

Python Installation



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➤ 기본설정

0) 본인 PC 사양확인

1) Anaconda 설치: 사람과 컴퓨터가 서로 대화할 수 있음

2) Jupyter Notebook 설치: 사람이 컴퓨터에게 지시를 할 수 있음

3) Jupyter Lab 설치: Jupyter Notebook보다 고급환경

4) 작업경로 반영: 분석할 때 작업하던 장소를 찾아 헤맬 필요 없음

➔ 여기까지 완료되면 분석/사용하는데 무리 없음

➤ 고급설정

1) Anaconda Prompt 진입: 모듈이나 기능의 추가/업데이트

2) Jupyter Notebook 확장기능 설치

3) Jupyter Lab 확장기능 설치

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➤ 고급설정

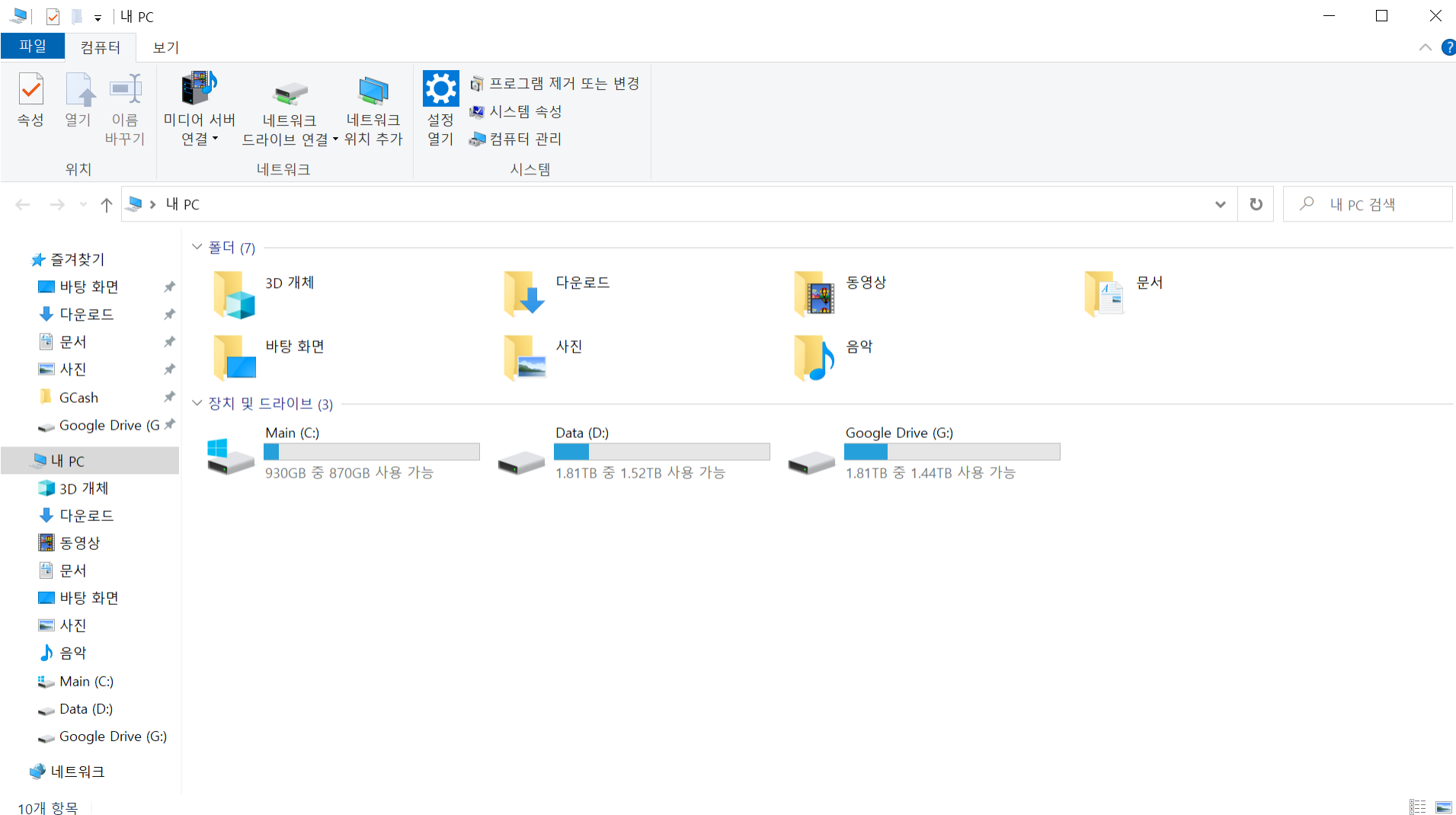
1) Anaconda Prompt 진입: 모듈이나 기능의 추가/업데이트

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기본설정: 0) 본인 PC 사양확인

➤ 윈도우탐색기 → “내 PC” 우클릭 → “속성” 선택



기본설정: 0) 본인 PC 사양확인

➤ 시스템 종류에서 32비트 / 64비트 확인

설정

홈

설정 검색

시스템

디스플레이

소리

알림 및 작업

집중 지원

전원 및 절전

저장소

태블릿

멀티태스킹

PC에 화면 표시

공유 환경

클립보드

정보

PC가 모니터링되고 보호됩니다.

자세한 내용은 [Windows 보안을 참조하세요.](#)

장치 사양

디바이스 이름

DESKTOP-BQOP850

프로세서

Intel(R) Core(TM) i5-8600 CPU @ 3.10GHz 3.10 GHz

설치된 RAM

48.0GB(47.9GB 사용 가능)

장치 ID

C29F9DFA-505B-4E5C-9553-CE1A11C12BCB

제품 ID

00330-80000-00000-AA021

시스템 종류

64비트 운영 체제, x64 기반 프로세서

펜 및 터치

이 디스플레이에 사용할 수 있는 펜 또는 터치식 입력이 없습니다.

복사

이 PC의 이름 바꾸기

Windows 사양

에디션

Windows 10 Pro

버전

20H2

설치 날짜

2020-12-29

OS 빌드

19042.804

관련 설정

[BitLocker 설정](#)

[장치 관리자](#)

[원격 데스크톱](#)

[시스템 보호](#)

[고급 시스템 설정](#)

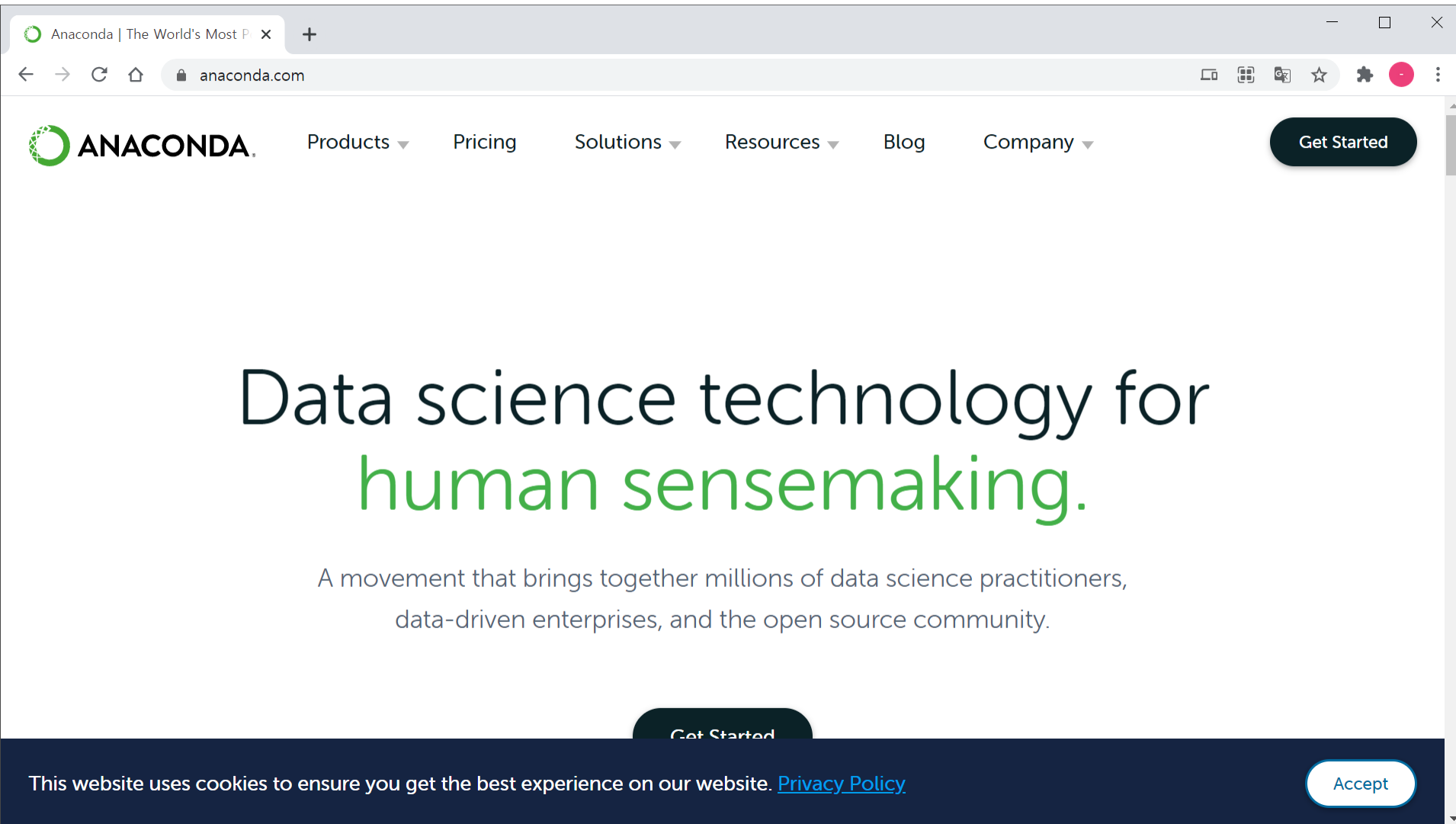
[이 PC의 이름 바꾸기\(고급\)](#)

[도움말 보기](#)

[피드백 보내기](#)

기본설정: 1) Anaconda 설치

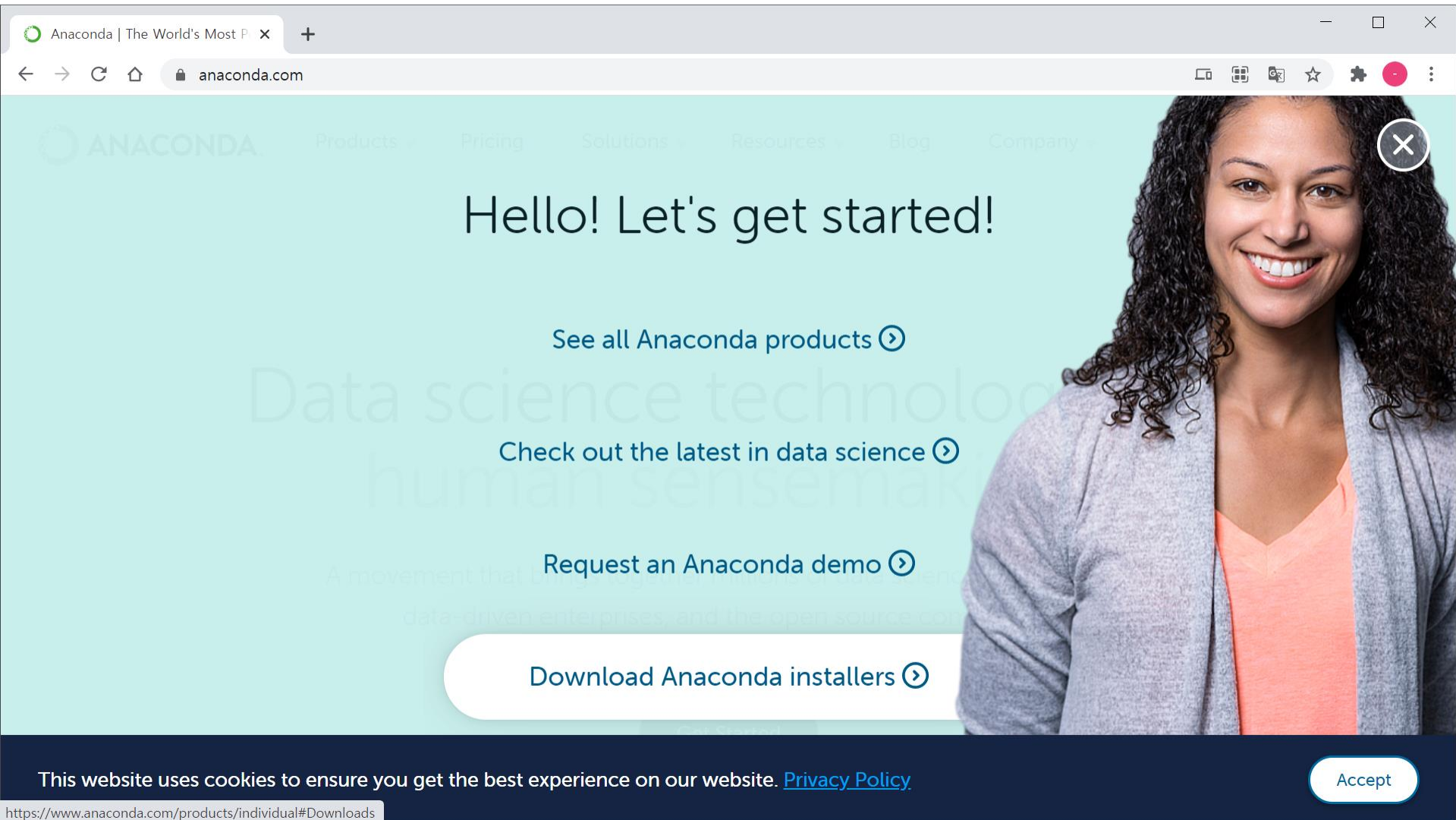
➤ ANACONDA 홈페이지 접속 → Get Started (기존에 설치했다면 제어판서 삭제 후 진행)



The screenshot shows the Anaconda website homepage. The browser's address bar displays 'anaconda.com'. The website's navigation bar includes the Anaconda logo, links for 'Products', 'Pricing', 'Solutions', 'Resources', 'Blog', and 'Company', and a prominent 'Get Started' button. The main content area features the headline 'Data science technology for human sensemaking.' with 'human sensemaking.' in green. Below this, a sub-headline reads: 'A movement that brings together millions of data science practitioners, data-driven enterprises, and the open source community.' A 'Get Started' button is partially visible at the bottom of the main content area. At the very bottom, a dark blue cookie consent banner states: 'This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)' with an 'Accept' button.

