy) C:\Users\po031>python -m ipykernel install --user --name=ghstudy  
Installed kernelspec ghstudy in C:\Users\po031\AppData\Roaming\jupyter\kernels\ghstudy
```

2. ipykernel 설치 (pip install ipykernel)

C:\ 명령 프롬프트

```
(ghstudy) C:\Users\po031>pip install ipykernel
```

```
Requirement already satisfied: ipykernel in c:\users\po031\ghstudy\lib\site-packages (4.9.0)  
Requirement already satisfied: jupyter-client in c:\users\po031\ghstudy\lib\site-packages (from ipykernel) (5.2.3)  
Requirement already satisfied: ipython>=4.0.0 in c:\users\po031\ghstudy\lib\site-packages (from ipykernel) (6.5.0)  
Requirement already satisfied: traitlets>=4.1.0 in c:\users\po031\ghstudy\lib\site-packages (from ipykernel) (4.3.2)
```

3. JUPYTER NOTEBOOK에 가상환경 설치 (python -m ipykernel install --user --name=ghstudy)

C:\ 선택 명령 프롬프트 - jupyter notebook

```
(ghstudy) C:\Users\po031>python -m ipykernel install --user --name=ghstudy
```

```
Installed kernelspec ghstudy in C:\Users\po031\AppData\Roaming\jupyter\kernels\ghstudy
```

가상환경에서 JUPYTER NOTEBOOK 실행

4. JUPYTER NOTEBOOK 실행 (jupyter notebook)

선택 명령 프롬프트 - jupyter notebook

```
(ghstudy) C:\Users\po03>jupyter notebook
[I 11:39:34.537 NotebookApp] Serving notebooks from local directory: C:\Users\po031
[I 11:39:34.537 NotebookApp] The Jupyter Notebook is running at:
[I 11:39:34.537 NotebookApp] http://localhost:8888/?token=6d490e4b9f890b89bd7346f74b7dd97ee29468486e53d875
[I 11:39:34.537 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 11:39:34.540 NotebookApp]

