

# ADVANCED TEXT MINING

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by FINGEREDMAN ([fingeredman@gmail.com](mailto:fingeredman@gmail.com))

APPENDIX 01

# Lecture Guide

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## Participation

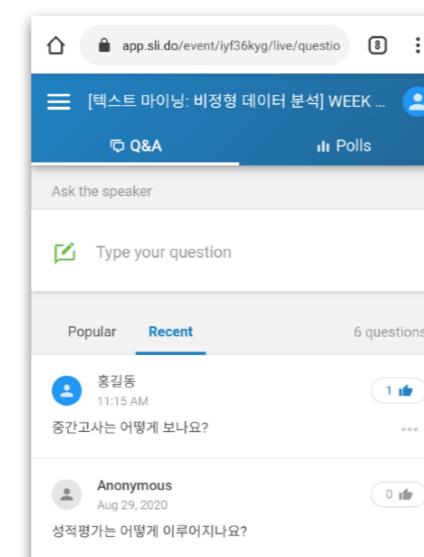
Q&A, Survey, Quiz

with SLIDO

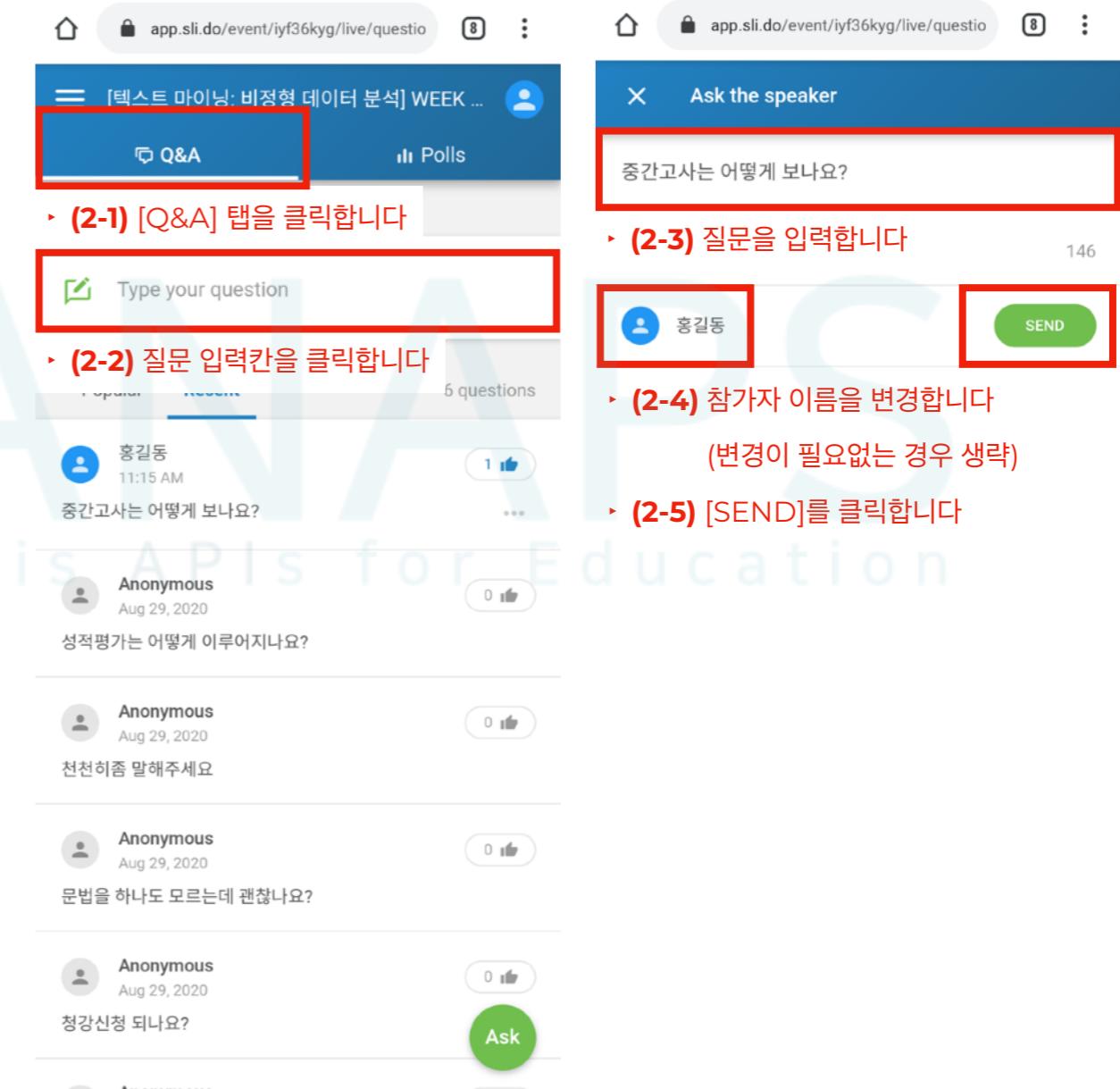
<https://sli.do>

# Q&A, Quiz, Survey with Slido

## Slido 접속하기 (PC, 모바일 모두 가능)



## Q&A 참여하기



# Q&A, Quiz, Survey with Slido

## Survey 참여하기

The screenshot shows a poll titled "Python 언어를 접해본 경험이 있나요?" with two options: "있다." (Yes) and "없다." (No). The "No" option is selected. A red box highlights the "Polls" tab at the top of the screen. Below the poll, a red box highlights the "SEND" button.

- (3-1) [Polls] 탭을 클릭합니다
- (3-2) 현재 진행중인 설문에 답변을 선택합니다
