통합개발환경에서 코딩하기

소프트웨어개발단 박경규

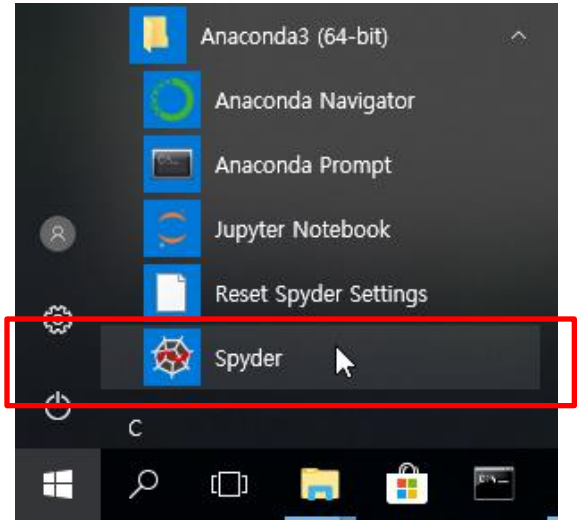
목차

학습목표

- 통합개발 환경 프로그램의 기능을 알아보고, IDE로 코딩하는 방법을 이해한다.
- 주피터 노트북으로 코딩하는 방법을 익힌다.
- 구글 Colaboratory로 코딩을 하는 방법과 공유를 하는 방법을 설명할 수 있다.

통합개발환경

- 통합개발 환경(IDE : Integrated Development Environment)은 코드 작성, 테스트, 컴파일, 디버깅 등 프로그램 개발에 관련된 여러 작업을 하나의 프로그램 안에서 처리하는 환경을 제공하는 소프트웨어입니다.
- 아나콘다 배포판에는 Spyder가 포함되어 있으며, Spyder는 과학자, 엔지니어 및 데이터 분석가가 설계한 강력한 IDE입니다.
- Spyder 실행 : 윈도우 시작메뉴 > Anaconda3 > Spyder



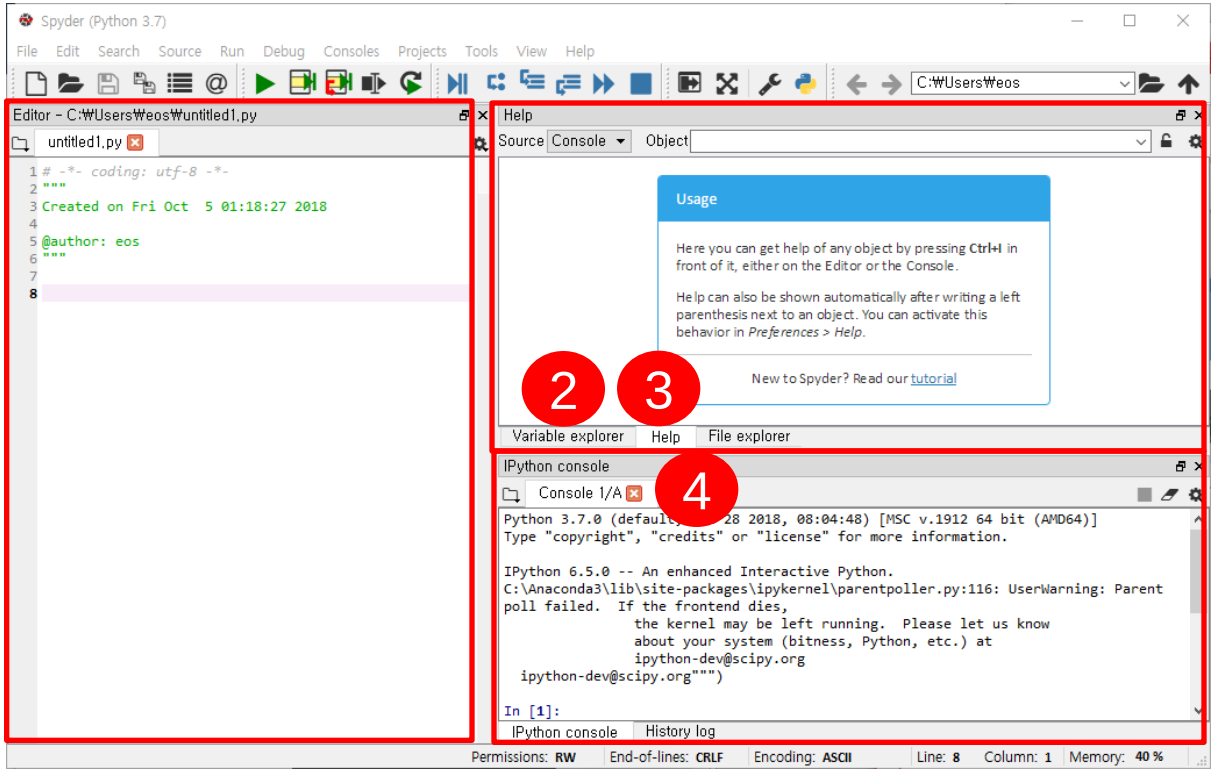
Spyder

① 에디터(Editor) : 코드를 편집하고 저장하는 에디터

② 변수탐색기(Variable explorer) : 변수(Variable)에 저장된 데이터를 표시

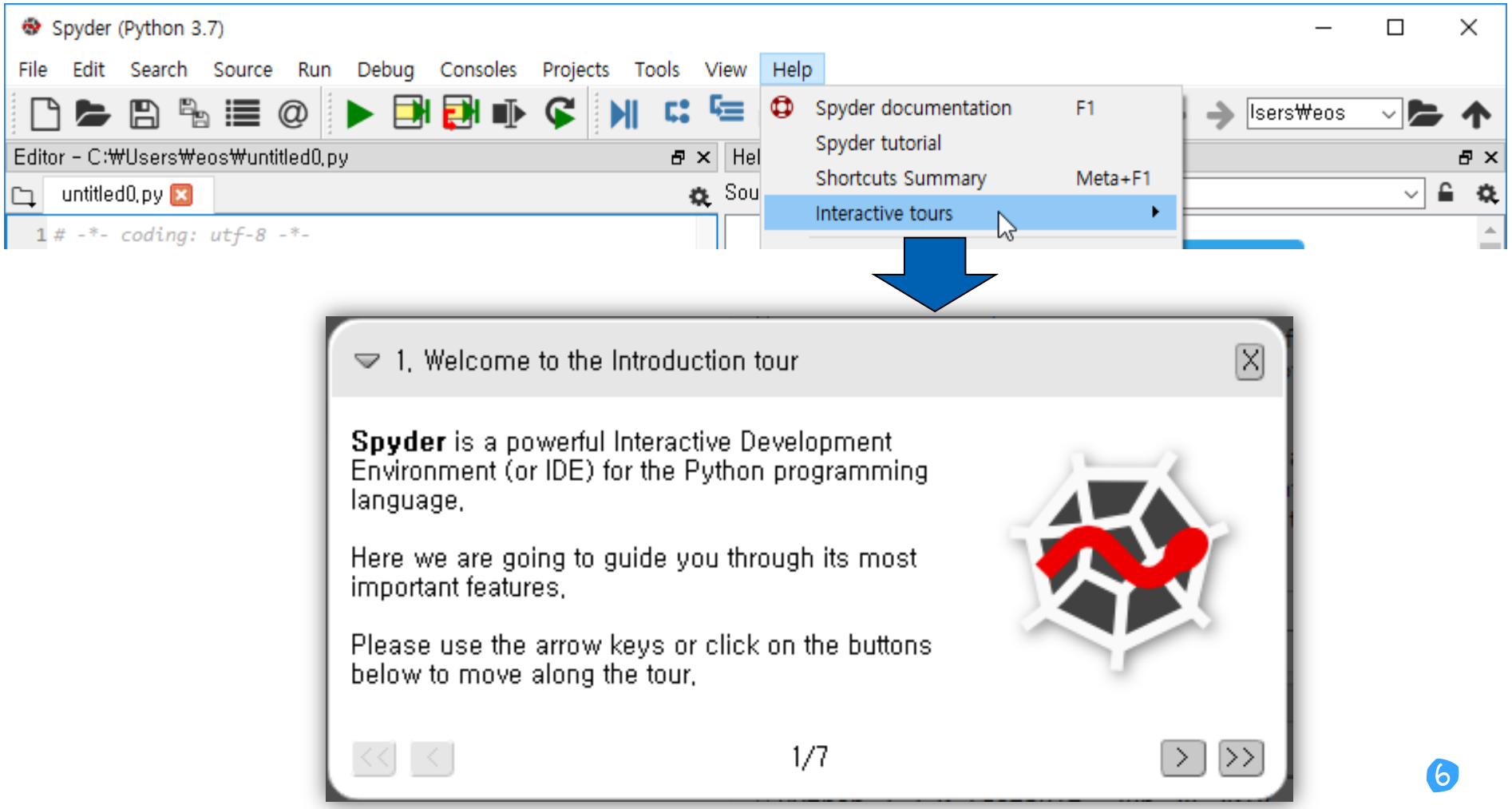
③ 도움말(Help) : 에디터, 콘솔에서 코드를 선택하고 Ctrl+I 키 클릭