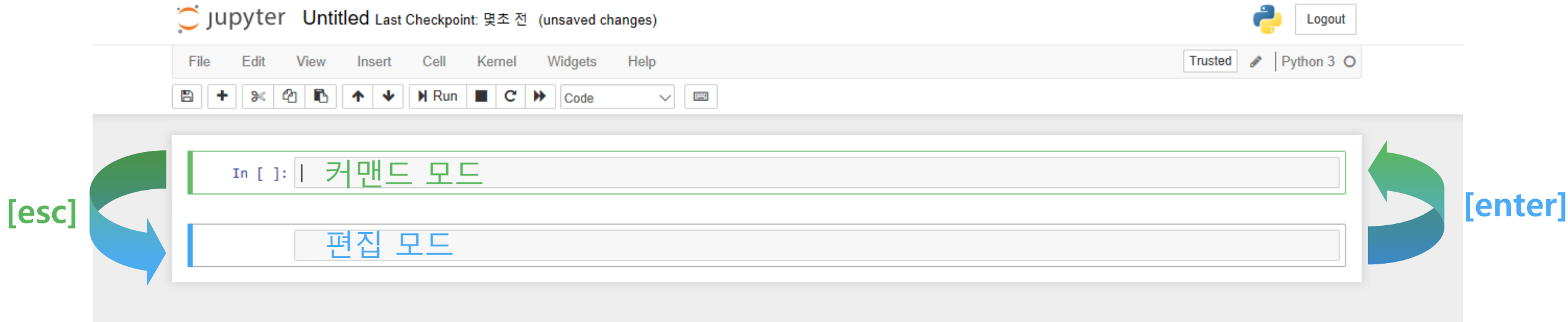
Copy/paste this URL into your browser when you connect for the first time,
to login with a token:
http://localhost:8888/?token=6d490e4b9f890b89bd7346f74b7dd97ee29468486e53d875
[I 11:39:36.251 NotebookApp] Accepting one-time-token-authenticated connection from ::1
```

5. 완료 (New > ghstudy)



The screenshot shows the Jupyter Notebook web interface. At the top, there's a header with the Jupyter logo and 'Quit' and 'Logout' buttons. Below the header, there are tabs for 'Files', 'Running', and 'Clusters'. The 'Files' tab is active, showing a file browser. A dropdown menu is open from the 'New' button, showing options: 'Notebook:', 'Python 3', 'ghstudy' (highlighted with a red box), 'Other:', 'Text File', 'Folder', and 'Terminal'. The file browser shows a list of folders: '3D Objects', 'Contacts', 'Creative Cloud Files', 'Desktop', and 'Documents'.

JUPYTER NOTEBOOK 사용법



Save: 저장 [S]



Add: 새로운 셀 추가 [A], [B]



Cut: 잘라내기 [X]



Copy: 복사 [C]



Paste: 붙여넣기 [V]



위의 셀로 이동 [Up], [K]



아래의 셀로 이동 [Down], [J]



Run: 입력한 코드 실행 [Shift] + [Enter]



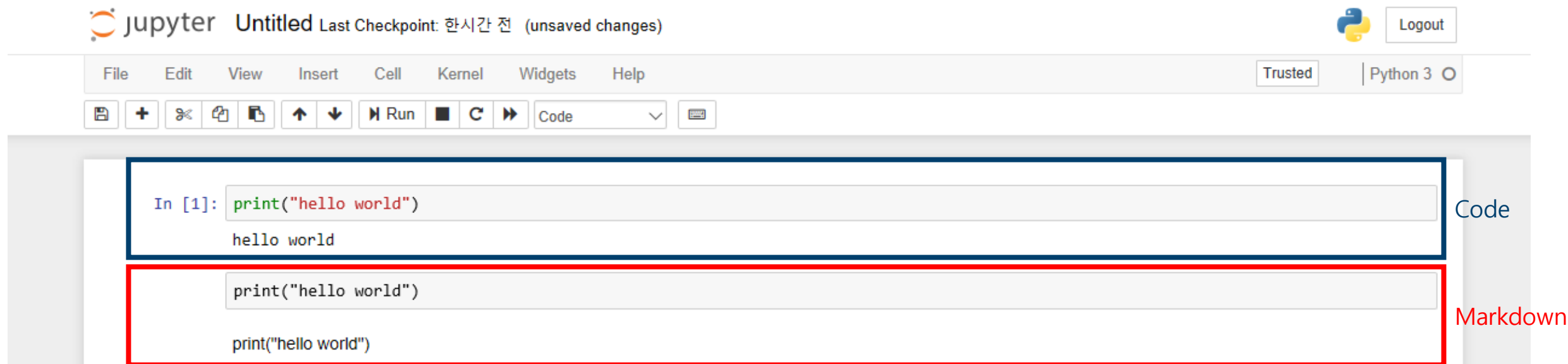
Code [Y], Markdown [M] 등 모드 변경



Command Palette: 다양한 명령을 검색할 수 있는 검색창 패널 [P]

JUPYTER NOTEBOOK 사용법

- Code & Markdown



The screenshot displays the Jupyter Notebook interface. At the top, the header shows the Jupyter logo, the text "jupyter", and "Untitled". To the right of the header, it says "Last Checkpoint: 한시간 전 (unsaved changes)" and a "Logout" button. Below the header is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. To the right of the menu bar are "Trusted" and "Python 3" indicators. Below the menu bar is a toolbar with icons for saving, adding, deleting, and running cells, as well as a dropdown menu currently set to "Code".

The main area shows two cells. The first cell is a Code cell, outlined with a blue border, containing the following text:

```
In [1]: print("hello world")  
hello world
```

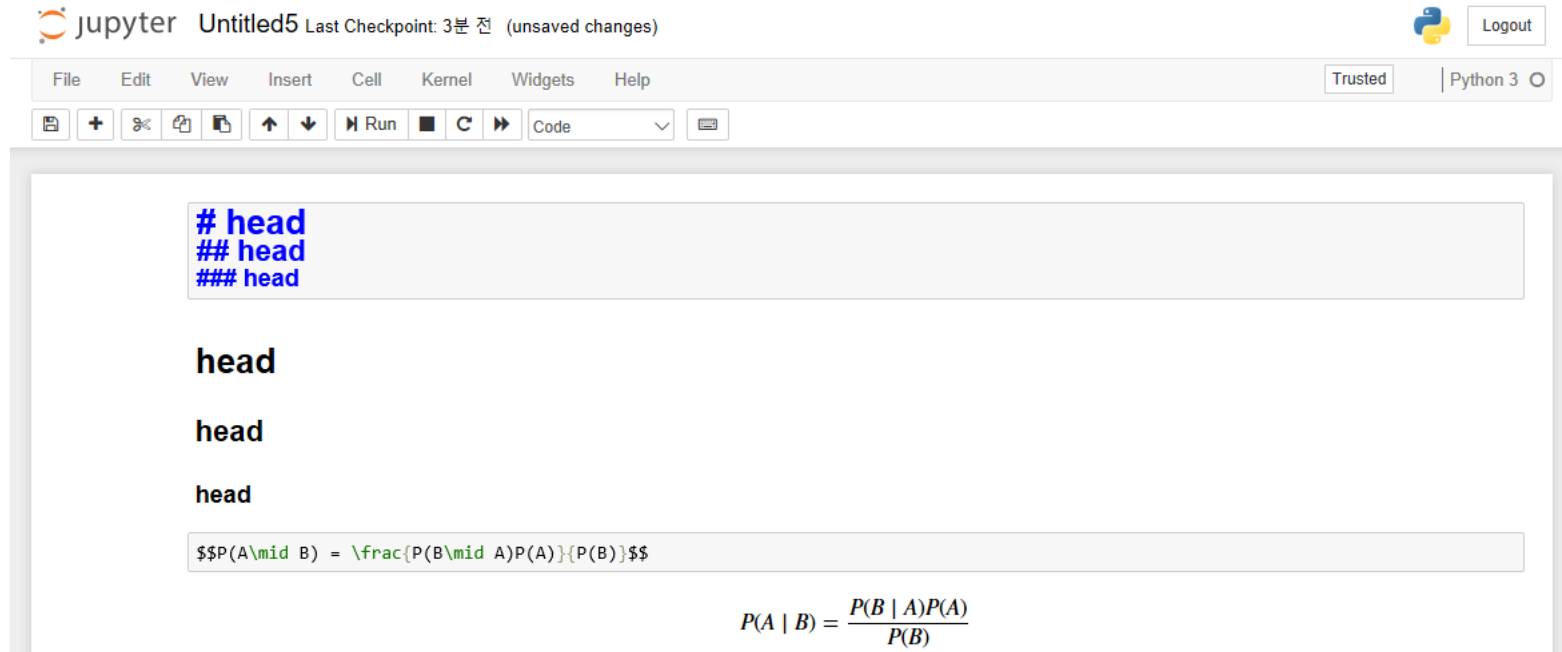
The second cell is a Markdown cell, outlined with a red border, containing the following text:

```
print("hello world")  
  
print("hello world")
```

On the right side of the cells, there are labels "Code" and "Markdown" in blue and red respectively, indicating the cell type.

JUPYTER NOTEBOOK 사용법

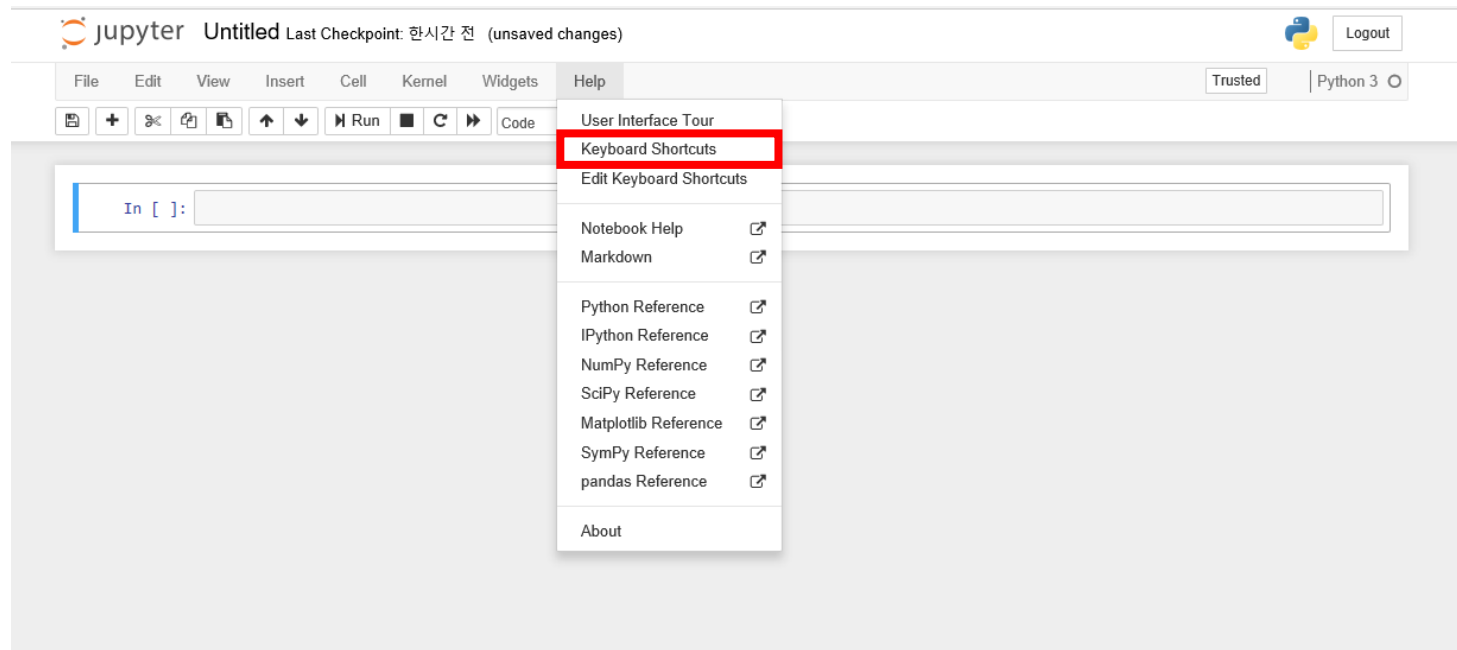
- Code & Markdown



Markdown에 대해 더 알고 싶다면: <http://kevinthegrey.tistory.com/74?category=793117>
<https://medium.com/ibm-data-science-experience/markdown-for-jupyter-notebooks-cheatsheet-386c05aeebed>

JUPYTER NOTEBOOK 사용법

- 단축키 (Help > Keyboard Shortcuts)