기본설정: 1) Anaconda 설치

➤ Download Anaconda installers



The screenshot shows the Anaconda website homepage. The browser's address bar displays 'anaconda.com'. The website features a light blue background with the Anaconda logo and navigation links (Products, Pricing, Solutions, Resources, Blog, Company) at the top. A large, smiling woman with curly hair is on the right side. The main heading reads 'Hello! Let's get started!'. Below it are three links: 'See all Anaconda products', 'Check out the latest in data science', and 'Request an Anaconda demo'. A prominent white button labeled 'Download Anaconda installers' is at the bottom. A cookie consent banner at the very bottom states: 'This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)'. The URL in the address bar is 'https://www.anaconda.com/products/individual#Downloads'.

ANAconda

Products Pricing Solutions Resources Blog Company

Hello! Let's get started!

See all Anaconda products

Check out the latest in data science

Request an Anaconda demo

Download Anaconda installers

This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)

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




기본설정: 1) Anaconda 설치

➤ 본인 os 사양에 맞는 프로그램 다운로드

Anaconda | Individual Edition

anaconda.com/products/individual#Downloads

Anaconda Installers

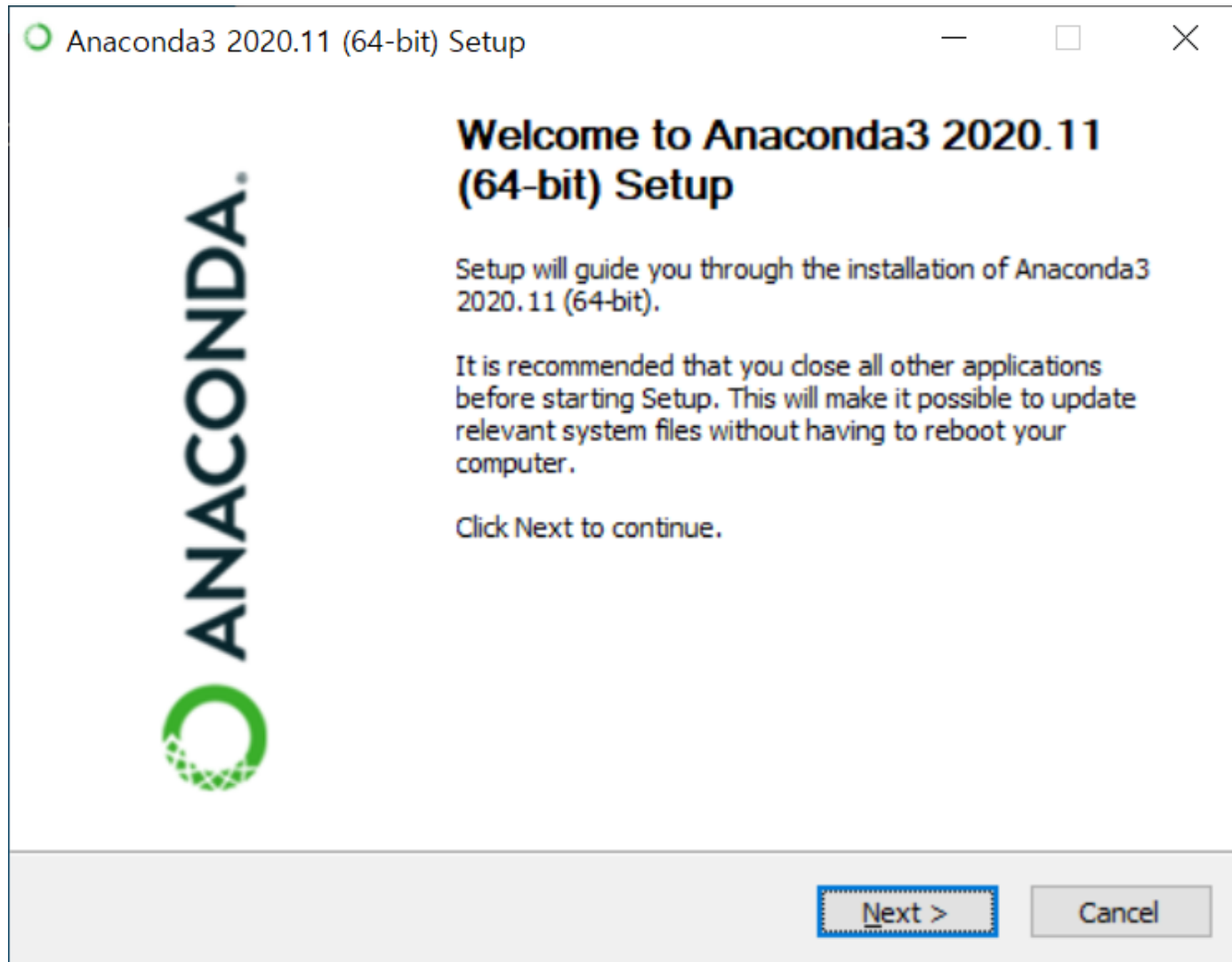
Windows 	MacOS 	Linux 
Python 3.8	Python 3.8	Python 3.8
<input checked="" type="radio"/> 64-Bit Graphical Installer (457 MB)	64-Bit Graphical Installer (435 MB)	64-Bit (x86) Installer (529 MB)
32-Bit Graphical Installer (403 MB)	64-Bit Command Line Installer (428 MB)	64-Bit (Power8 and Power9) Installer (279 MB)

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https://repo.anaconda.com/archive/Anaconda3-2020.11-Windows-x86_64....