④ IPython 콘솔(Ipython console) : 실행 결과 표시, 코드를 입력하고 실행

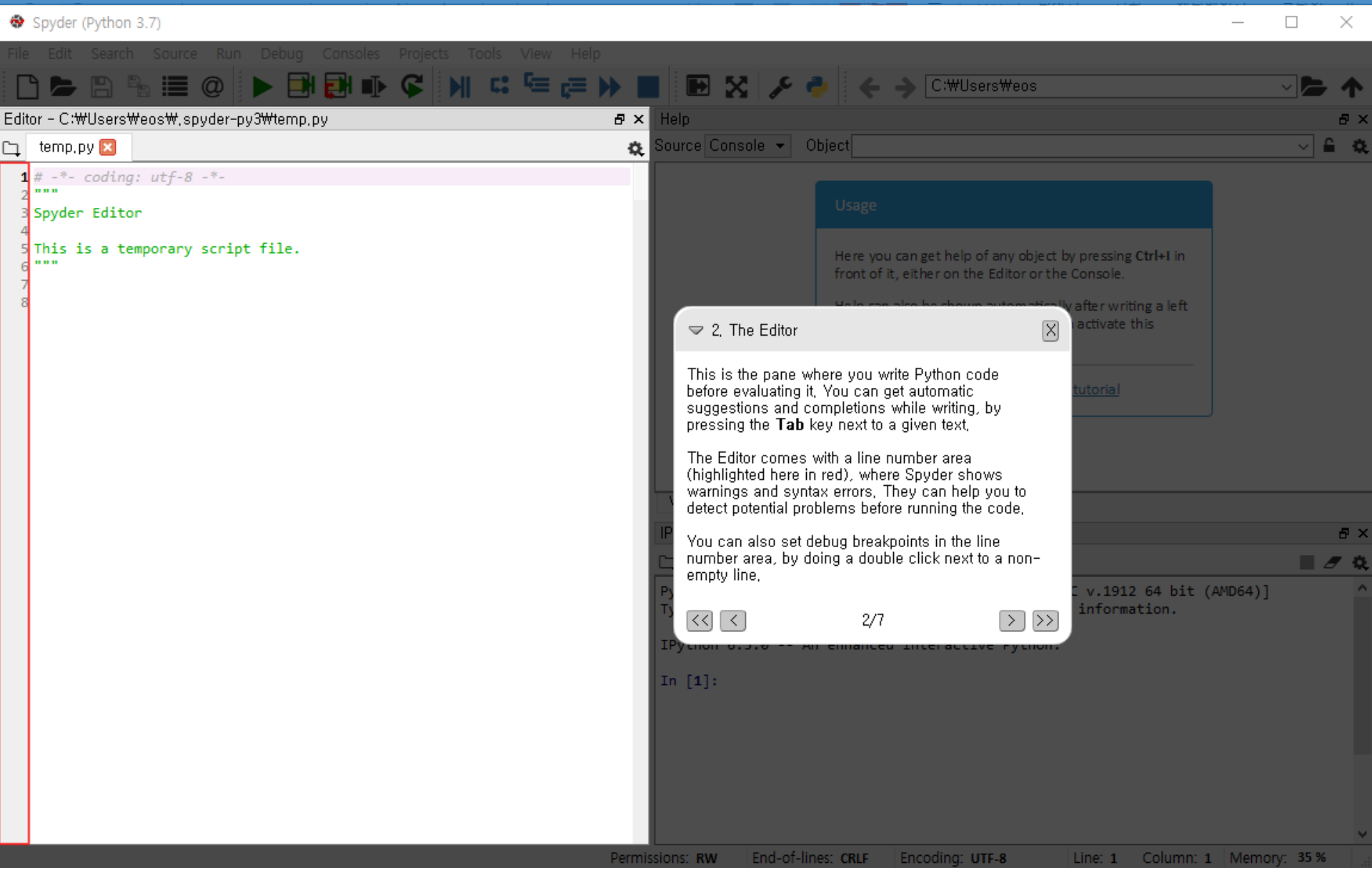


Spyder 기능

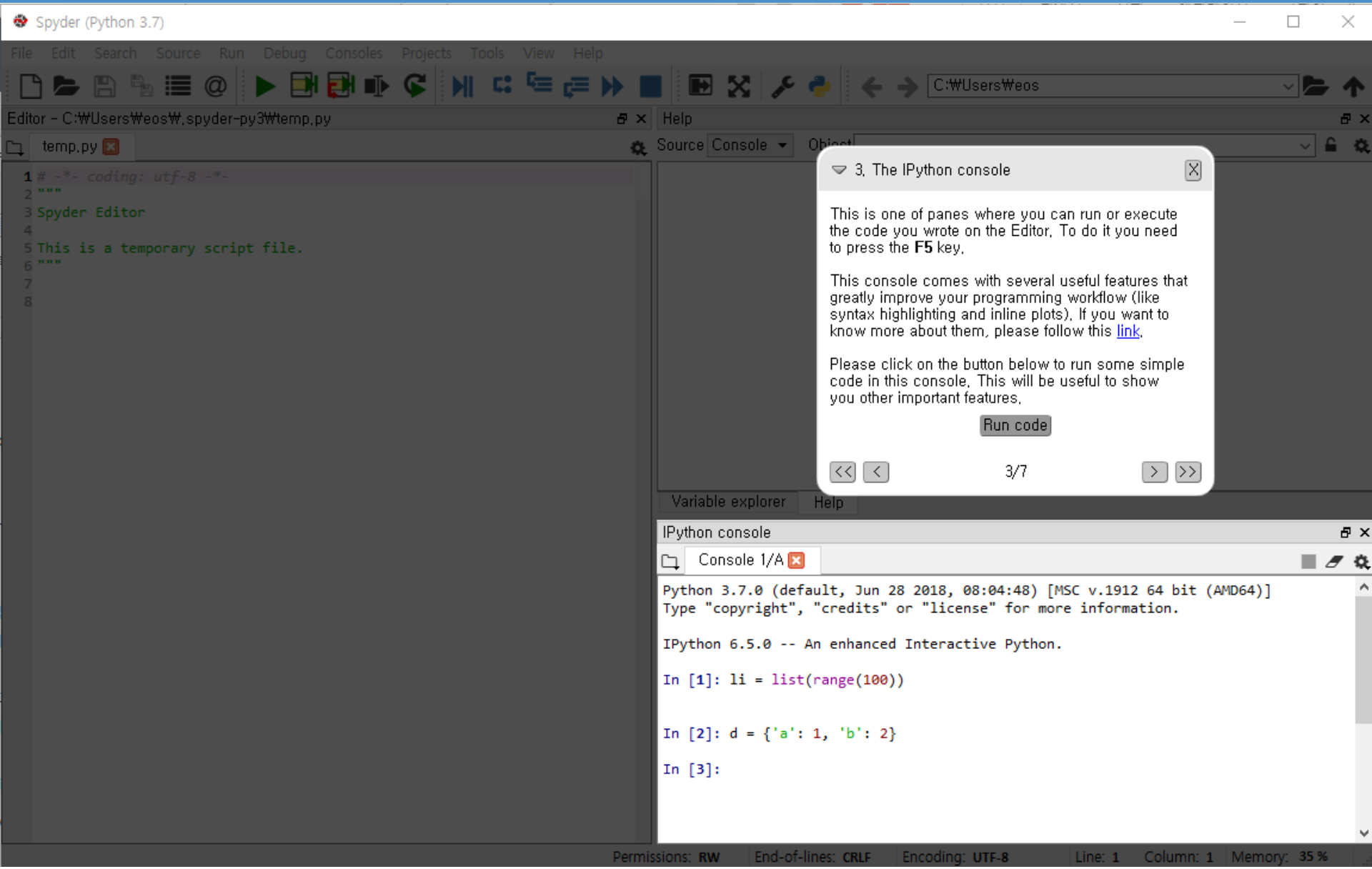
Spyder 메뉴에서 [Help > Interactive tours > Introduction tour] 선택