- (3-3) [SEND]를 클릭해 답변을 제출합니다
- (3-4) 답변 수정이 필요한 경우 [EDIT RESPONSE]를 클릭합니다

## Quiz 참여하기

The screenshot shows a poll titled "데이터 분석을 해본 경험이 있나요?" with two options: "없다." (No) and "있다.". The "No" option is selected. A red box highlights the "Polls" tab at the top of the screen. Below the poll, a red box highlights the "JOIN" button. A message box on the right says "Get ready, 홍길동! 1 user has already joined".

- (4-1) [Polls] 탭을 클릭합니다
- (4-2) 참가자 이름을 변경합니다  
(변경이 필요없는 경우 생략)
- (4-3) [JOIN]를 클릭합니다
- (4-4) 진행자가 퀴즈를 시작할때 까지 대기합니다

# Q&A, Quiz, Survey with Slido

# Quiz 참여하기 - 정답체크 및 결과확인

The screenshots illustrate the following steps:

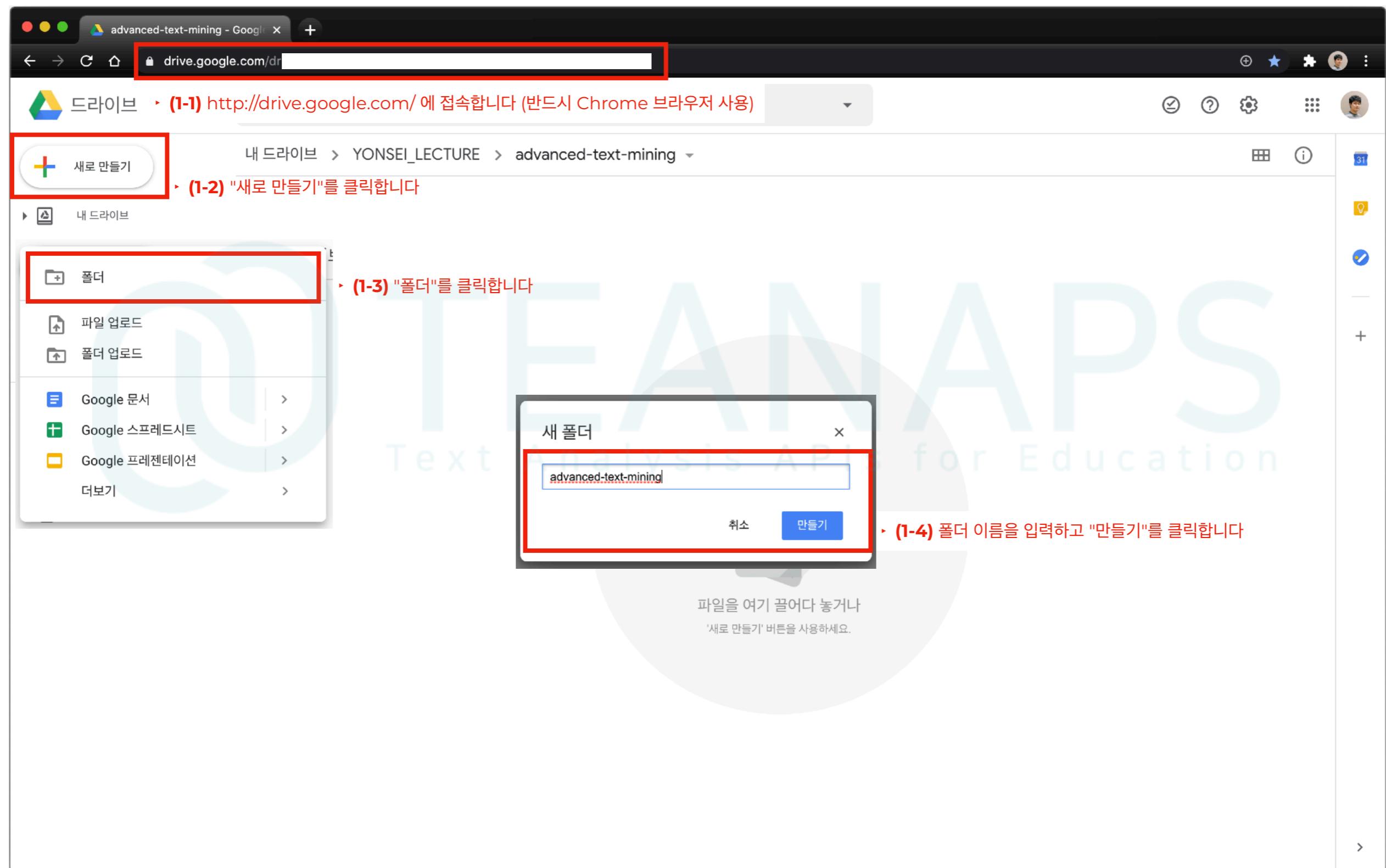
- (4-5) 현재 진행중인 설문에 답변을 선택합니다**
- (4-6) [SEND]를 클릭해 답변을 제출합니다**
- (4-7) 정답을 확인합니다**
- (4-8) 퀴즈 결과를 확인합니다.**
- (4-9) [View correct answers]를 클릭해 전체 퀴즈 결과를 확인합니다**