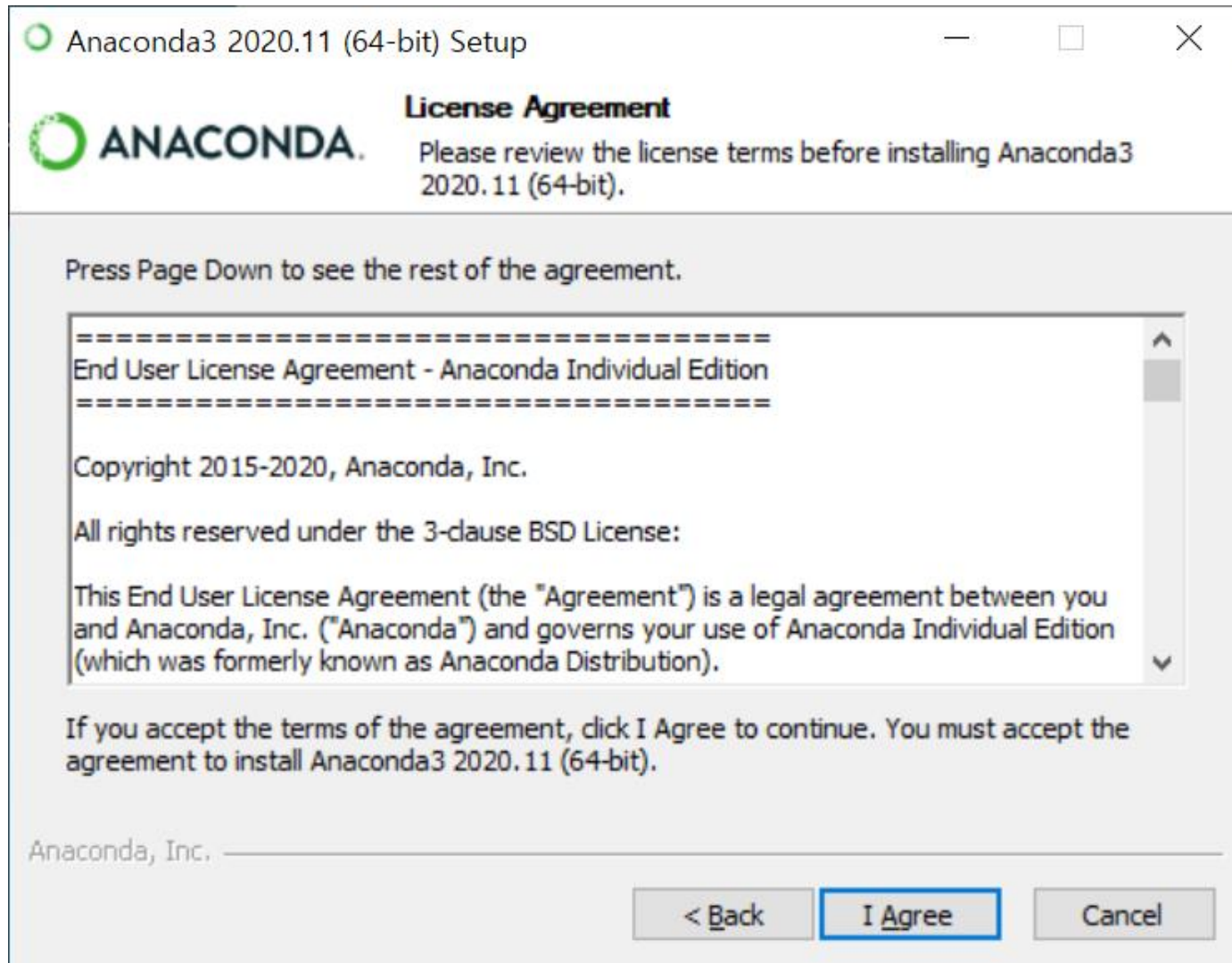
기본설정: 1) Anaconda 설치

➤ 다운받은 파일 실행 -> Next



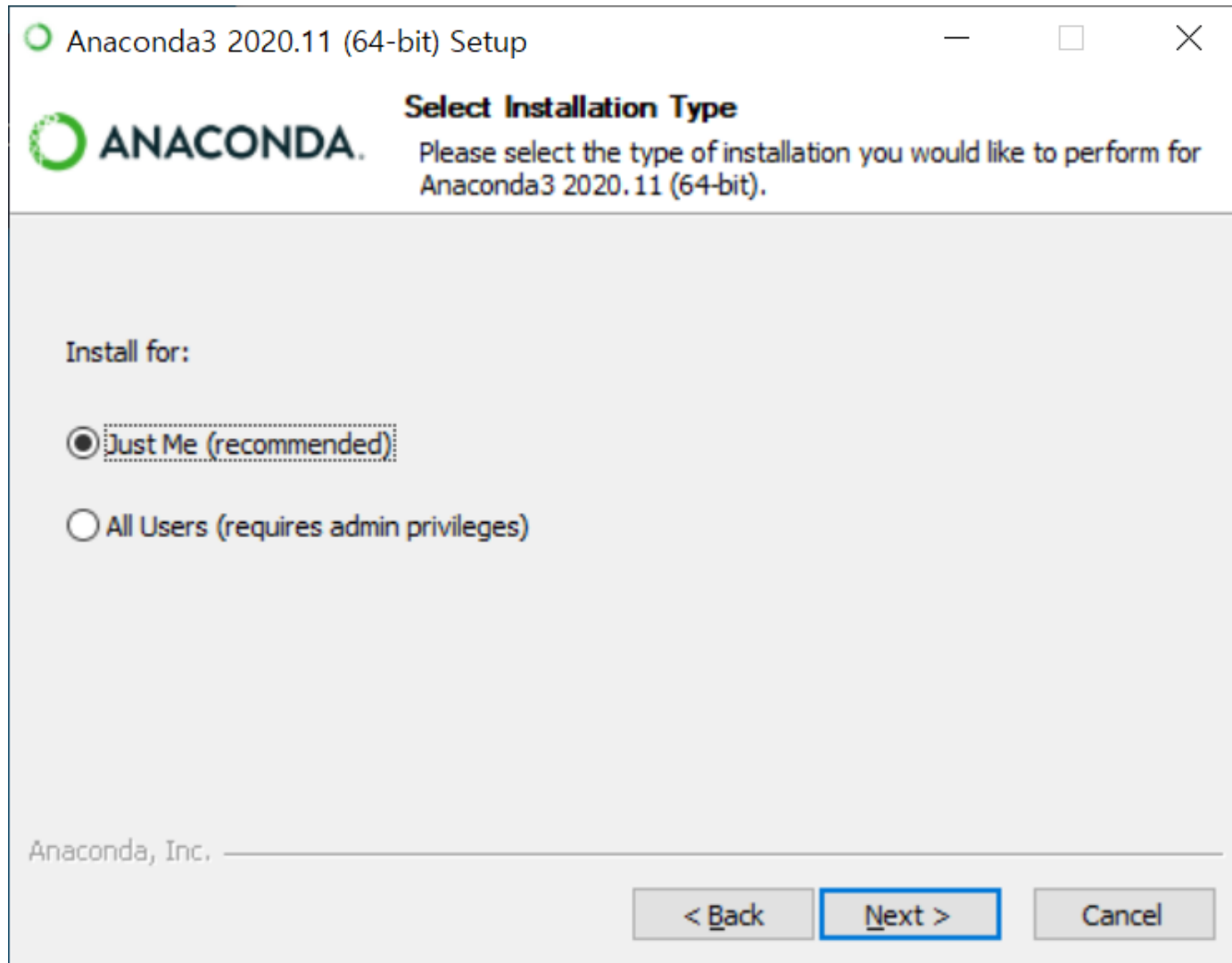
기본설정: 1) Anaconda 설치

➤ I Agree



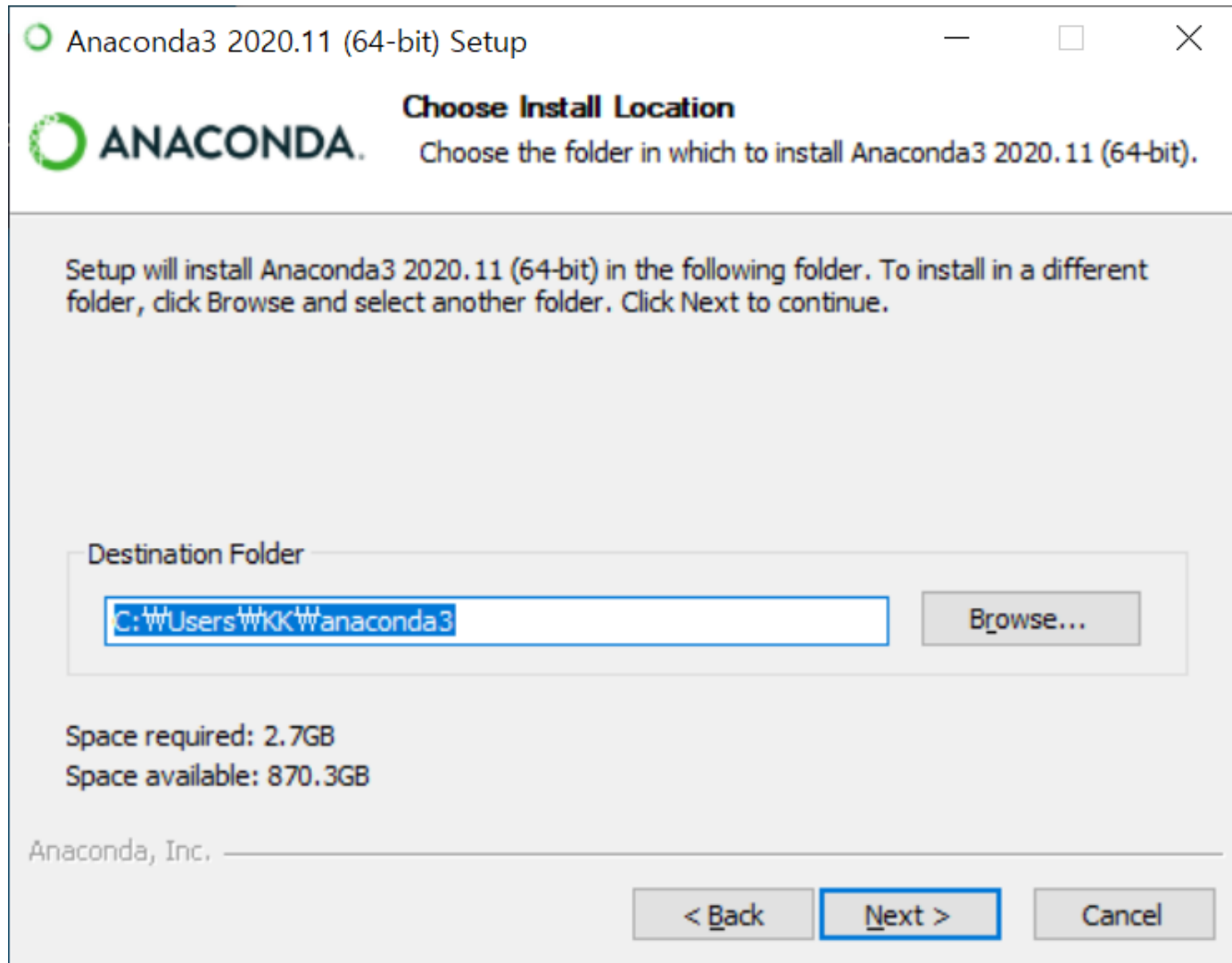
기본설정: 1) Anaconda 설치

➤ Next



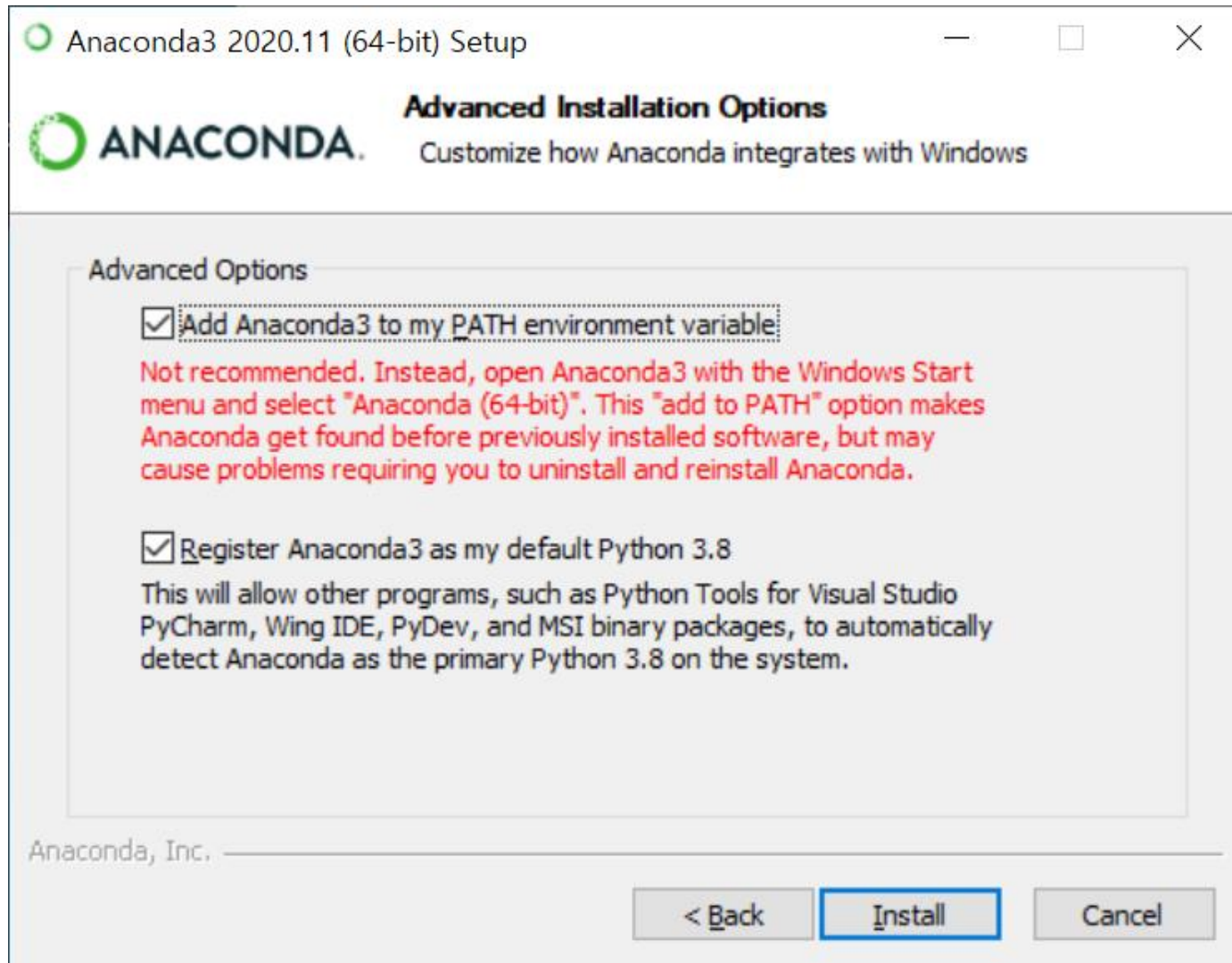
기본설정: 1) Anaconda 설치

➤ Next



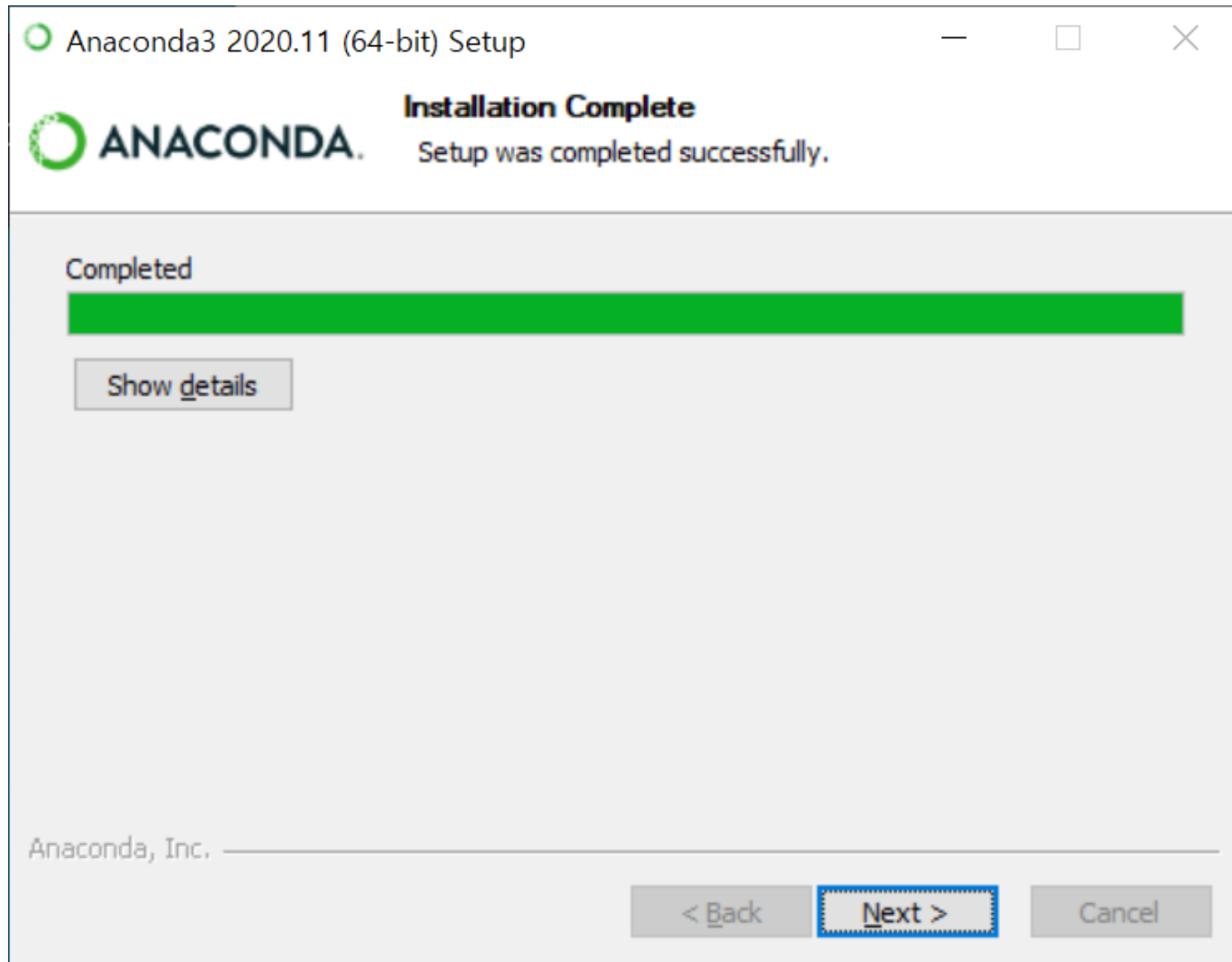
기본설정: 1) Anaconda 설치

➤ “Add Anaconda3 to my PATH~~” 체크 → Install



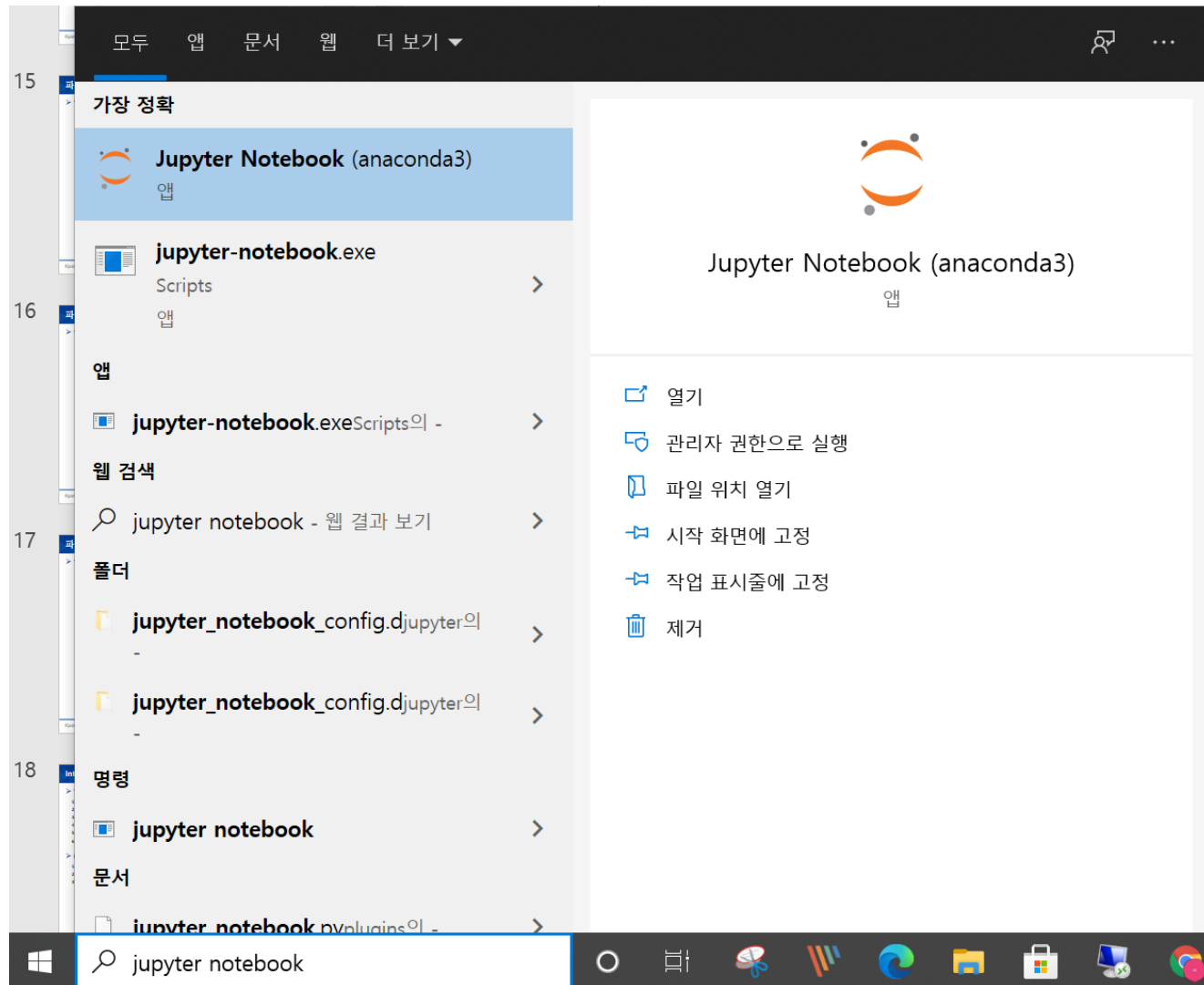
기본설정: 1) Anaconda 설치

➤ Next → Next → Finish → Anaconda 설치완료



기본설정: 2) Jupyter Notebook 설치 (Anaconda 설치 시 동시 설치)