에디터


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:₩Users₩eos
Editor - C:₩Users₩eos₩.spyder-py3₩temp.py
temp.py
-*- coding: utf-8 -*-
"""
Spyder Editor
This is a temporary script file.
"""
Help
Source Console Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either on the Editor or the Console.
2. The Editor
This is the pane where you write Python code before evaluating it. You can get automatic suggestions and completions while writing, by pressing the Tab key next to a given text.
The Editor comes with a line number area (highlighted here in red), where Spyder shows warnings and syntax errors. They can help you to detect potential problems before running the code.
You can also set debug breakpoints in the line number area, by doing a double click next to a non-empty line.
2/7
v.1912 64 bit (AMD64)]
information.
In [1]:
Permissions: RW
End-of-lines: CRLF
Encoding: UTF-8
Line: 1
Column: 1
Memory: 35 %

IPython 콘솔

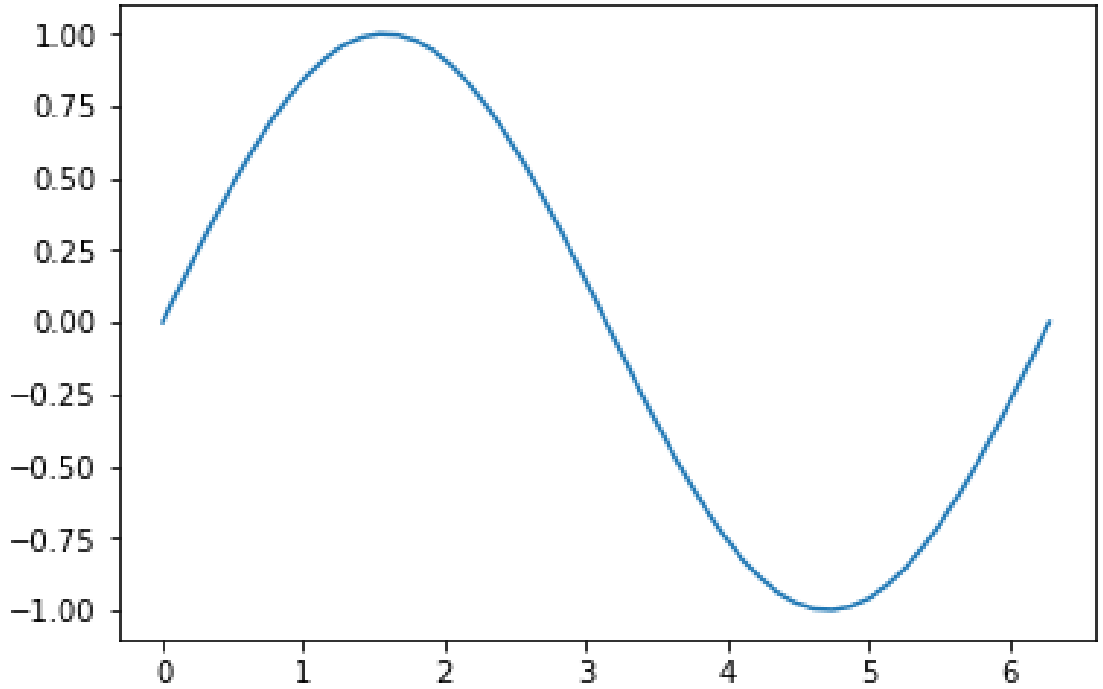

Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:₩Users₩eos
Editor - C:₩Users₩eos₩.spyder-py3₩temp.py
temp.py
-*- coding: utf-8 -*-
"""
Spyder Editor
This is a temporary script file.
"""
Help
Source Console
3. The IPython console
This is one of panes where you can run or execute the code you wrote on the Editor. To do it you need to press the F5 key.
This console comes with several useful features that greatly improve your programming workflow (like syntax highlighting and inline plots). If you want to know more about them, please follow this link.
Please click on the button below to run some simple code in this console. This will be useful to show you other important features.
Run code
3/7
Variable explorer Help
IPython console
Console 1/A
Python 3.7.0 (default, Jun 28 2018, 08:04:48) [MSC v.1912 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.
IPython 6.5.0 -- An enhanced Interactive Python.
In [1]: li = list(range(100))
In [2]: d = {'a': 1, 'b': 2}
In [3]:
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 35 %