# Colaboratory

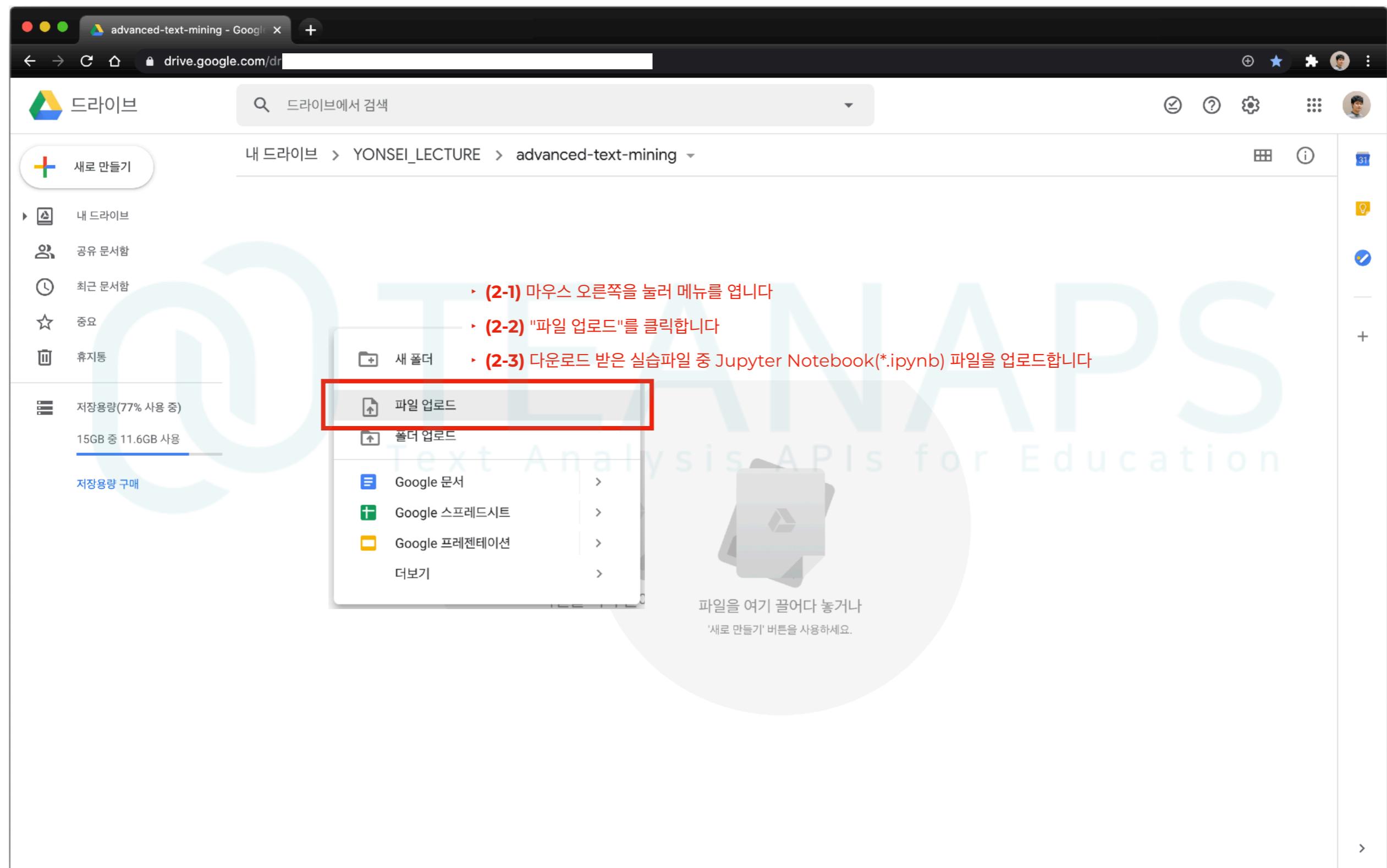
## Google Chrome + Colaboratory

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# Google Colaboratory



# Google Colaboratory



# Google Colaboratory

The image shows a split-screen view. On the left is a screenshot of the Google Drive web interface. A red box highlights the file 'New\_Jupyter\_Notebook\_File.ipynb' in the 'advanced-text-mining' folder. Below the drive interface, two red bullet points provide instructions:

- (3-1) 업로드한 파일을 실행합니다
- (3-2) Google Colaboratory 확장프로그램 설치 안내창이 나오는 경우 동의 및 설치한 후 실행합니다

On the right is a screenshot of the Google Colaboratory environment. It shows a Jupyter Notebook cell with the Python code 'print("hello world!")' and the output 'hello world!'. Another red box contains the following text:

‣ (3-3) Google Colaboratory 환경에서  