➤ 시작 → “Jupyter Notebook” 입력 → 클릭 실행



기본설정: 2) Jupyter Notebook 설치

➤ Jupyter Notebook 실행화면

Home Page - Select or create a +

localhost:8888/tree

jupyter

Quit Logout

Files Running Clusters

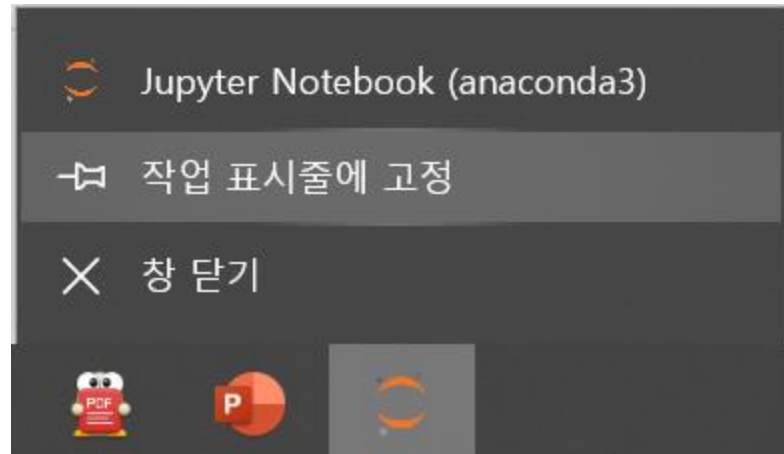
Select items to perform actions on them.

Upload New

<input type="checkbox"/> 0 <input type="button" value="dropdown"/>	<input type="button" value="folder icon"/> /	Name <input type="button" value="dropdown"/>	Last Modified	File size
<input type="checkbox"/>	3D Objects		2달 전	
<input type="checkbox"/>	anaconda3		한 시간 전	
<input type="checkbox"/>	Contacts		2달 전	
<input type="checkbox"/>	Desktop		28분 전	
<input type="checkbox"/>	Documents		한 시간 전	
<input type="checkbox"/>	Downloads		21일 전	
<input type="checkbox"/>	Favorites		2달 전	
<input type="checkbox"/>	Links		2달 전	
<input type="checkbox"/>	Music		2달 전	
<input type="checkbox"/>	Pictures		2달 전	
<input type="checkbox"/>	PyEMD		2달 전	
<input type="checkbox"/>	Saved Games		2달 전	
<input type="checkbox"/>	Searches		2달 전	
<input type="checkbox"/>	Videos		2달 전	
<input type="checkbox"/>	mercurial.ini		2달 전	41 B

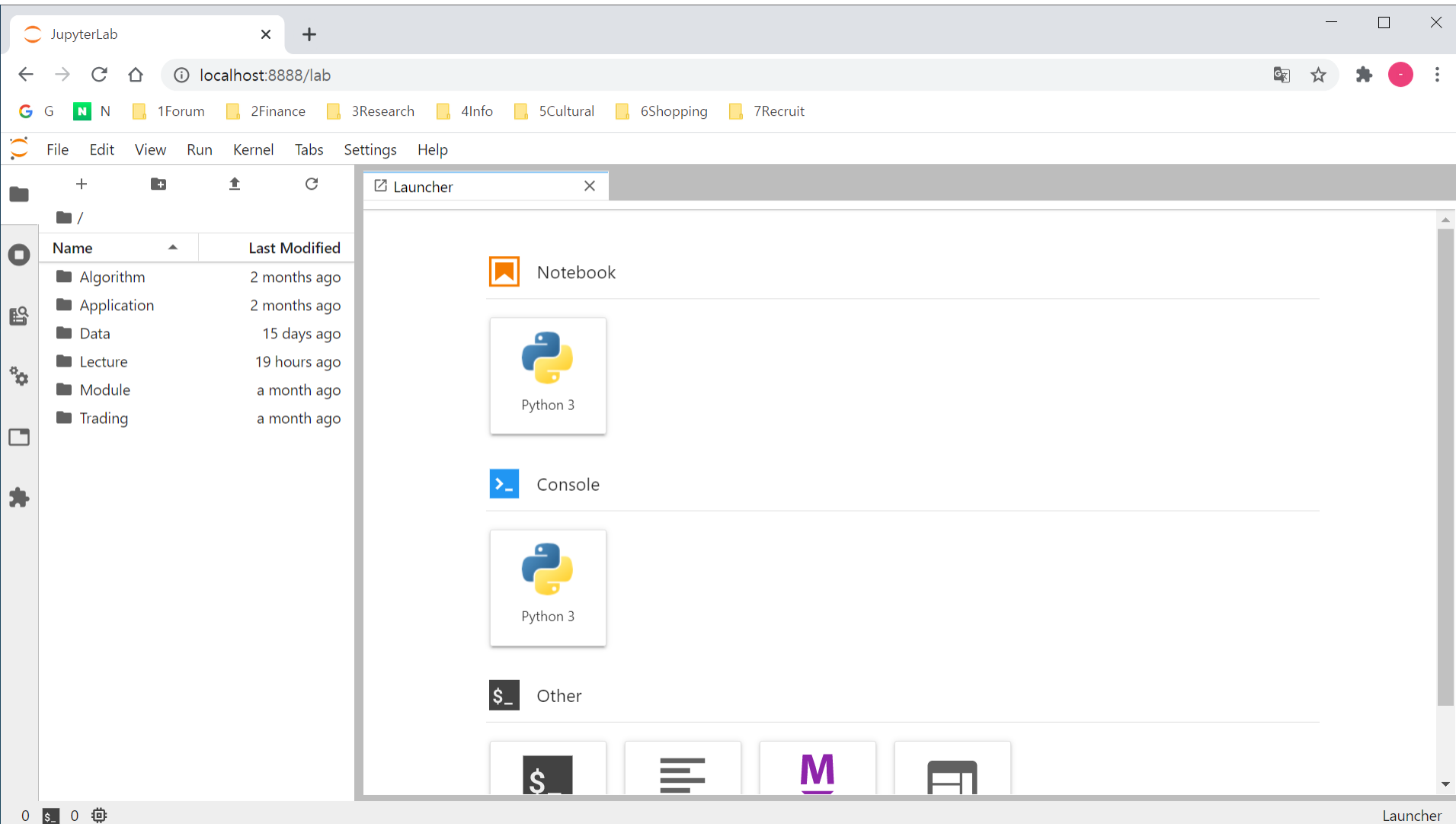
기본설정: 2) Jupyter Notebook 설치

- 작업표시줄 “Jupyter Notebook” 우클릭 → “작업 표시줄에 고정” 클릭



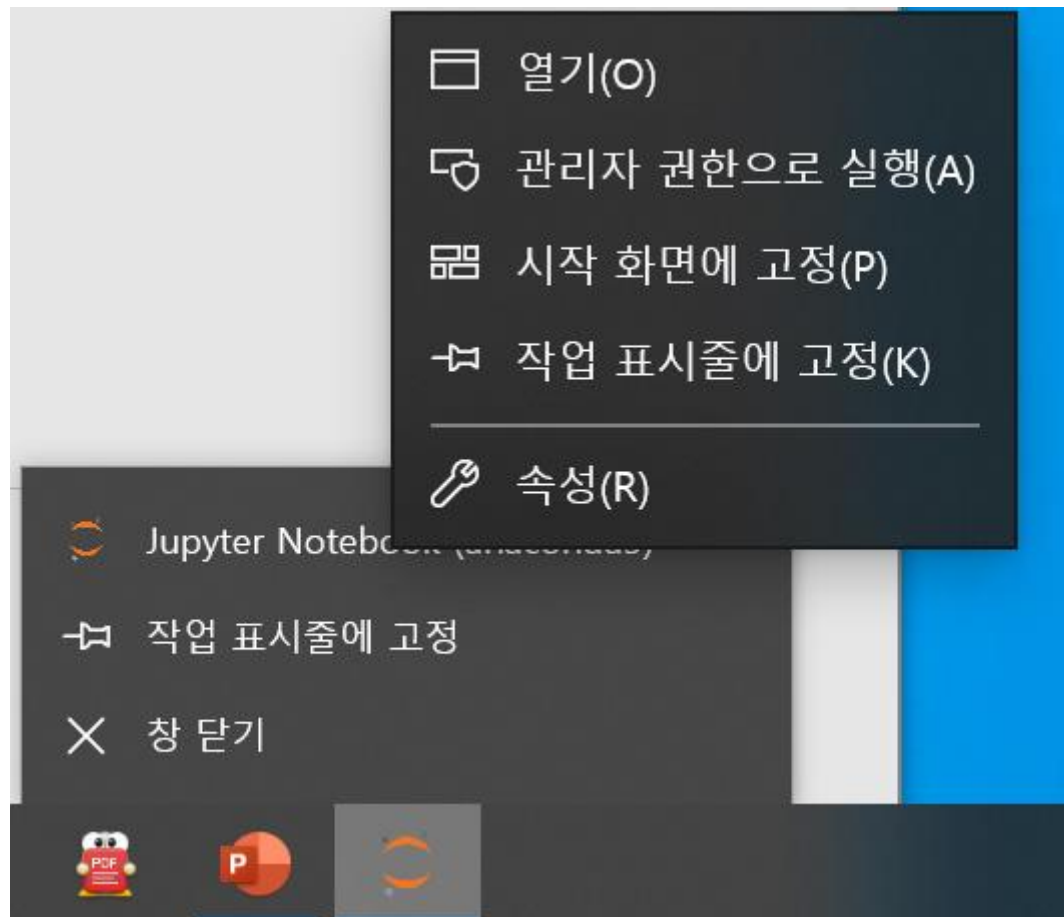
기본설정: 3) Jupyter Lab 설치 (Anaconda 설치 시 같이 설치)