IPython 콘솔

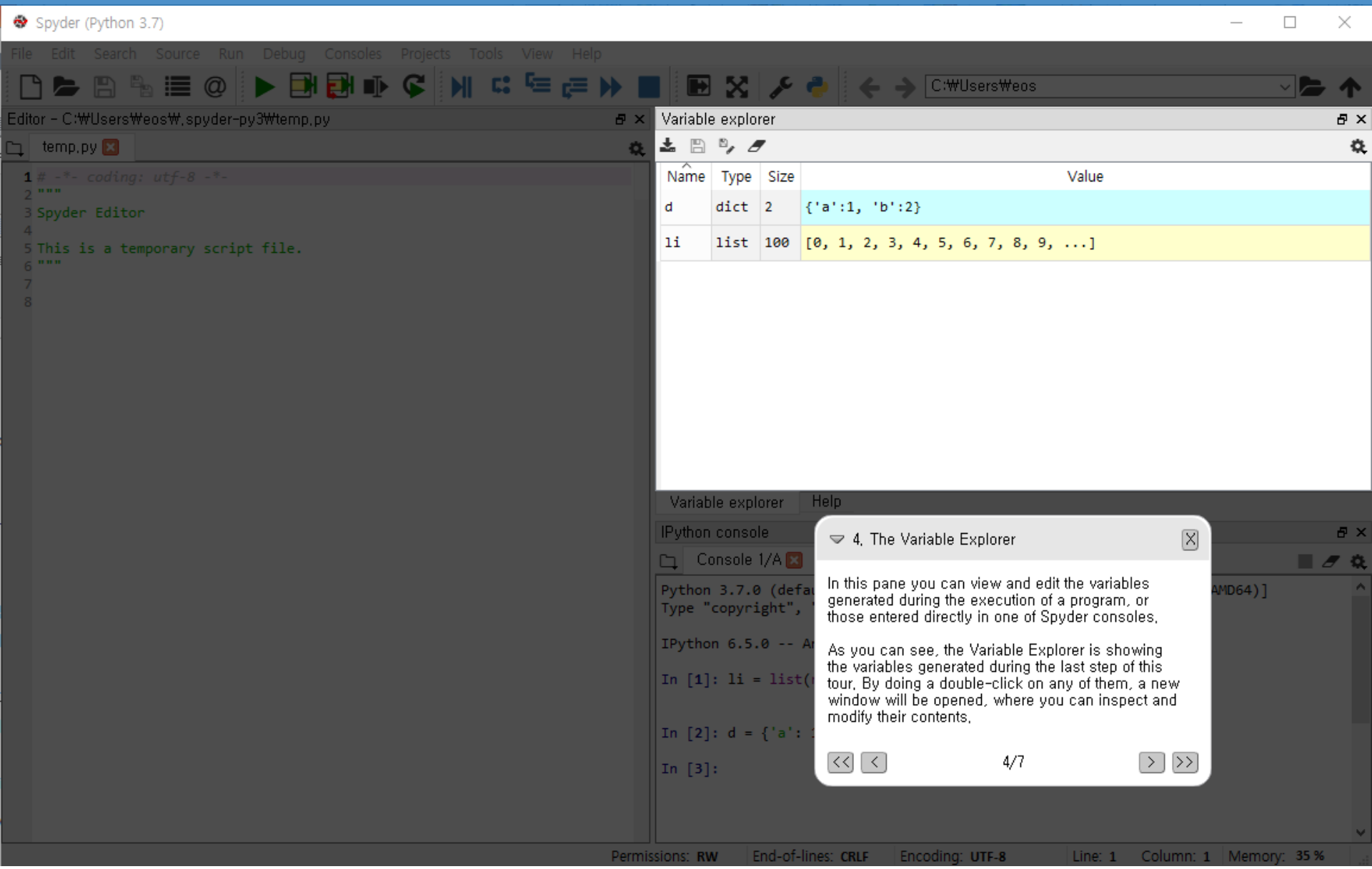
IPython console

Console 1/A

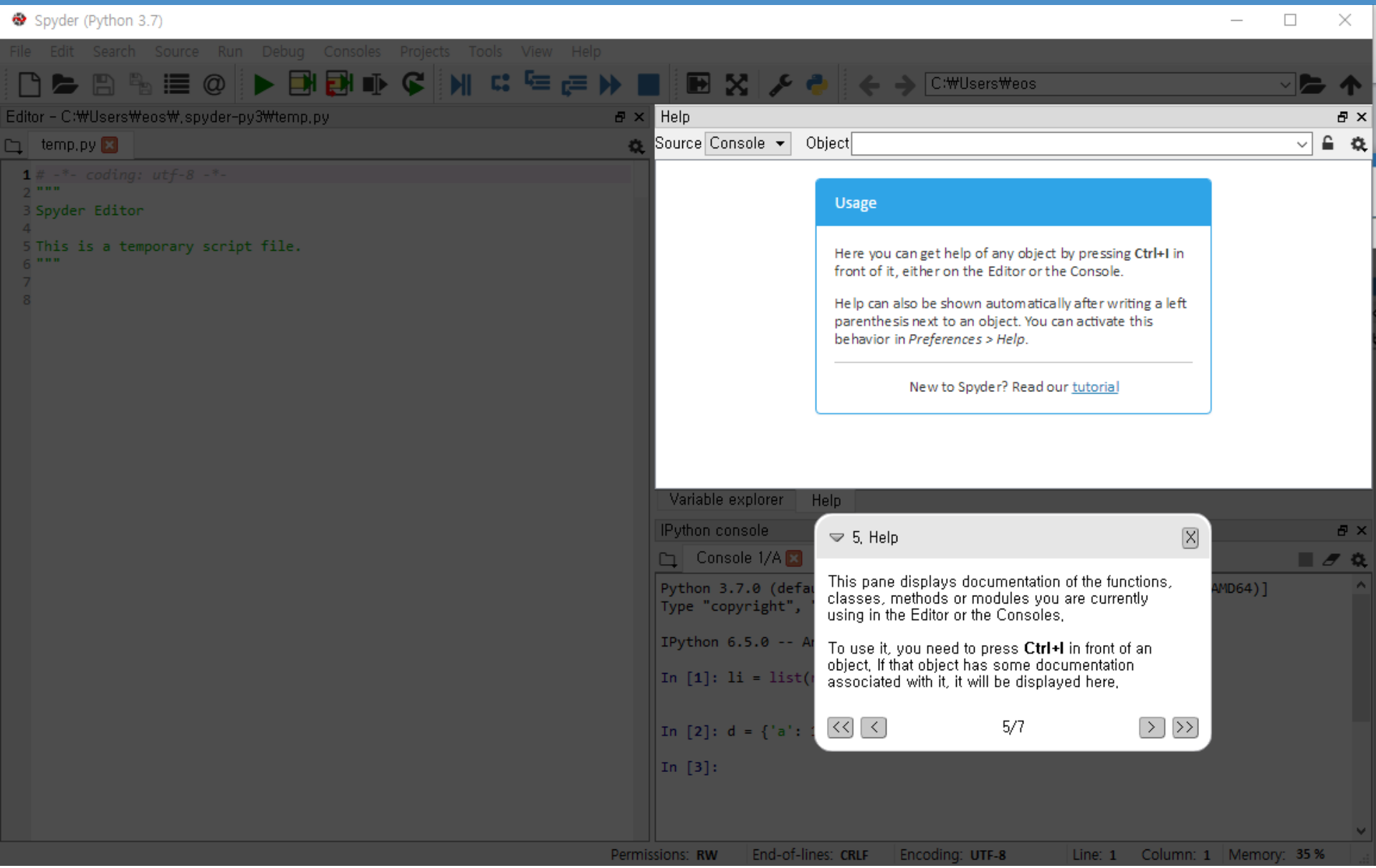
```
In [1]: import numpy as np

In [2]: import matplotlib.pyplot as plt

In [3]: x = np.linspace(0, 2*np.pi)

In [4]: y = np.sin(x)

In [5]: plt.plot(x, y)
Out[5]: [<matplotlib.lines.Line2D at 0x22a18c00080>]
```



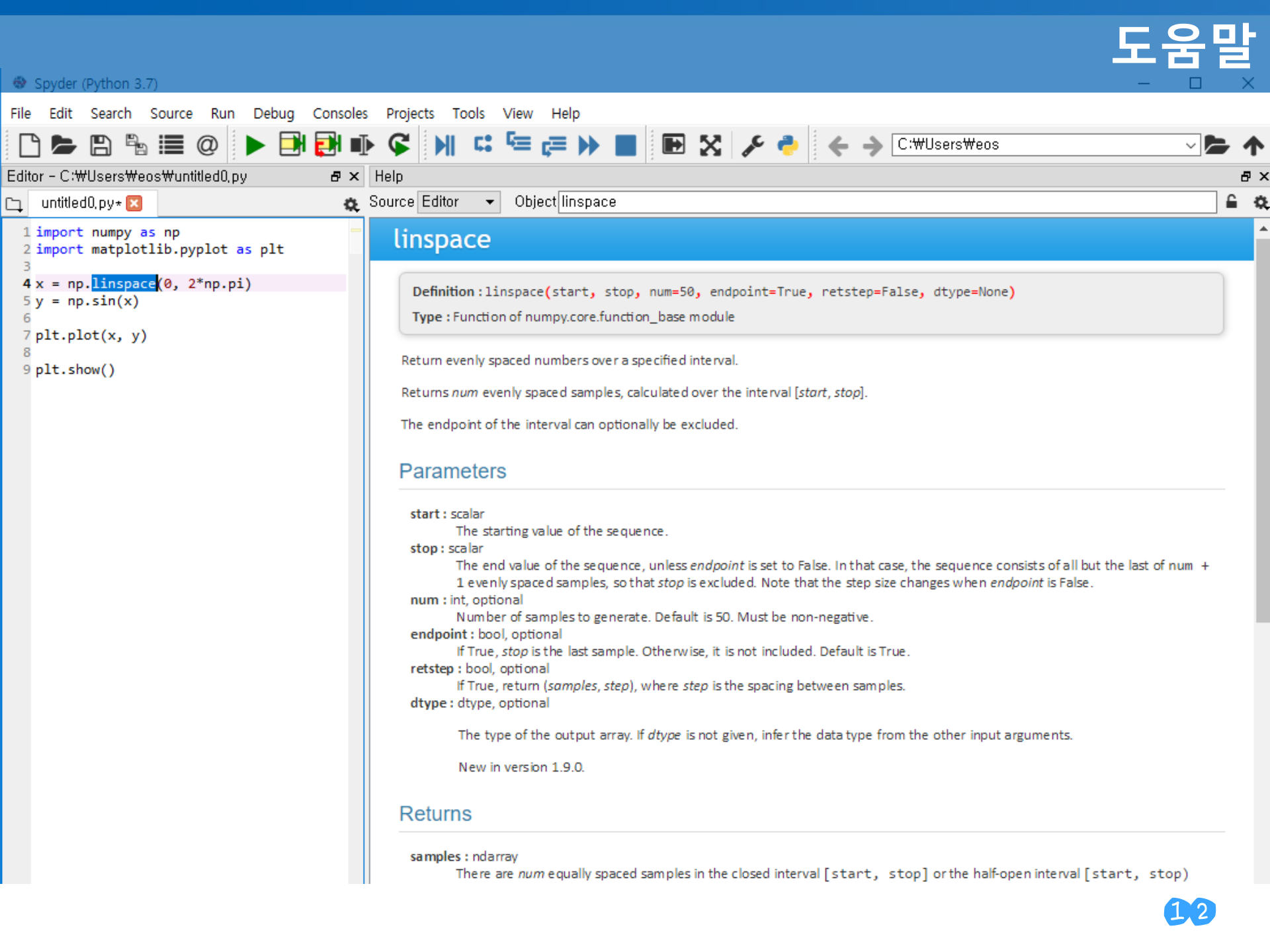
변수 탐색기


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:₩Users₩eos
Editor - C:₩Users₩eos₩.spyder-py3₩temp.py
temp.py
1 # -*- coding: utf-8 -*-
2 """
3 Spyder Editor
4
5 This is a temporary script file.
6 """
7
8
Variable explorer
Name Type Size Value
d dict 2 {'a':1, 'b':2}
li list 100 [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ...]
Variable explorer Help
IPython console
Console 1/A
Python 3.7.0 (defa
Type "copyright",
IPython 6.5.0 -- A
In [1]: li = list(
In [2]: d = {'a':
In [3]:
AMD64)]
4. The Variable Explorer
In this pane you can view and edit the variables generated during the execution of a program, or those entered directly in one of Spyder consoles.
As you can see, the Variable Explorer is showing the variables generated during the last step of this tour. By doing a double-click on any of them, a new window will be opened, where you can inspect and modify their contents.
4/7
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 35 %