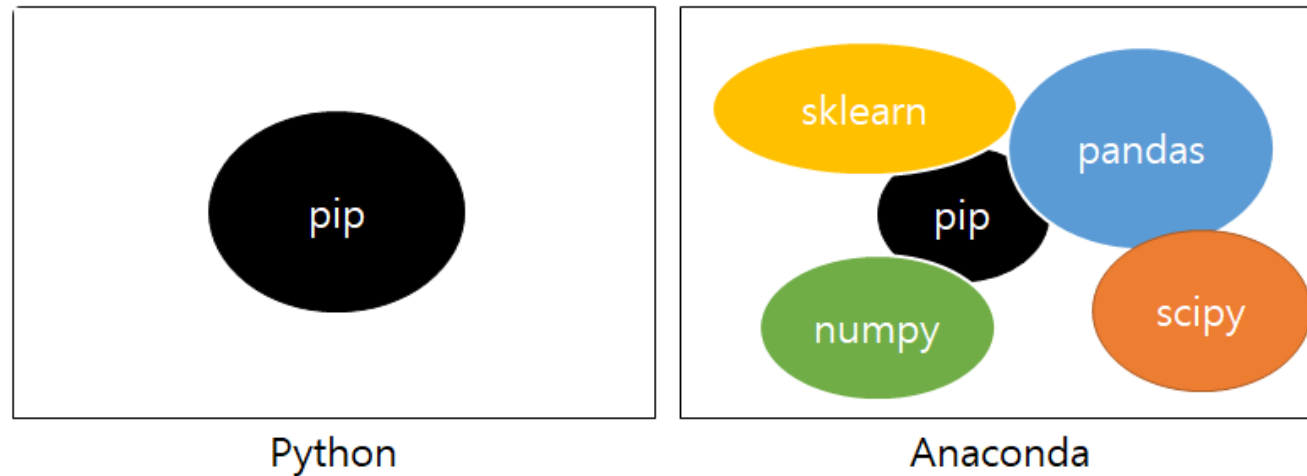


단축키에 대해 더 알고 싶다면: <https://www.dataquest.io/blog/jupyter-notebook-tips-tricks-shortcuts/>

Wrap-up

• 아나콘다를 사용하는 이유

- Python 기반의 데이터 분석에 필요한 오픈 소스를 모아 놓은 개발 플랫폼
- 가상환경 및 패키지 관리자 제공

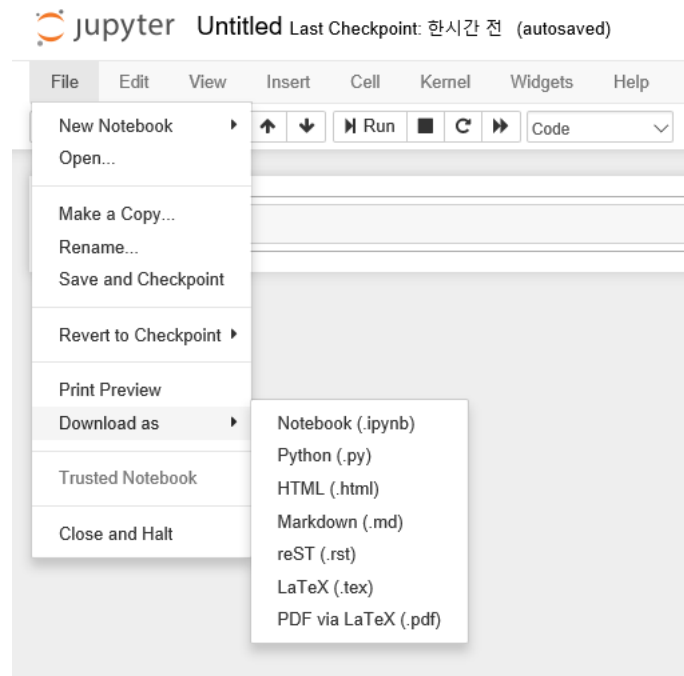


출처: <http://snowdeer.github.io/python/2017/11/07/python-vs-anaconda/>

Wrap-up

• 주피터 노트북을 사용하는 이유

- IDE(Integrated Development Environment): 효율적으로 소프트웨어를 개발하기 위한 통합개발환경 어플리케이션 인터페이스
- 셀 단위의 순차적인 실행 가능
- Html이나 pdf로 변환해서 공유하기 쉬움 (File > Download as >)
- Github과 연동 가능



감사합니다