➤ 만약 인터넷창 “localhost:8888/lab” 입력으로 실행



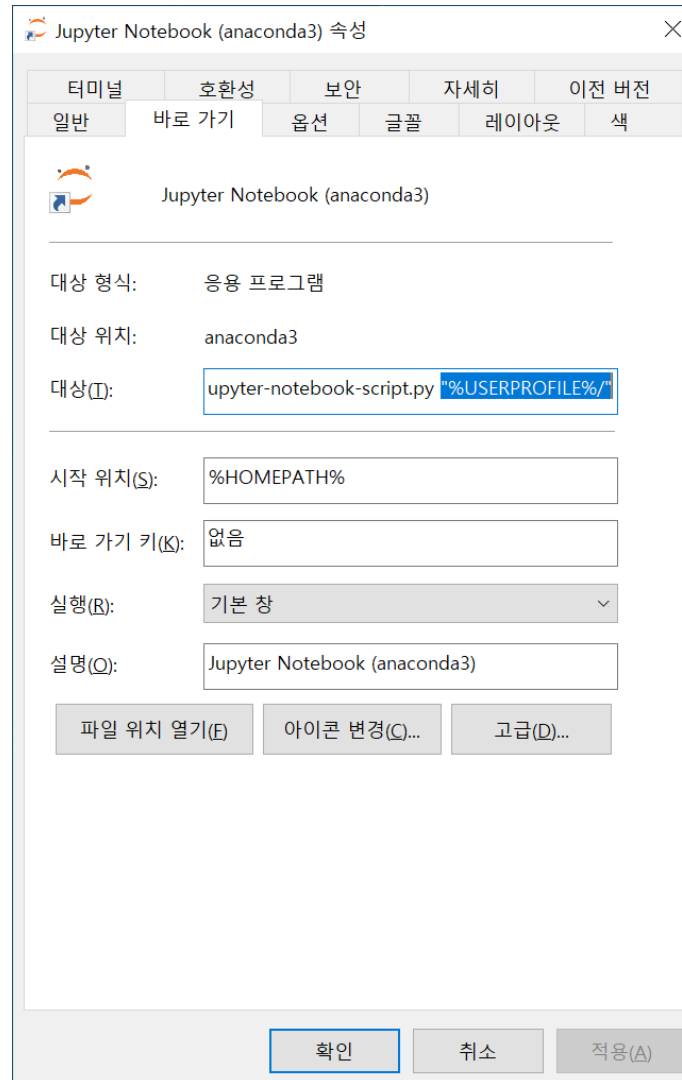
기본설정: 4) 작업경로 반영

➤ 작업표시줄 “Jupyter Notebook” 우클릭 → 상단의 “Jupyter Notebook” 우클릭 → 속성



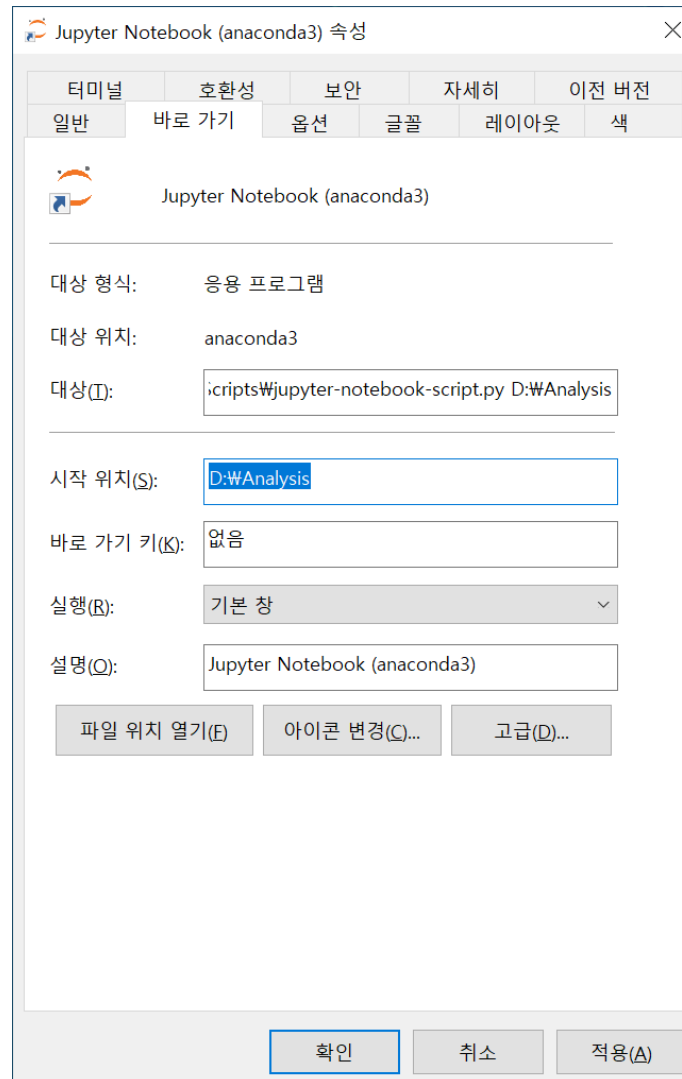
기본설정: 4) 작업경로 반영

➤ “대상”에서 ‘ “%USERPROFILE%/" ’ 삭제 후 본인 작업경로 반영 (ex. D:Analysis)



기본설정: 4) 작업경로 반영

➤ “시작위치”에서 “%HOMEPATH%” 삭제 후 본인 작업경로 반영 (ex. D:Analysis) → 확인



기본설정: 4) 작업경로 반영

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기

The screenshot shows a web browser window at `localhost:8888/tree` displaying the Jupyter Notebook interface. On the left is a file browser showing the local file system with folders like 3D Objects, anaconda3, Desktop, etc. The main area is a terminal window titled "Jupyter Notebook (anaconda3)" showing the following output:

```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\WKK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\WKK\anaconda3\lib\importlib\_init_.py", line 127, in import_module
    return _bootstrap.gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\WKK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\WKK\anaconda3\share\jupyterlab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\WKK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
    file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
    http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
    or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[W 00:54:46.842 NotebookApp] 404 GET /nbextensions/nbextensions_configurator/tree_tab/main.js?v=20210228005444 (::1) 6.9
5ms referer=http://localhost:8888/tree
```

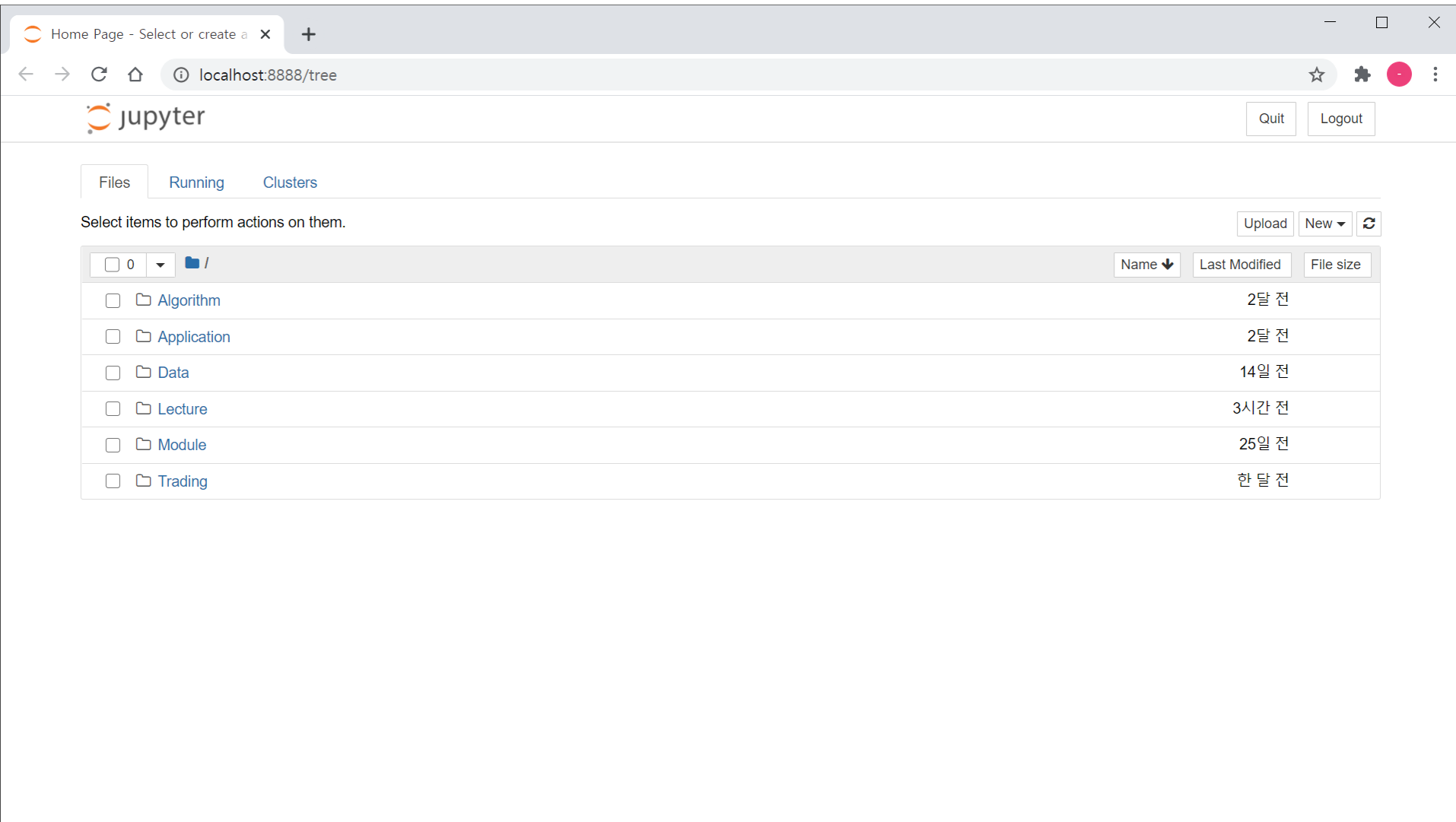
기본설정: 4) 작업경로 반영

- 작업표시줄 “Jupyter Notebook” 클릭하여 실행



기본설정: 4) 작업경로 반영

➤ Jupyter Notebook 실행화면이 설정한 폴더로 변경됨이 확인됨

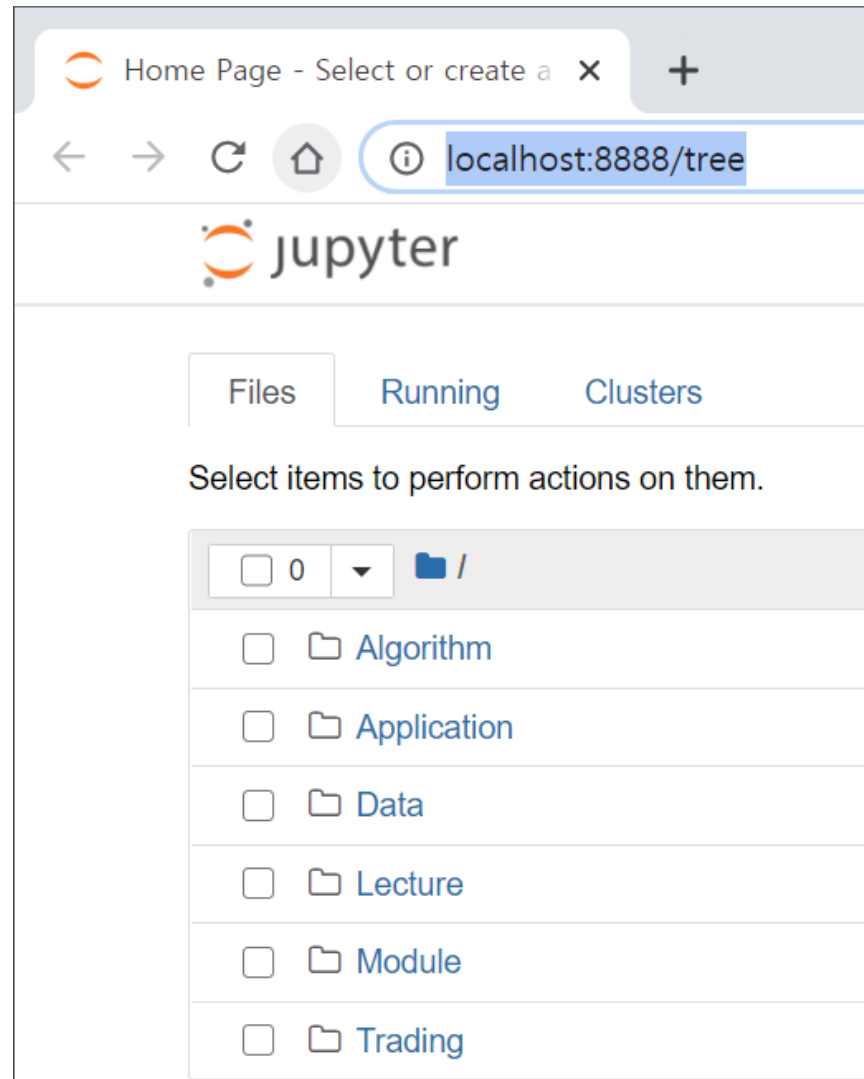


The screenshot displays the Jupyter Notebook web interface in a browser. The address bar shows 'localhost:8888/tree'. The interface includes a top bar with the Jupyter logo, 'Quit', and 'Logout' buttons. Below this, there are tabs for 'Files', 'Running', and 'Clusters'. A message states 'Select items to perform actions on them.' To the right of this message are buttons for 'Upload', 'New', and a refresh icon. The main area shows a file tree with a root directory '/' and several subdirectories: 'Algorithm', 'Application', 'Data', 'Lecture', 'Module', and 'Trading'. Each directory entry has a checkbox on the left and a timestamp on the right indicating when it was last modified.

Name	Last Modified	File size
<input type="checkbox"/> 0		
<input type="checkbox"/> /		
<input type="checkbox"/> Algorithm	2달 전	
<input type="checkbox"/> Application	2달 전	
<input type="checkbox"/> Data	14일 전	
<input type="checkbox"/> Lecture	3시간 전	
<input type="checkbox"/> Module	25일 전	
<input type="checkbox"/> Trading	한 달 전	

기본설정: 4) 작업경로 반영

➤ 만약 인터넷창에 Jupyter Notebook이 실행되지 않는다면 “주소 입력”으로 실행



기본설정: 4) 작업경로 반영

➤ Jupyter Lab도 작업경로가 동일하게 변경됨

The screenshot displays the JupyterLab web interface in a browser window. The address bar shows 'localhost:8888/lab'. The left sidebar contains a file browser with a table of files and folders. The main area shows the 'Launcher' tab with options to create a Notebook, Console, or Other environment, each with a Python 3 kernel.