도움말

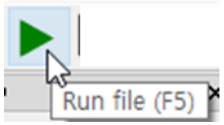

Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:₩Users₩eos
Editor - C:₩Users₩eos₩.spyder-py3₩temp.py
temp.py
-*- coding: utf-8 -*-
"""
Spyder Editor
This is a temporary script file.
"""
Help
Source Console Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either on the Editor or the Console.
Help can also be shown automatically after writing a left parenthesis next to an object. You can activate this behavior in Preferences > Help.
New to Spyder? Read our tutorial
Variable explorer Help
IPython console
Console 1/A
Python 3.7.0 (defa
Type "copyright",
IPython 6.5.0 -- A
In [1]: li = list(
In [2]: d = {'a':
In [3]:
AMD64)]
5. Help
This pane displays documentation of the functions, classes, methods or modules you are currently using in the Editor or the Consoles.
To use it, you need to press Ctrl+I in front of an object. If that object has some documentation associated with it, it will be displayed here.
5/7
Permissions: RW End-of-lines: CRLF Encoding: UTF-8 Line: 1 Column: 1 Memory: 35 %

도움말


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
C:₩Users₩eos
Editor - C:₩Users₩eos₩untitled0.py
untitled0.py*
1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 x = np.linspace(0, 2*np.pi)
5 y = np.sin(x)
6
7 plt.plot(x, y)
8
9 plt.show()
Help
Source Editor
Object linspace
linspace
Definition : linspace(start, stop, num=50, endpoint=True, retstep=False, dtype=None)
Type : Function of numpy.core.function_base module
Return evenly spaced numbers over a specified interval.
Returns num evenly spaced samples, calculated over the interval [start, stop].
The endpoint of the interval can optionally be excluded.
Parameters
start : scalar
The starting value of the sequence.
stop : scalar
The end value of the sequence, unless endpoint is set to False. In that case, the sequence consists of all but the last of num + 1 evenly spaced samples, so that stop is excluded. Note that the step size changes when endpoint is False.
num : int, optional
Number of samples to generate. Default is 50. Must be non-negative.
endpoint : bool, optional
If True, stop is the last sample. Otherwise, it is not included. Default is True.
retstep : bool, optional
If True, return (samples, step), where step is the spacing between samples.
dtype : dtype, optional
The type of the output array. If dtype is not given, infer the data type from the other input arguments.
New in version 1.9.0.
Returns
samples : ndarray
There are num equally spaced samples in the closed interval [start, stop] or the half-open interval [start, stop)

Spyder로 코딩하기

① 에디터에 아래 코드를 입력하고 sine_graph.py로 저장합니다.

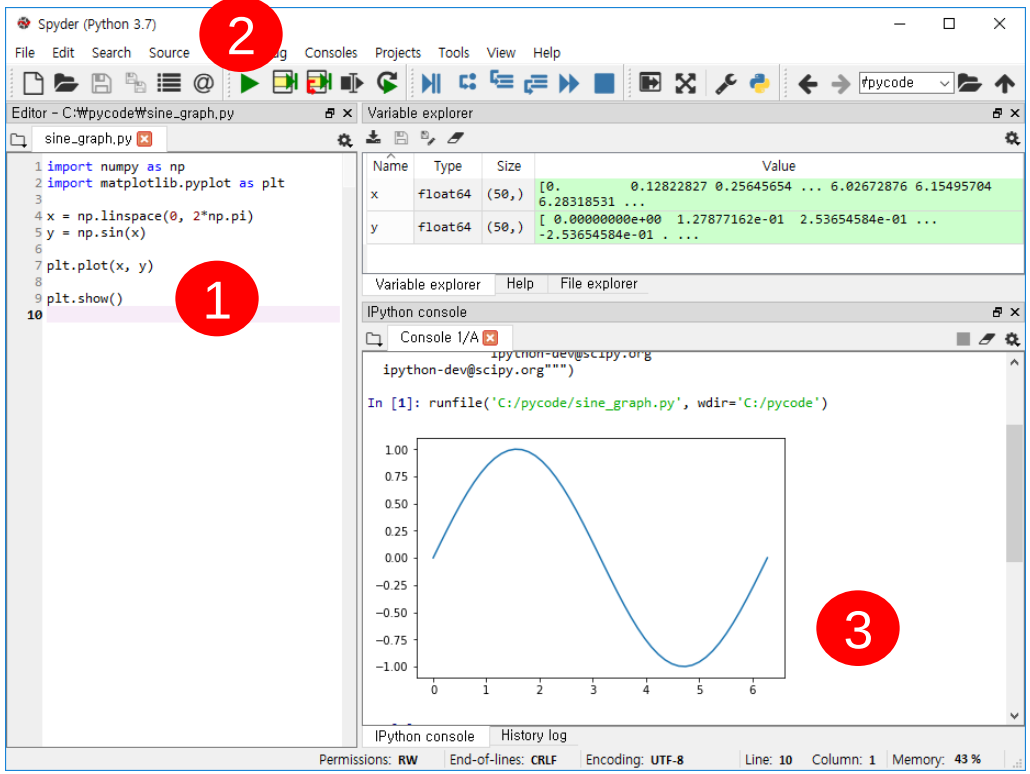
② 실행버튼 

클릭 또는 F5키 눌러서 프로그램을 실행합니다.

③ 실행결과는 IPython 콘솔에 나타납니다.

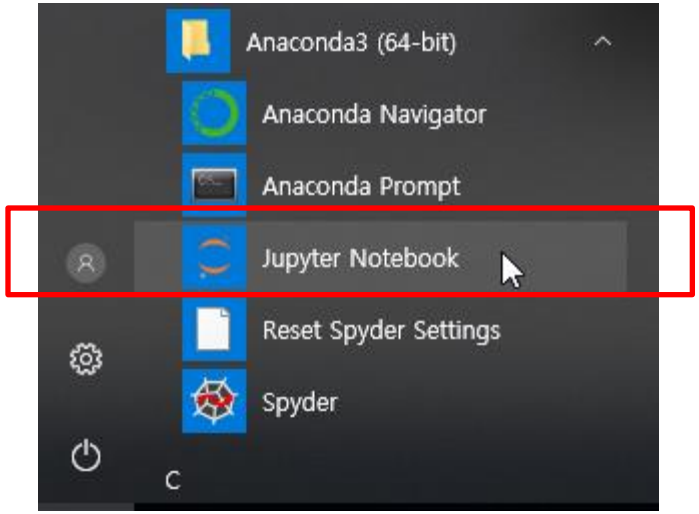
코드

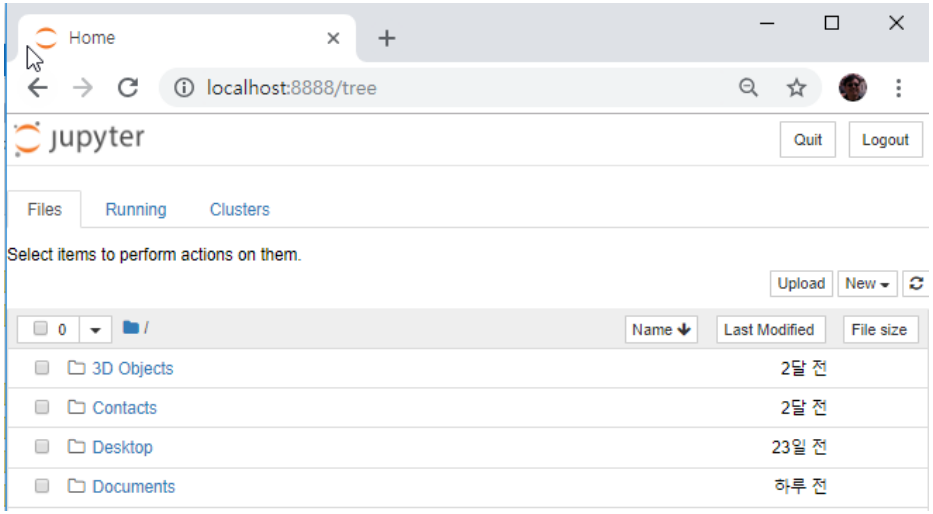
```
import numpy as np
import matplotlib.pyplot as plt

x = np.linspace(0, 2*np.pi)
y = np.sin(x)

plt.plot(x, y)

plt.show()
```



주피터 노트북

- 아나콘다 배포판에 웹브라우저 프로그램으로 코딩을 할 수 있게 하는 주피터 노트북(Jupyter Notebook)이 포함되어 있습니다.
- 주피터 노트북에서는 코드 작성, 실행, 설명문 작성, 시각화, 공유가 편리해 교육, 과학, 공학, 데이터분석 분야에서 많이 이용하고 있습니다.
- Jupyter 실행 : 윈도우 시작메뉴 > Anaconda3 > Jupyter Notebook





주피터 노트북

실습 편의를 위해 주피터노트북 작업폴더를 c:₩pycode 로 변경하겠습니다.