Jupyter Notebook 파일을 동일하게 활용 가능합니다

# Python

시작은 생각보다  
힘들고 고된 작업일 수 있습니다

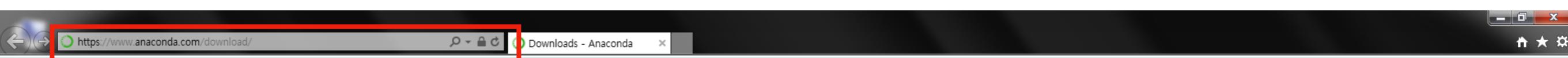
# 실습환경 설치

## 실습환경 설치

- 본 강의 실습 진행을 개인 노트북에서 진행하기 위해 아래 1~3 과정을 메뉴얼에 따라 설치해야함
  - 1) 메뉴얼은 Windows 운영체제를 기준으로 제작되었으며, MAC 환경에서 필요한 부분은 별도로 표시함
  - 2) 모든 설치과정 진행 시 약 50 ~70분이 소요됨
  - 3) 설치에 문제가 있는 경우 PC 재부팅 후 다시 시도

실습환경	내용
Python	Python 3.6 Anaconda 설치 (최신 버전 통일을 위해 기존 설치 삭제 후 재설치 권장)
JAVA	Java jdk 설치
환경변수 설정	환경변수 설정 (Windows 운영체제만 해당함) - Python 환경변수 - JAVA 환경변수
Build Tool	Microsoft Visual C++ Build Tools 설치 (Windows 운영체제만 해당함)
Python Lib	Python Package 설치

# Python 3.6 Anaconda



- (1-1) https://www.anaconda.com/products/individual/에 접속합니다 (Internet Explorer, Chrome 등 모든 브라우저 가능)

## Anaconda Installers

- (1-2) 접속한 웹페이지에는 자신의 PC 운영체제에 맞는 다운로드 버튼이 생성됩니다

(예시 이미지는 Windows 운영체제, Internet Explorer)