Name	Last Modified
Algorithm	2 months ago
Application	2 months ago
Data	15 days ago
Lecture	19 hours ago
Module	a month ago
Trading	a month ago

Launcher options:

- Notebook (Python 3)
- Console (Python 3)
- Other (\$_)

➤ 기본설정

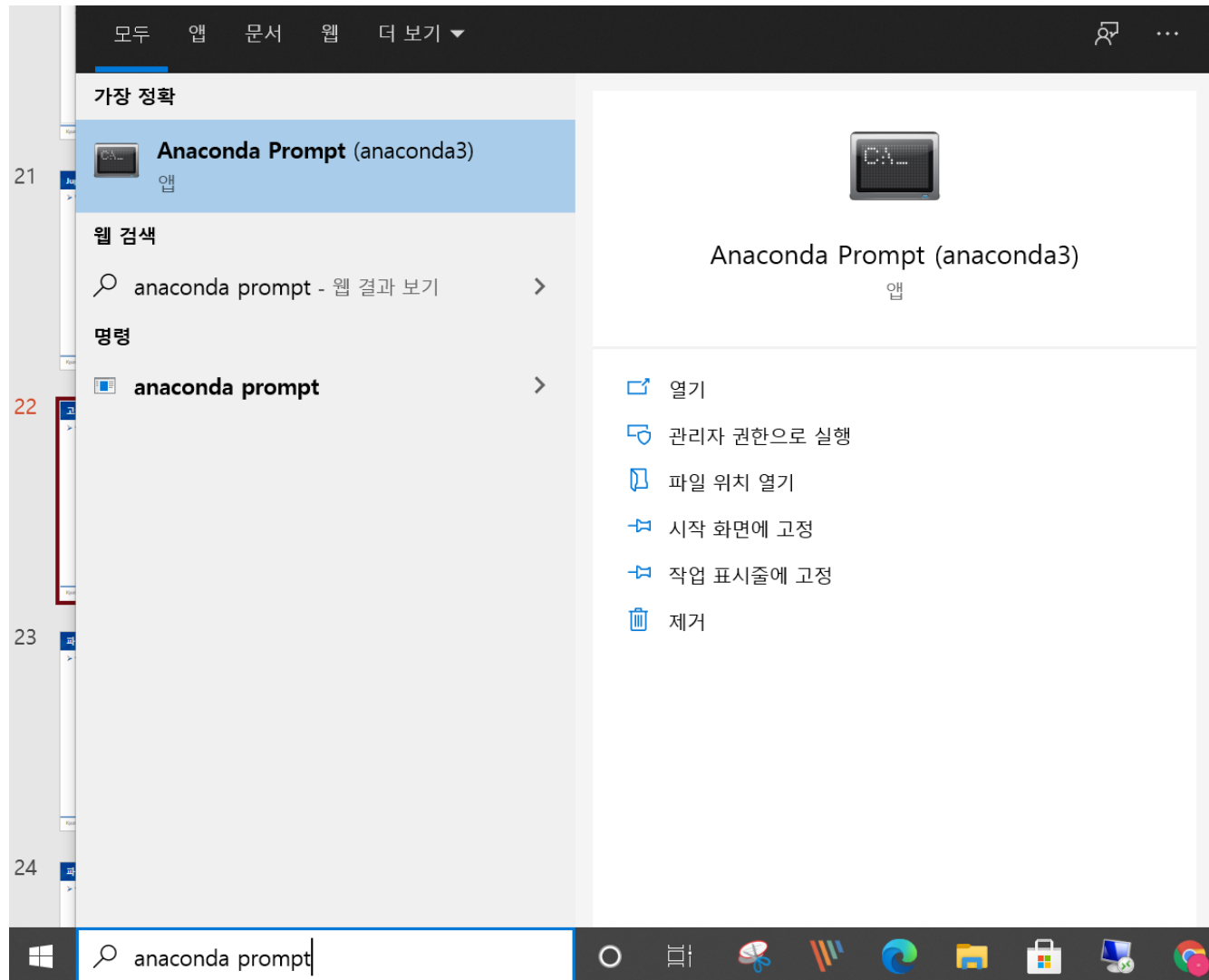
- 1) Anaconda 설치: 사람과 컴퓨터가 서로 대화할 수 있음
 - 2) Jupyter Notebook 설치: 사람이 컴퓨터에게 지시를 할 수 있음
 - 3) Jupyter Lab 설치: Jupyter Notebook보다 고급환경
 - 4) 작업경로 반영: 분석할 때 작업하던 장소를 찾아 헤맬 필요 없음
- ➔ 여기까지 완료되면 분석/사용하는데 무리 없음

➤ 고급설정

- 1) Anaconda Prompt 진입: 모듈이나 기능의 추가/업데이트
- 2) Jupyter Notebook 확장기능 설치
- 3) Jupyter Lab 확장기능 설치

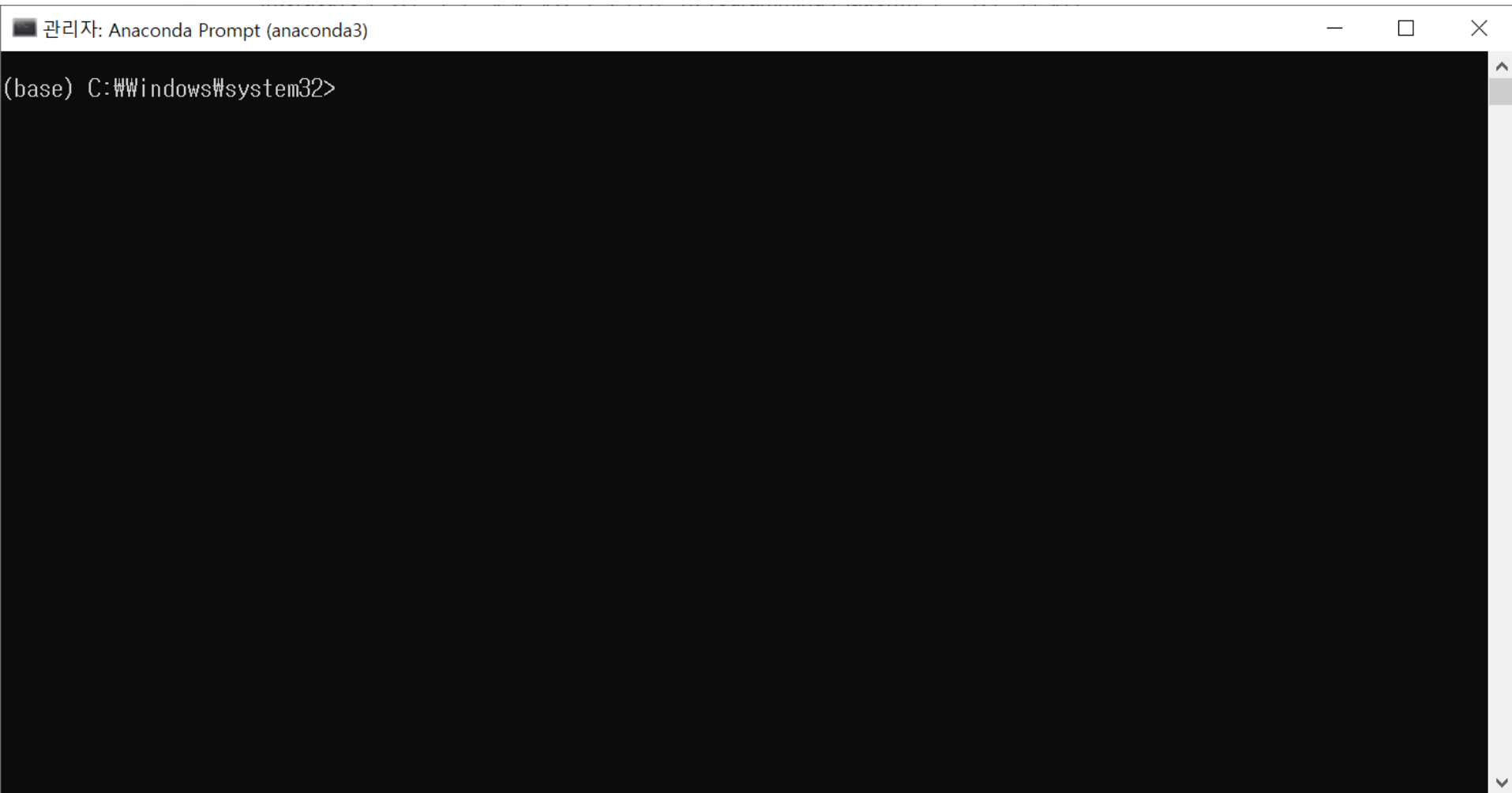
고급설정: 1) Anaconda Prompt 진입

➤ 시작 → “Anaconda Prompt” 타이핑 → 앱 우클릭 후 “관리자 권한으로 실행”



고급설정: 1) Anaconda Prompt 진입

➤ 시작 → “Anaconda Promp” 타이핑 → 앱 우클릭 후 “관리자 권한으로 실행”



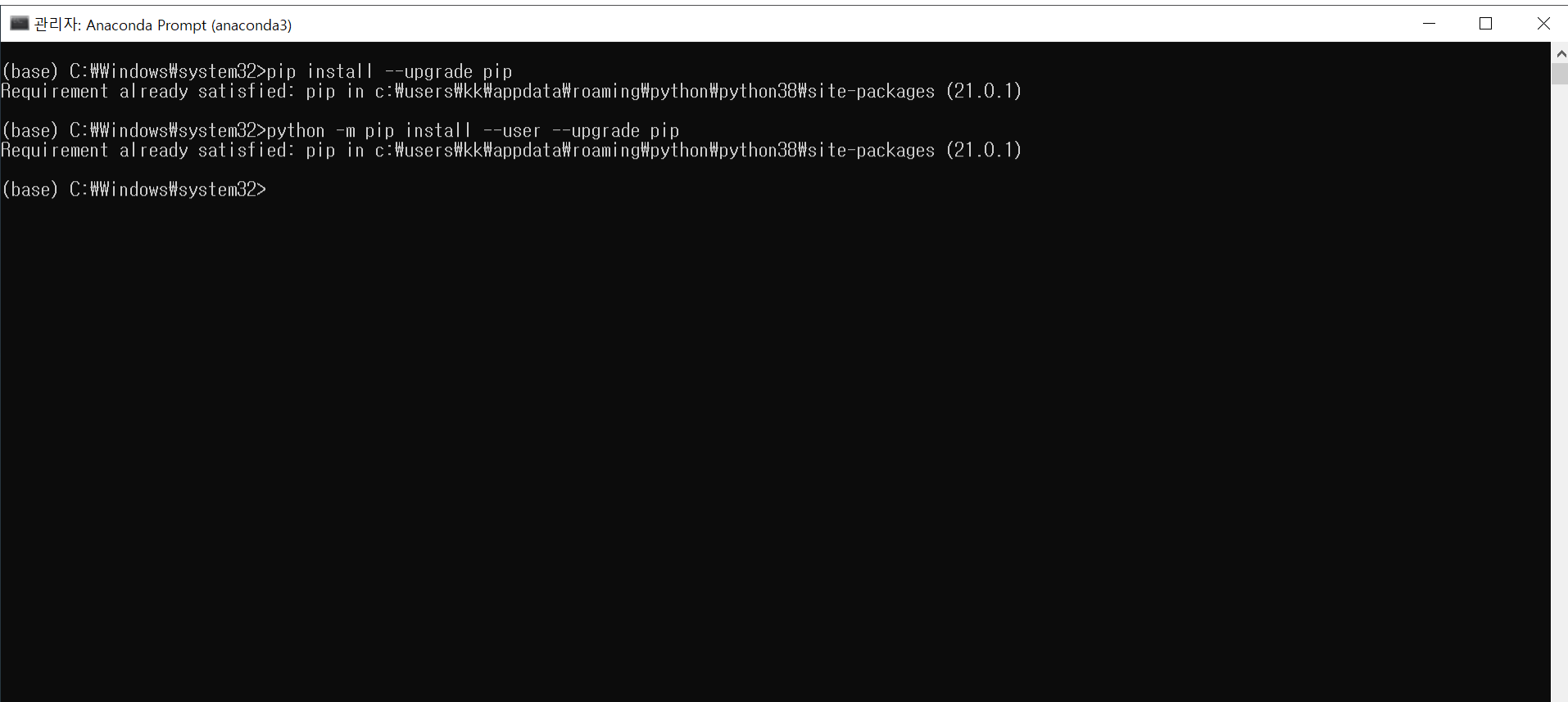
고급설정: 1) Anaconda Prompt 진입

➤ “pip”라는 파이썬의 패키지 라이브러리 관리 시스템 업데이트 (복불가능)

:: Update of PIP

pip install --upgrade pip

python -m pip install --user --upgrade pip



The screenshot shows a Windows command prompt window titled "관리자: Anaconda Prompt (anaconda3)". The prompt is at the base environment (base) in C:\Windows\system32. The user enters the command `pip install --upgrade pip`, and the output is "Requirement already satisfied: pip in c:\users\kkk\appdata\roaming\python\python38\site-packages (21.0.1)". The user then enters `python -m pip install --user --upgrade pip`, and the output is the same: "Requirement already satisfied: pip in c:\users\kkk\appdata\roaming\python\python38\site-packages (21.0.1)". The prompt ends with `(base) C:\Windows\system32>`.

```
(base) C:\Windows\system32>pip install --upgrade pip
Requirement already satisfied: pip in c:\users\kkk\appdata\roaming\python\python38\site-packages (21.0.1)

(base) C:\Windows\system32>python -m pip install --user --upgrade pip
Requirement already satisfied: pip in c:\users\kkk\appdata\roaming\python\python38\site-packages (21.0.1)

(base) C:\Windows\system32>
```

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “nbextensions”라는 노트북 확장기능 패키지 설치 (복불가능)