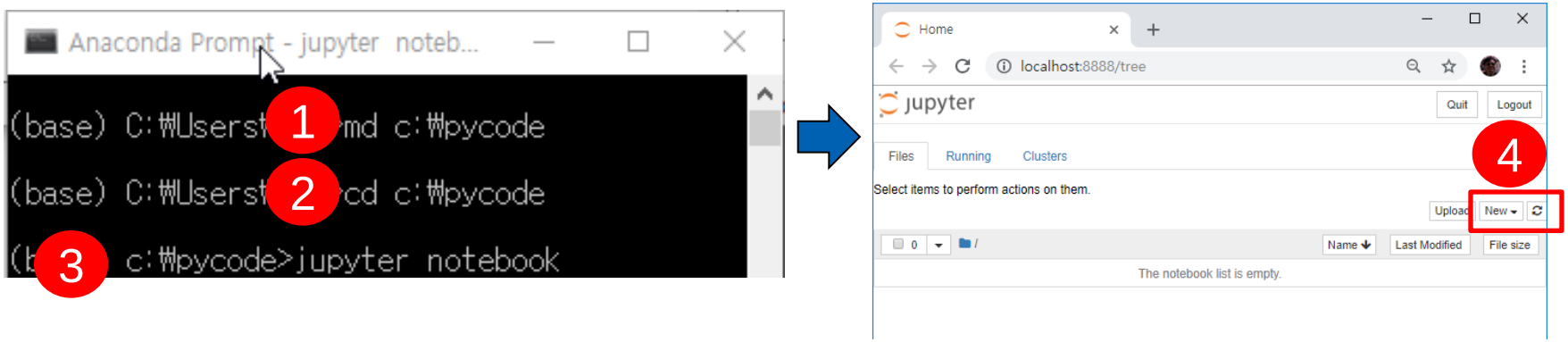
윈도우 시작메뉴에서 [Anaconda3 > Anaconda Prompt] 를 클릭하세요.

① 작업폴더 생성 : md c:₩pycode

② 작업폴더로 이동 : cd c:₩pycode

③ 주피터 노트북 실행 : 프롬프트에서 jupyter notebook 입력

④ 새파일 만들기 : 주피터 노트북 오른쪽 위에서 [New > Python3] 클릭



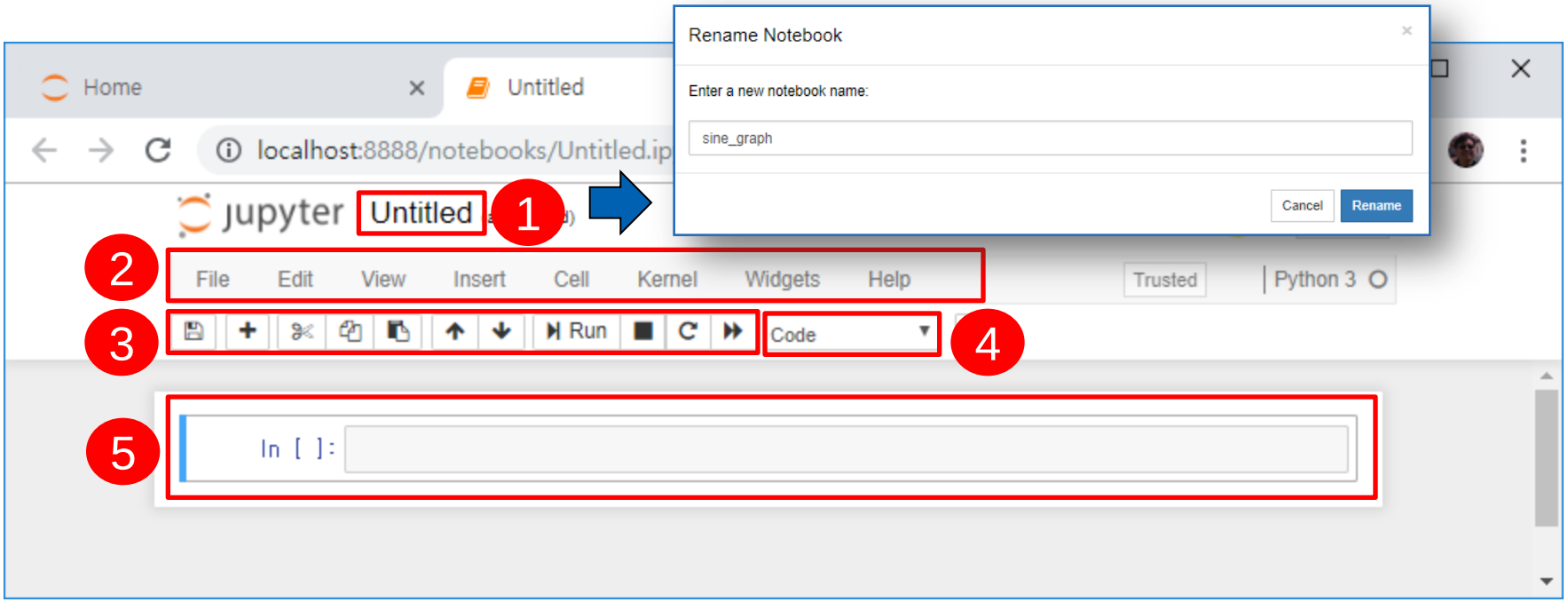
주피터 노트북 기능

① 노트북 이름 : 노트북 이름을 클릭하고 팝업창에서 제목(파일명) 수정

② 메뉴바 ③ 툴바 : 메뉴에서 많이 사용하는 기능을 아이콘으로 표시

④ 셀타입 : 셀타입 선택, Code : 코드, Markdown : 설명문

⑤ 셀(Cell) : 파이썬 코드와 문자를 입력



주피터 노트북 기능

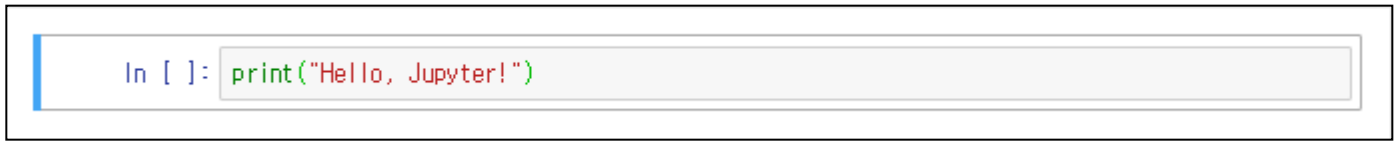
① 편집모드(Edit mode) : Enter 키를 누르거나 마우스로 셀을 클릭하여 코드와 문서를 입력할 수 있습니다. 셀 왼쪽 막대가 녹색으로 표시됨

② 명령모드(Command mode) : 편집모드에서 Esc 키를 누르거나 셀 바깥 부분을 클릭하면 명령모드가 됩니다. 셀 왼쪽 막대가 파란색으로 표시됨

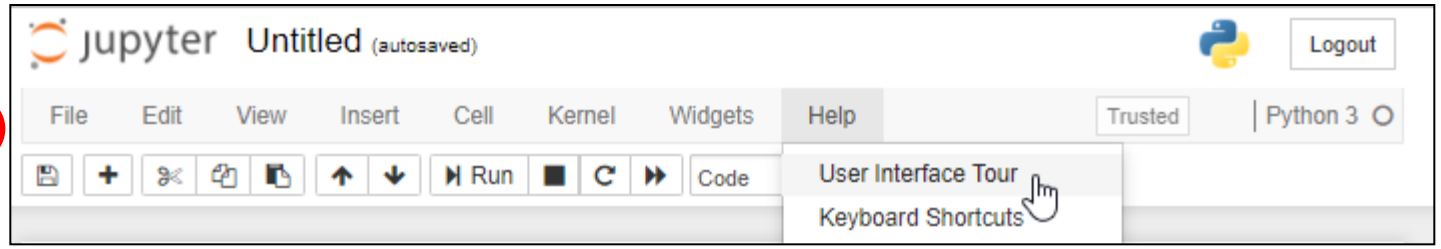
③ 인터페이스, 단축키 : [Help > User Interface Tour, Keyboard Shortcuts]

1

2



3



주피터 노트북으로 코딩하기

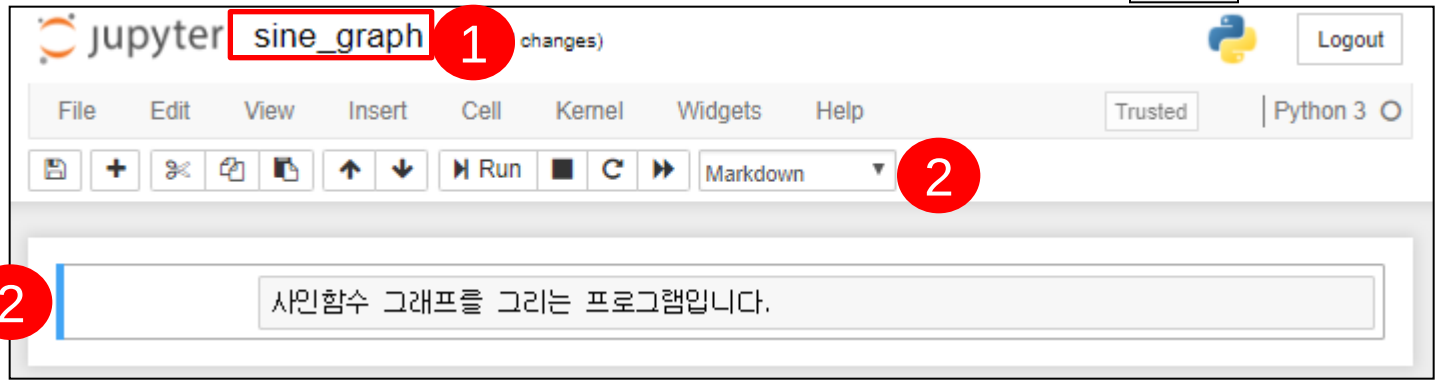
① 노트북 이름을 클릭하여 sine_graph로 수정합니다.

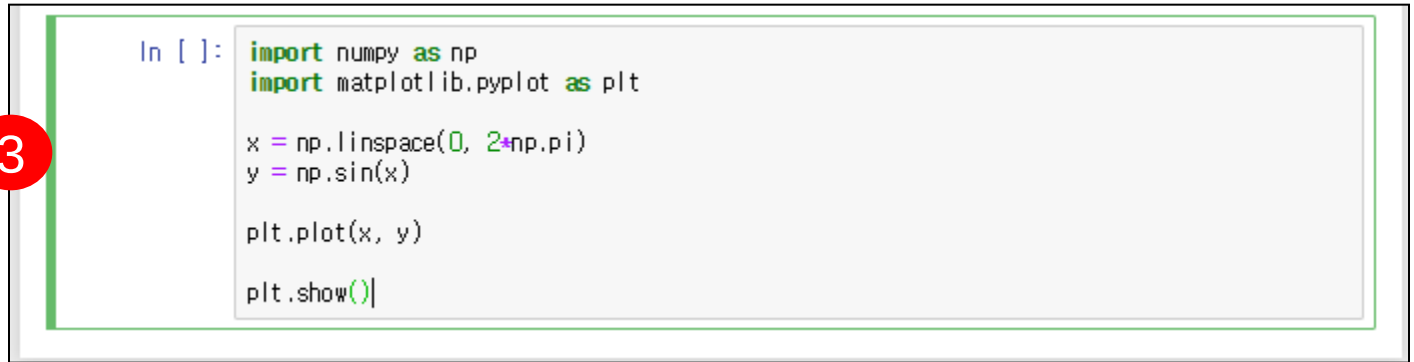
② 셀타입을 Markdown으로 선택하고 설명문을 입력합니다.

Shift + Enter키를 눌러서 셀을 추가합니다.

③ 사인 그래프를 그리는 코드를 입력하고 실행아이콘 

을 클릭하세요.