:: Jupyter Nbextensions

pip install jupyter_contrib_nbextensions

jupyter contrib nbextension install --user

```
0.png
[I 18:07:52.111 InstallContribNbextensionsApp] Copying: c:\Users\WKK\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env\doc_files\latex_env_doc_48_0.png
-> C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_48_0.png
[W 18:07:52.111 InstallContribNbextensionsApp] Out of date: C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_49_0.png
0.png
[I 18:07:52.111 InstallContribNbextensionsApp] Copying: c:\Users\WKK\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env\doc_files\latex_env_doc_49_0.png
-> C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_49_0.png
[W 18:07:52.111 InstallContribNbextensionsApp] Out of date: C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_50_0.png
0.png
[I 18:07:52.111 InstallContribNbextensionsApp] Copying: c:\Users\WKK\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env\doc_files\latex_env_doc_50_0.png
-> C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_50_0.png
[W 18:07:52.111 InstallContribNbextensionsApp] Out of date: C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_51_0.png
0.png
[I 18:07:52.111 InstallContribNbextensionsApp] Copying: c:\Users\WKK\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env\doc_files\latex_env_doc_51_0.png
-> C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_51_0.png
[W 18:07:52.111 InstallContribNbextensionsApp] Out of date: C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_52_0.png
0.png
[I 18:07:52.111 InstallContribNbextensionsApp] Copying: c:\Users\WKK\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env\doc_files\latex_env_doc_52_0.png
-> C:\Users\WKK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env\doc_files\latex_env_doc_52_0.png
[I 18:07:52.111 InstallContribNbextensionsApp] - Validating: ok
[I 18:07:52.111 InstallContribNbextensionsApp] Installing jupyter_contrib_nbextensions items to config in C:\Users\WKK\jupyter
Enabling: jupyter_nbextensions_configurator
- Writing config: C:\Users\WKK\jupyter
- Validating...
  jupyter_nbextensions_configurator 0.4.1 ok
Enabling notebook nbextension nbextensions_configurator/config_menu/main...
Enabling tree nbextension nbextensions_configurator/tree_tab/main...
[I 18:07:52.111 InstallContribNbextensionsApp] Enabling notebook extension contrib_nbextensions_help_item/main...
[I 18:07:52.111 InstallContribNbextensionsApp] - Validating: ok
[I 18:07:52.111 InstallContribNbextensionsApp] - Editing config: C:\Users\WKK\jupyter\jupyter_nbconvert_config.json
[I 18:07:52.111 InstallContribNbextensionsApp] -- Configuring nbconvert template path
[I 18:07:52.111 InstallContribNbextensionsApp] -- Configuring nbconvert preprocessors
[I 18:07:52.111 InstallContribNbextensionsApp] - Writing config: C:\Users\WKK\jupyter\jupyter_nbconvert_config.json
[I 18:07:52.111 InstallContribNbextensionsApp] -- Writing updated config file C:\Users\WKK\jupyter\jupyter_nbconvert_config.json
(base) C:\Windows\system32>
```

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기

The screenshot shows a web browser window with the Jupyter Notebook interface. The address bar shows 'localhost:8888/tree'. The Jupyter logo and 'Quit'/'Logout' buttons are at the top right. Below the logo are tabs for 'Files', 'Running', and 'Clusters'. A message says 'Select items to perform actions on them.' with 'Upload', 'New', and a refresh icon. On the left is a file browser showing a tree structure with folders like '3D Objects', 'anaconda3', 'Desktop', etc. On the right is a terminal window titled 'Jupyter Notebook (anaconda3)' showing the following output:

```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\WKK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\WKK\anaconda3\lib\importlib\_init_.py", line 127, in import_module
    return _bootstrap.gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\WKK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\WKK\anaconda3\share\jupyterlab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\WKK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
    file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
    http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
    or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[W 00:54:46.842 NotebookApp] 404 GET /nbextensions/nbextensions_configurator/tree_tab/main.js?v=20210228005444 (::1) 6.9
5ms referer=http://localhost:8888/tree
```

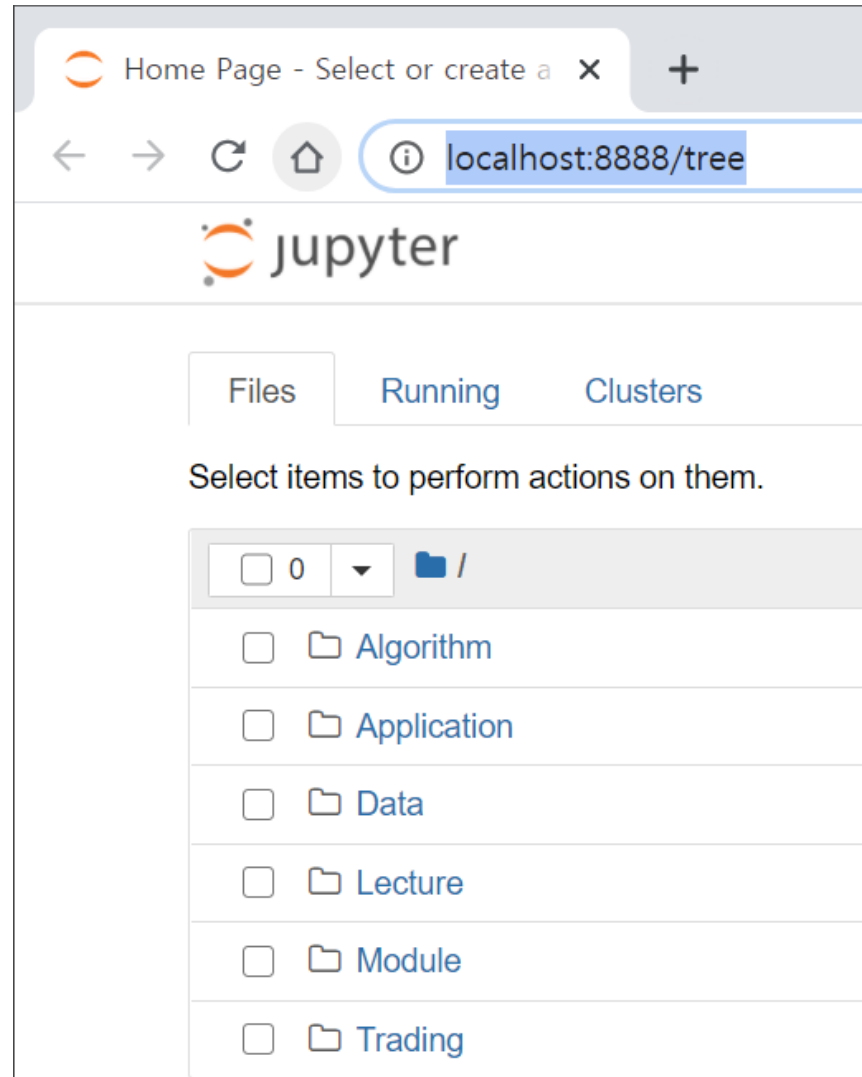

고급설정: 2) Jupyter Notebook 확장기능 설치

- 작업표시줄 “Jupyter Notebook” 클릭하여 실행



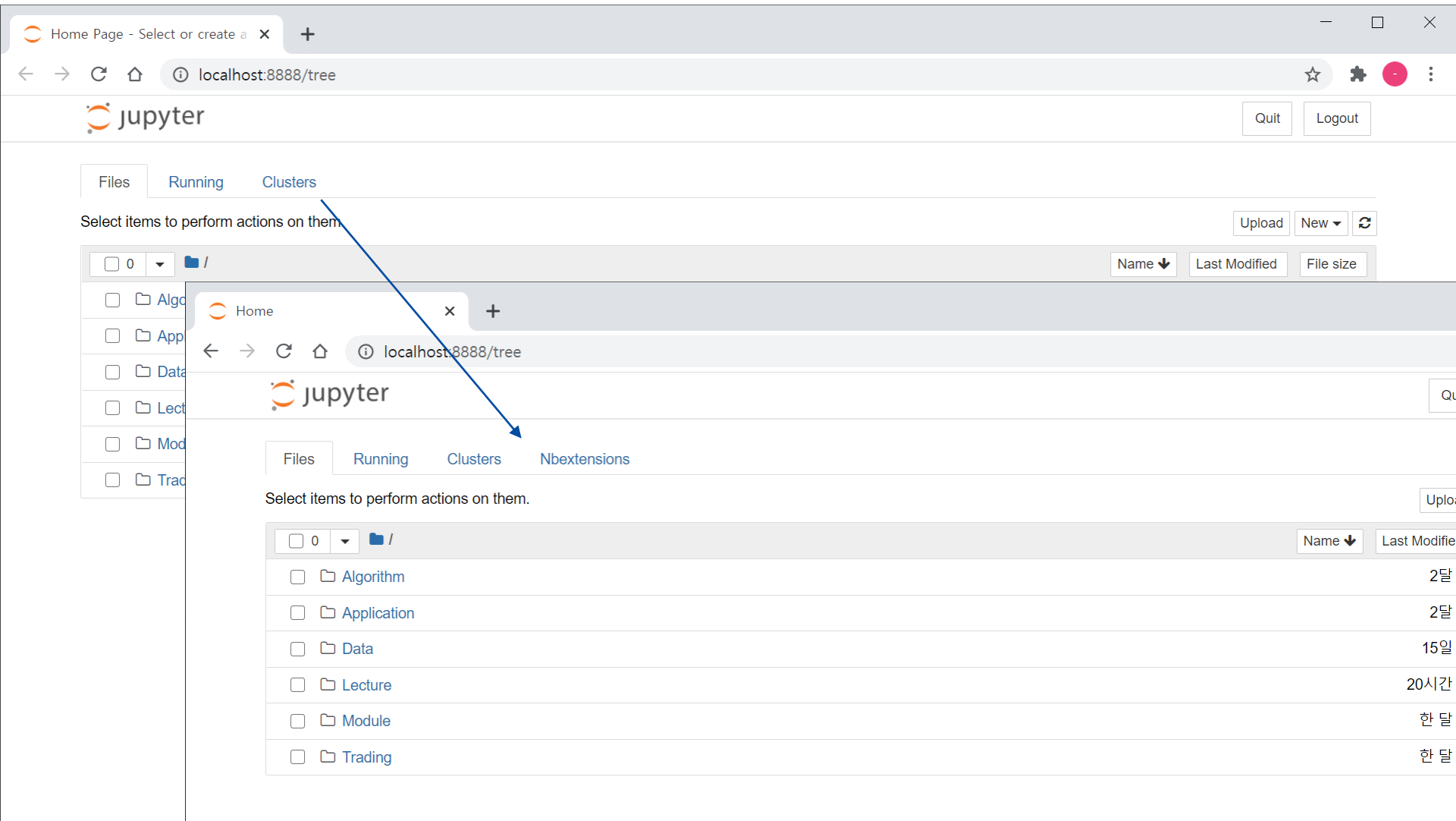
고급설정: 2) Jupyter Notebook 확장기능 설치

➤ 만약 인터넷창에 Jupyter Notebook이 실행되지 않는다면 “주소 입력”으로 실행



고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Jupyter Notebook 실행화면에서 “Nbextensions” 탭이 추가됨



고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “disable ~~”를 해제하고 하기처럼 기능들을 추가 (선택적이며 스크롤다운시 설명나옴)

Lecture/[데이터사이언스/]

localhost:8888/tree/Lecture/%5B데이터사이언스%5D#nbextensions_configurator

1Info 2Finance 3Research 4Cultural 5Item

jupyter Quit Logout

Files Running Clusters Nbextensions

Configurable nbextensions

☐ disable configuration for nbextensions without explicit compatibility (they may break your notebook environment, but can be useful to show for nbextension development)

filter: by description, section, or tags

<input type="checkbox"/> (some) LaTeX environments for Jupyter	<input type="checkbox"/> 2to3 Converter	<input type="checkbox"/> AddBefore	<input checked="" type="checkbox"/> Autopep8
<input type="checkbox"/> AutoSaveTime	<input type="checkbox"/> Autoscroll	<input type="checkbox"/> Cell Filter	<input type="checkbox"/> Code Font Size
<input type="checkbox"/> Code prettify	<input checked="" type="checkbox"/> Codefolding	<input type="checkbox"/> Codefolding in Editor	<input type="checkbox"/> CodeMirror mode extensions
<input checked="" type="checkbox"/> Collapsible Headings	<input type="checkbox"/> Comment/Uncomment Hotkey	<input checked="" type="checkbox"/> contrib_nbextensions_help_item	<input type="checkbox"/> datestamper
<input type="checkbox"/> Equation Auto Numbering	<input checked="" type="checkbox"/> ExecuteTime	<input type="checkbox"/> Execution Dependencies	<input type="checkbox"/> Exercise
<input type="checkbox"/> Exercise2	<input type="checkbox"/> Export Embedded HTML	<input type="checkbox"/> Freeze	<input type="checkbox"/> Gist-it
<input type="checkbox"/> Help panel	<input type="checkbox"/> Hide Header	<input type="checkbox"/> Hide input	<input checked="" type="checkbox"/> Hide input all
<input type="checkbox"/> Highlight selected word	<input type="checkbox"/> highlighter	<input checked="" type="checkbox"/> Hinterland	<input type="checkbox"/> Initialization cells
<input type="checkbox"/> isort formatter	<input checked="" type="checkbox"/> jupyter-js-widgets/extension	<input type="checkbox"/> Keyboard shortcut editor	<input type="checkbox"/> Launch QTConsole
<input type="checkbox"/> Limit Output	<input type="checkbox"/> Live Markdown Preview	<input type="checkbox"/> Load TeX macros	<input type="checkbox"/> Move selected cells
<input type="checkbox"/> Navigation-Hotkeys	<input checked="" type="checkbox"/> Nbextensions dashboard tab	<input checked="" type="checkbox"/> Nbextensions edit menu item	<input checked="" type="checkbox"/> nbresuse/main
<input type="checkbox"/> nbTranslate	<input type="checkbox"/> Notify	<input checked="" type="checkbox"/> plotlywidget/extension	<input type="checkbox"/> Printview
<input type="checkbox"/> Python Markdown	<input checked="" type="checkbox"/> RISE	<input type="checkbox"/> Rubberband	<input type="checkbox"/> Ruler
<input type="checkbox"/> Ruler in Editor	<input type="checkbox"/> Runtools	<input type="checkbox"/> Scratchpad	<input type="checkbox"/> ScrollDown
<input type="checkbox"/> Select CodeMirror Keymap	<input type="checkbox"/> SKILL Syntax	<input type="checkbox"/> Skip-Traceback	<input checked="" type="checkbox"/> Snippets
<input type="checkbox"/> Snippets Menu	<input type="checkbox"/> spellchecker	<input type="checkbox"/> Split Cells Notebook	<input checked="" type="checkbox"/> Table of Contents (2)
<input type="checkbox"/> table_beautifier	<input type="checkbox"/> Toggle all line numbers	<input type="checkbox"/> Tree Filter	<input checked="" type="checkbox"/> Variable Inspector
<input type="checkbox"/> zenmode			

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Table of Contents 설명 예시

Home Page - Select or create a x +

localhost:8888/tree#nbextensions_configurator

1Forum 2Finance 3Research 4Info 5Cultural 6Shopping 7Recruit

jupyter Quit Logout

Table of Contents (2)

Description and main features

The toc2 extension enables to collect all running headers and display them in a floating window, as a sidebar or with a navigation menu. The extension is also draggable, resizable, collapsable, dockable and features automatic numerotation with unique links ids, and an optional toc cell. Sections of currently selected/edited or running cells are highlighted in the toc. Some minor display tweaks are also available (moving header tile/menus, widening cells); Finally, the toc can be preserved when exporting to html.

First demo: Floating toc window and SideBar, toc auto-update, section numbering

1.2.2.1 Definition

The time average, taken on realization ω is

$$\langle X(n, \omega) \rangle = \lim_{n \rightarrow \infty} \frac{1}{n} \sum_{i=0}^{n-1} X(n, \omega)^i$$

Of course, in the general case, this time average is a random variable, since it depends on ω .

Definition A random signal is said ergodic if its time average is a deterministic i.e. non random

Important consequence

A really important consequence is that if a signal is both stationary and ergodic, then the statistical averages are equal.

Contents [-] v n t

- 1. An Introduction to Random Signals
 - 1.1 Notations
 - 1.2 Fundamental properties
 - 1.2.1 Stationarity
 - 1.2.2 Ergodism
 - 1.2.2.1 Definition
 - 1.2.3 Examples of random signals
 - 1.2.4 White noise

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “Files” 탭으로 와서 강의자료와 실습을 진행

The screenshot shows the Jupyter Notebook interface in a web browser. The browser's address bar shows 'localhost:8888/tree'. The Jupyter logo is in the top left, and 'Quit' and 'Logout' buttons are in the top right. Below the logo, there are tabs for 'Files', 'Running', 'Clusters', and 'Nbextensions'. The 'Files' tab is active. Below the tabs, there is a text prompt 'Select items to perform actions on them.' and buttons for 'Upload', 'New', and a refresh icon. A file browser table is displayed with columns for 'Name', 'Last Modified', and 'File size'. The table lists several folders: 'Algorithm', 'Application', 'Data', 'Lecture', 'Module', and 'Trading'. Each folder has a checkbox to its left. The 'Last Modified' column shows relative times like '2달 전', '15일 전', '20시간 전', '한 달 전', and '한 달 전'.

	Name	Last Modified	File size
<input type="checkbox"/>	/		
<input type="checkbox"/>	Algorithm	2달 전	
<input type="checkbox"/>	Application	2달 전	
<input type="checkbox"/>	Data	15일 전	
<input type="checkbox"/>	Lecture	20시간 전	
<input type="checkbox"/>	Module	한 달 전	
<input type="checkbox"/>	Trading	한 달 전	

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ 확장기능이 표시된 강의자료 예시

Lecture/시계열답러닝/ x Lecture1_DataAnalysis_DataSci x +

localhost:8888/notebooks/Lecture/시계열답러닝/Lecture1_DataAnalysis_DataScience_KK.ipynb

Jupyter Lecture1_DataAnalysis_DataScience_KK (unsaved changes) Logout

File Edit View Insert Cell Kernel Navigate Widgets Help Trusted Python 3

Contents

- 1 데이터 분석의 단계별 목적 이해하기 (분석 사이클 이해)
 - 1.1 데이터 사이언티스트?/애널리스트?/엔지니어?/비즈니스고객? 관점에서:
 1. 데이터수집: 소스별 데이터 추출 및 저장>Loading)
 2. 데이터전처리: 기초통계(Descriptive Statistics) + 불이기(Curation) + 없애기(Remove) + 채우기(Fill) + 필터(Filter) + 변경하기(Tr
 3. 데이터정리: 데이터한곳에담기(Data Warehouse) + 바꾸기및정리(Data Mart) + 분리(Data Split)
 4. 데이터분석: 기초통계(Descriptive Statistics) + 모델링(Algorithm) + 검증(Evaluation) + 에러분석(Error Analysis)
 5. 결과정리: 시각화(Visualization/Dashboard) + 의사결정(Decision Support) + 지식화(Knowledge) + 공유(Reporting)

1 Raw Data

2 ETL

3 Data Warehouse

4 Reporting

Structured: TXT, CSV, SQL

Semi-Structured: JSON, XML, DOC, WE

Un-Structured: AVI, f, RSS

Extract, Transform, Load

DataMart

Reports & Score-Cards, Dashboards, Mobile BI

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 하기 내용 복사 후 검은화면(Anaconda Prompt)에 우클릭(붙여넣기) → 시간소요!

:: Jupyter Lab

pip install jupyterlab

pip install --upgrade jupyterlab

:: Jupyter Lab Extensions Package

pip install nodejs

conda install --yes nodejs

conda install -c conda-forge --yes nodejs

:: Table of Contents

jupyter labextension install @jupyterlab/toc

:: Shortcut UI

jupyter labextension install @jupyterlab/shortcui

:: Variable Inspector

jupyter labextension install @lckr/jupyterlab_variableinspector

:: Go to Definition of Module

jupyter labextension install @krassowski/jupyterlab_go_to_definition

:: Interactive Visualization

jupyter labextension install @jupyter-widgets/jupyterlab-manager

jupyter labextension install lineup_widget

:: Connection to Github

jupyter labextension install @jupyterlab/github

:: CPU+RAM Monitor

pip install nbresuse

jupyter labextension install jupyterlab-topbar-extension jupyterlab-system-monitor

:: File Tree Viewer

jupyter labextension install jupyterlab_filetree

:: Download Folder as Zip File

conda install --yes jupyter-archive

jupyter lab build

jupyter labextension update --all

:: End

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 설치완료 (라이브러리 버전에 따라 에러가 발생할 수 있음 → 일단 무시하고 진행)

```
선택 관리자: Anaconda Prompt (anaconda3)
(base) C:\Windows\system32>conda install --yes jupyter-archive
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Collecting package metadata (repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.

PackagesNotFoundError: The following packages are not available from current channels:

- jupyter-archive

Current channels:

- https://repo.anaconda.com/pkgs/main/win-64
- https://repo.anaconda.com/pkgs/main/noarch
- https://repo.anaconda.com/pkgs/r/win-64
- https://repo.anaconda.com/pkgs/r/noarch
- https://repo.anaconda.com/pkgs/msys2/win-64
- https://repo.anaconda.com/pkgs/msys2/noarch

To search for alternate channels that may provide the conda package you're
looking for, navigate to

    https://anaconda.org

and use the search bar at the top of the page.

(base) C:\Windows\system32>jupyter lab build
[LabBuildApp] JupyterLab 3.0.9
[LabBuildApp] Building in C:\Users\WKK\anaconda3\share\jupyter\lab
[LabBuildApp] Building jupyterlab assets (production, minimized)
/
(base) C:\Windows\system32>jupyter labextension update --all
No compatible version found for @jupyter-widgets/jupyterlab-manager!
Extension 'jupyterlab-system-monitor' already up to date
No compatible version found for @jupyterlab/toc!
Extension 'jupyterlab-topbar-extension' already up to date
Extension '@krassowski/jupyterlab_go_to_definition' already up to date
Extension '@lckr/jupyterlab_variableinspector' already up to date
Extension 'lineup_widget' already up to date

(base) C:\Windows\system32>: End
```

고급설정: 3) Jupyter Lab 확장기능 설치

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기

The screenshot shows the JupyterLab web interface in a browser window. The address bar shows 'localhost:8888/tree'. The interface includes a top bar with 'Quit' and 'Logout' buttons, and a sidebar with 'Files', 'Running', and 'Clusters' tabs. The 'Files' tab is active, showing a file browser with a list of folders and files. The main area displays a terminal window titled 'Jupyter Notebook (anaconda3)' showing the following output:

```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\WKK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\WKK\anaconda3\lib\importlib\_init_.py", line 127, in import_module
    return _bootstrap.gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\WKK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\WKK\anaconda3\share\jupyter\lab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\WKK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
    file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
    http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
    or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[W 00:54:46.842 NotebookApp] 404 GET /nbextensions/nbextensions_configurator/tree_tab/main.js?v=20210228005444 (::1) 6.9
5ms referer=http://localhost:8888/tree
```

고급설정: 3) Jupyter Lab 확장기능 설치

- 작업표시줄 “Jupyter Notebook” 클릭하여 실행



고급설정: 3) Jupyter Lab 확장기능 설치

➤ 인터넷창에 “tree” 대신 “lab”으로 변경하여 실행

The screenshot shows the JupyterLab web interface in a browser window. The address bar shows `localhost:8888/lab`. The interface includes a top menu bar with File, Edit, View, Run, Kernel, Tabs, Settings, and Help. Below the menu is a toolbar with icons for creating new files, opening recent files, and refreshing. On the left is a file browser sidebar with a search bar and a table of files and folders. The main area is titled 'Launcher' and displays three categories: Notebook, Console, and Other. Each category has a 'Python 3' option with a Python logo icon. At the bottom, there are four icons for Terminal, Text File, Markdown File, and Show Contextual.

Name	Last Modified
/	
Algorithm	2 months ago
Application	2 months ago
Data	15 days ago
Lecture	a day ago
Module	a month ago
Trading	a month ago

Launcher

- Notebook
 - Python 3
- Console
 - Python 3
- Other
 - Terminal
 - Text File
 - Markdown File
 - Show Contextual

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 강의자료를 찾아 실습을 진행

The screenshot displays the JupyterLab web interface in a browser window. The address bar shows `localhost:8888/lab`. The interface includes a top menu bar with `File`, `Edit`, `View`, `Run`, `Kernel`, `Tabs`, `Settings`, and `Help`. On the right of the menu bar, it indicates `Mem:94 MB`. A left sidebar contains a file explorer with a search bar labeled "Filter files by name" and a list of files and folders:

Name	Last Modified
/	
Algorithm	2 months ago
Application	2 months ago
Data	15 days ago
Lecture	a day ago
Module	a month ago
Trading	a month ago

The main area is titled "Launcher" and contains three sections:

- Notebook**: A section with a Python 3 icon.
- Console**: A section with a Python 3 icon.
- Other**: A section with a terminal icon.

At the bottom of the Launcher, there are four icons for `Terminal`, `Text File`, `Markdown File`, and `Show Contextual`. The bottom status bar shows `Simple` (with a toggle), `0`, `$`, `0`, and a gear icon. The word "Launcher" is also present in the bottom right corner.

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 확장기능이 표시된 실습 예시

The screenshot shows the JupyterLab interface. On the left, the file explorer displays a tree view of the current directory structure:

- PRACTICE8_DATAANALYSIS_TSDEEPLERN
 - 1. Import Library: 분석에 사용할 모듈 설치
 - 2. TS with Deep Learning
 - 2.1. Example 1: Bitcoin Prediction
 - 2.1.1. MLP
 - 2.1.2. RNN
 - 2.1.3. LSTM
 - 2.1.4. GRU
 - 2.2. Example 2: Bike Sharing Prediction
 - 2.2.1. MLP
 - 2.2.2. RNN
 - 2.2.2.1. sequence = 1
 - 2.2.2.2. sequence = 24
 - 2.2.3. LSTM (seq=24)
 - 2.2.4. GRU (seq=24)

The main editor area shows the code for the selected file, "Practice8_DataAnalysis_TSDe". The code is as follows:

```
[1]: !python -m pip install --user --upgrade pip
Requirement already satisfied: pip in c:\users\kk\appdata\roaming\python\python38\site-packages (20.3.1)

[2]: # Ignore the warnings
import warnings
warnings.filterwarnings('always')
warnings.filterwarnings('ignore')

# System related and data input controls
import os

# Data manipulation, visualization and useful functions
import pandas as pd
pd.options.display.float_format = '{:,.2f}'.format
pd.options.display.max_rows = 50
pd.options.display.max_columns = 40
import numpy as np
from itertools import product # iterative combinations
from tqdm import tqdm
import matplotlib.pyplot as plt
import seaborn as sns

# Modelina alorithms
```

The status bar at the bottom indicates the current mode is "Command", the file is "Practice8_DataAnalysis_TSDeepLearning_KK.ipynb", and the memory usage is 201 MB.

➤ Library 모두 한번에 설치하기 → Anaconda Prompt에 하기내용 복붙

```
:: Update of PIP
pip install --upgrade pip
python -m pip install --user --upgrade pip
:: Jupyter Nbextensions
pip install jupyter_contrib_nbextensions
jupyter contrib nbextension install --user
:: Jupyter Lab
pip install jupyterlab
pip install --upgrade jupyterlab
:: Jupyter Lab Extensions Package
pip install nodejs
conda install --yes nodejs
conda install -c conda-forge --yes nodejs
:: Table of Contents
jupyter labextension install @jupyterlab/toc
:: Shortcut UI
jupyter labextension install @jupyterlab/shortcutfui
:: Variable Inspector
jupyter labextension install @lckr/jupyterlab_variableinspector
:: Go to Definition of Module
jupyter labextension install @krassowski/jupyterlab_go_to_definition
jupyter labextension install @jupyter-widgets/jupyterlab-manager
jupyter labextension install lineup_widget
:: Connection to Github
jupyter labextension install @jupyterlab/github
:: CPU+RAM Monitor
pip install nbresuse
jupyter labextension install jupyterlab-topbar-extension jupyterlab-
system-monitor
:: File Tree Viewer
jupyter labextension install jupyterlab_filetree
:: Download Folder as Zip File
conda install --yes jupyter-archive
:: Jupyter to Slide
pip install RISE
jupyter-nbextension install rise --py --sys-prefix
jupyter-nbextension enable rise --py --sys-prefix
conda install -c damianavila82 rise --yes
:: Build
jupyter lab build
jupyter labextension update --all
:: End
```

:: Interactive Visualization



Thank You

Q&A