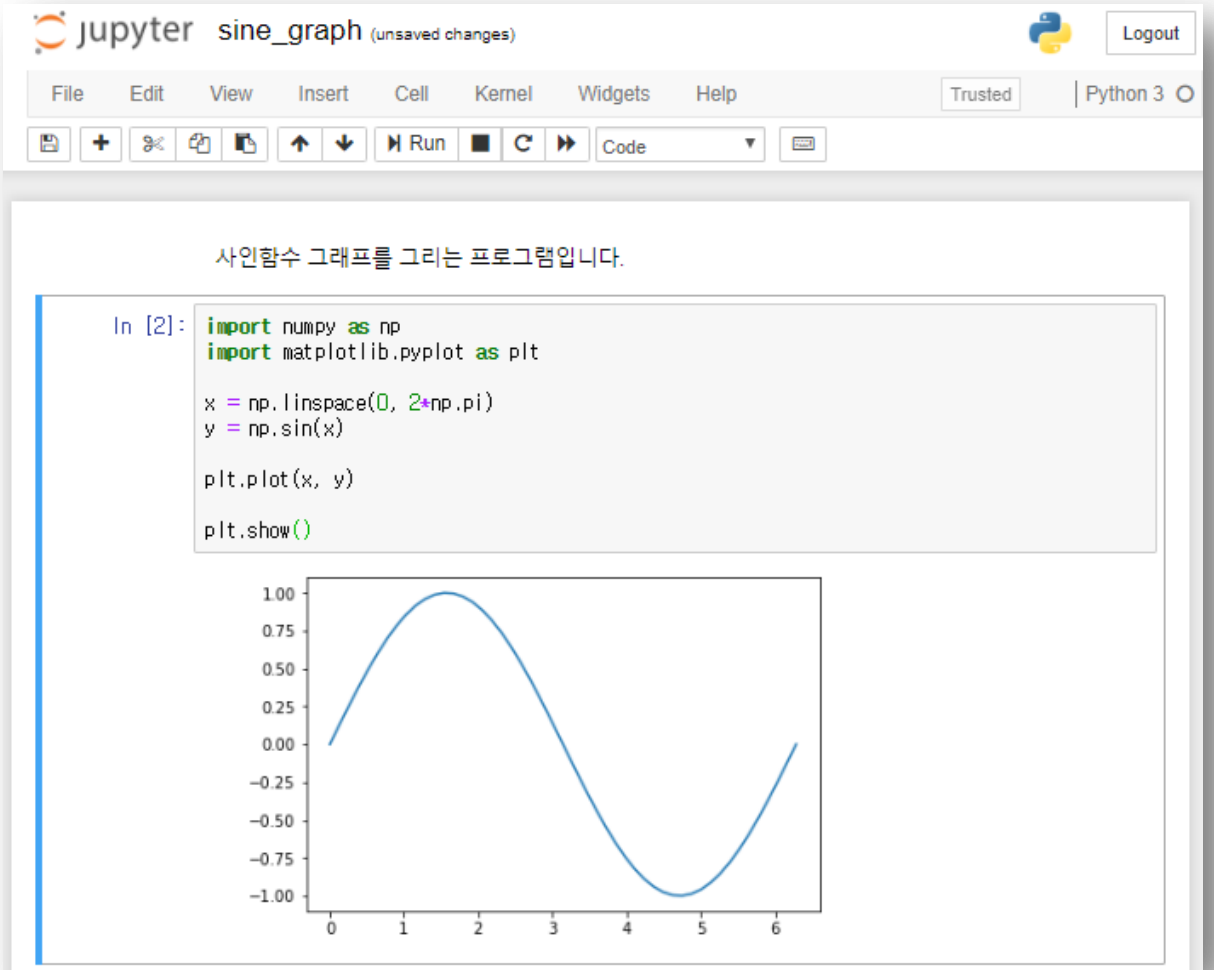




주피터 노트북으로 코딩하기

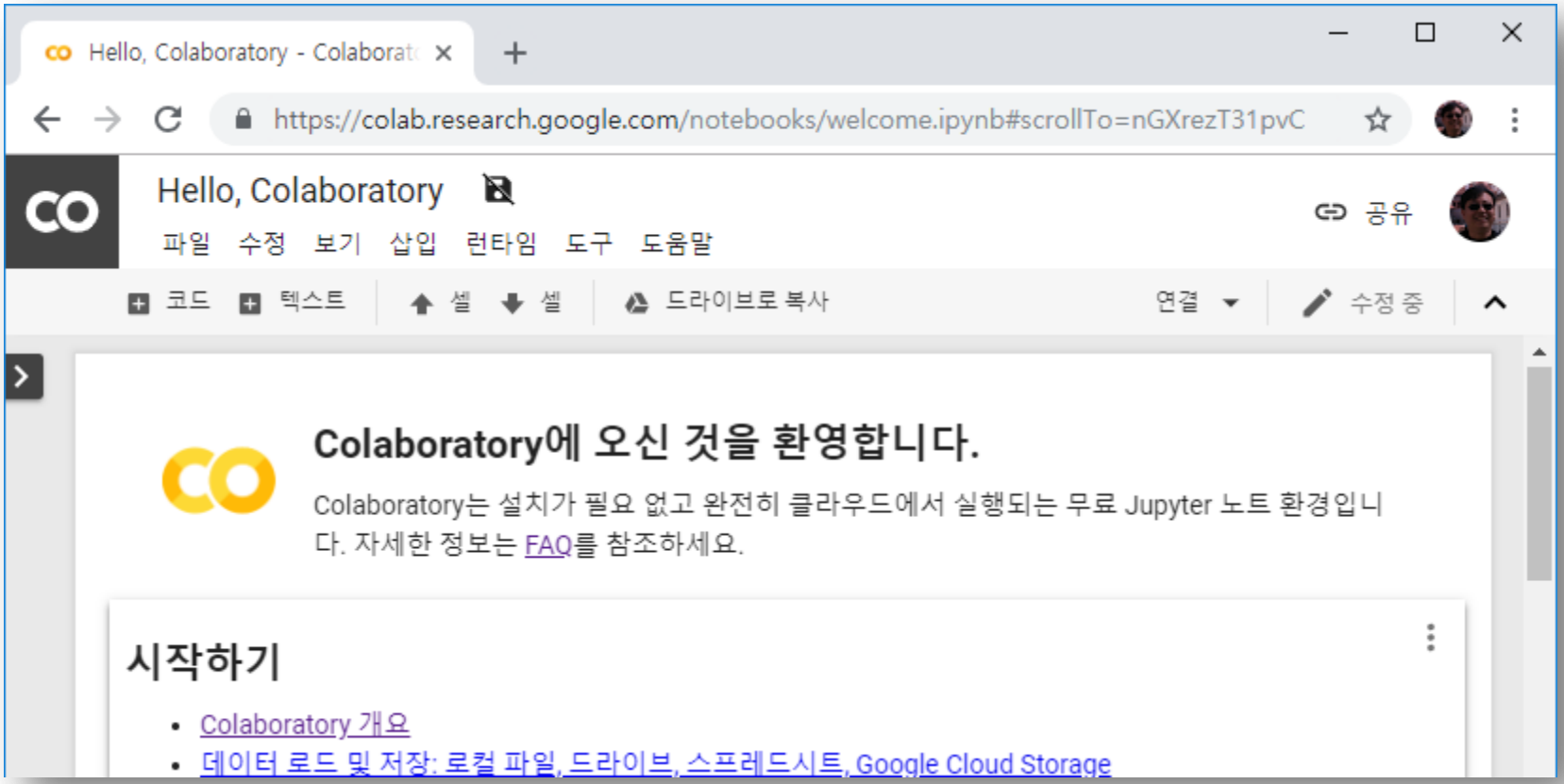
- 툴바에서 실행아이콘 

클릭 또는 Shift + Enter키를 눌러서 코드를 실행하세요. 그래프가 표시되지 않으면 실행아이콘을 다시 클릭하세요.



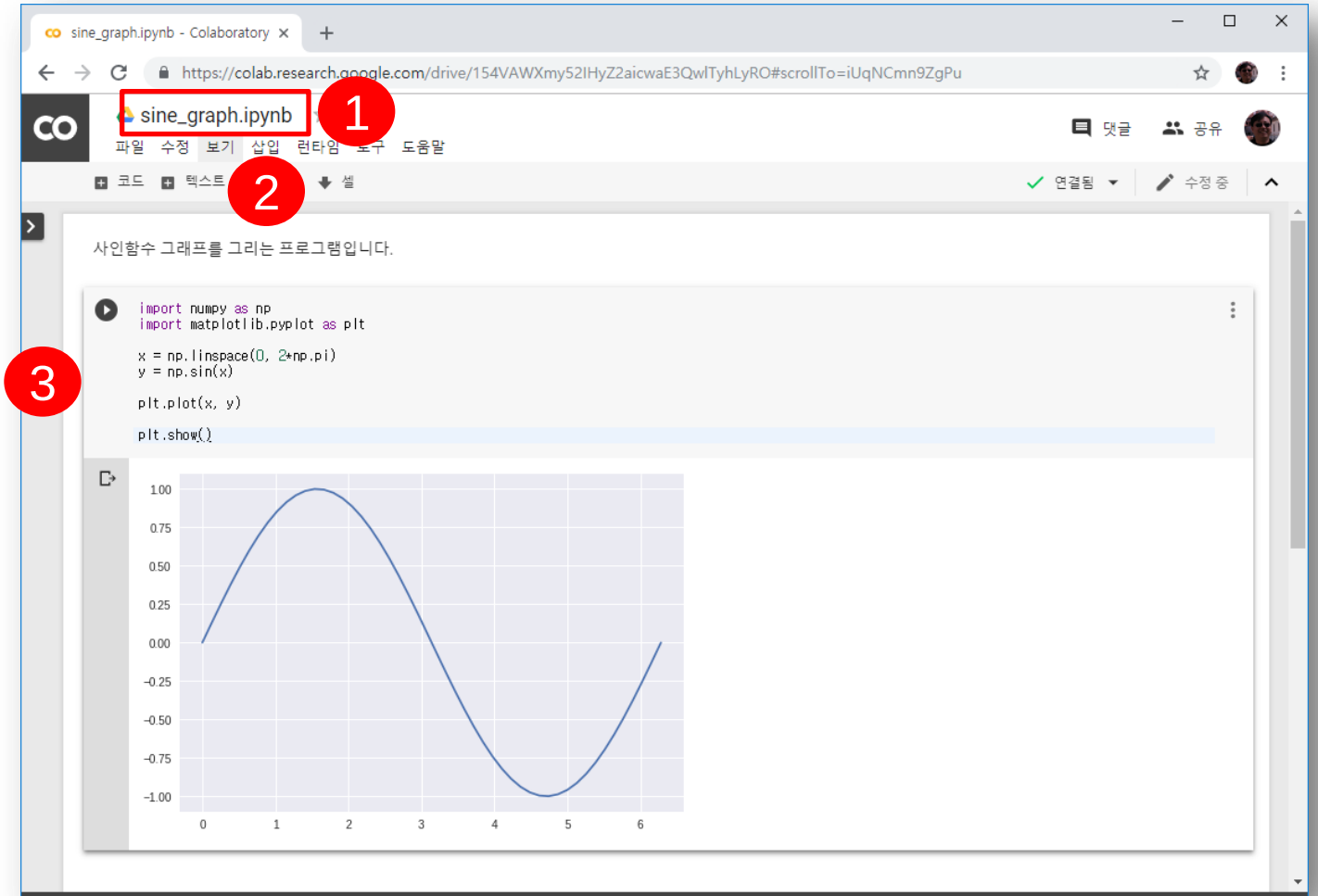
구글 Colaboratory

- 웹브라우저로 https://colab.research.google.com/ 에 접속하세요.
- 별도의 프로그램 설치 없이 무료이며 구글계정이 필요합니다.
- 사용법은 주피터 노트북과 유사하며, 공유와 협업이 편리합니다.



Colaboratory로 코딩하기

- 주피터 노트북으로 작성한 코드를 입력하고 실행을 해 보세요.
- ① sine_graph.ipynb 로 이름 수정 ② 텍스트(설명문) 입력 ③ 코드 입력



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