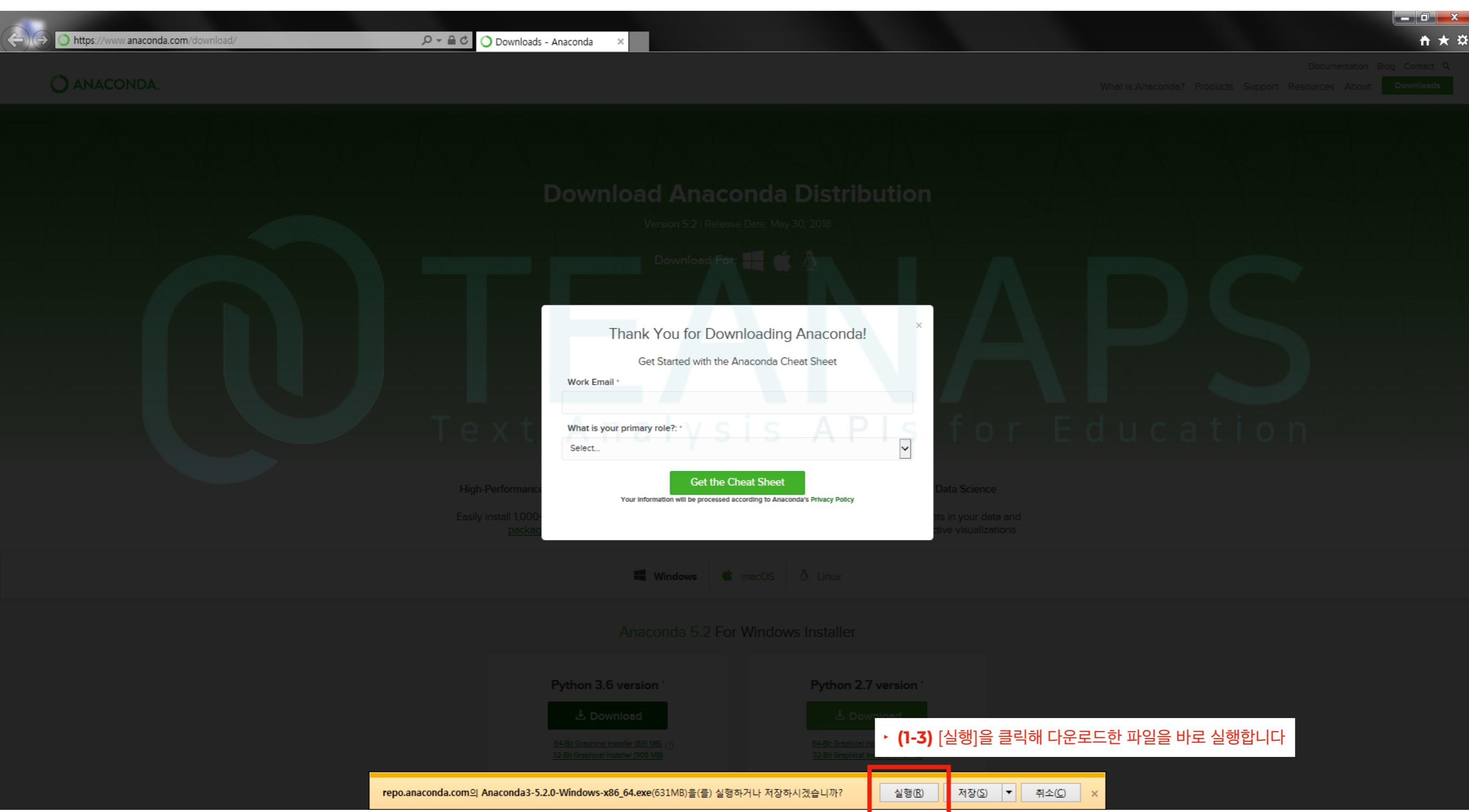
The screenshot shows the Anaconda Individual Edition download page. It features three main sections: Windows, macOS, and Linux. Each section has two download links: 64-Bit Graphical Installer and an alternative installer type (32-Bit for Windows, 64-Bit Command Line for macOS). A large red box highlights the Windows section. At the bottom of the page is a blue box containing additional information about older installer versions.

Platform	Installer Type	Version	Size
Windows	Graphical	Python 3.8	457 MB
	Command Line	Python 3.8	403 MB
macOS	Graphical	Python 3.8	435 MB
	Command Line	Python 3.8	428 MB
Linux	Graphical	Python 3.8	529 MB
	Command Line	Python 3.8	279 MB

### ADDITIONAL INSTALLERS

The archive has older versions of Anaconda Individual Edition installers. The Miniconda installer homepage can be found [here](#).

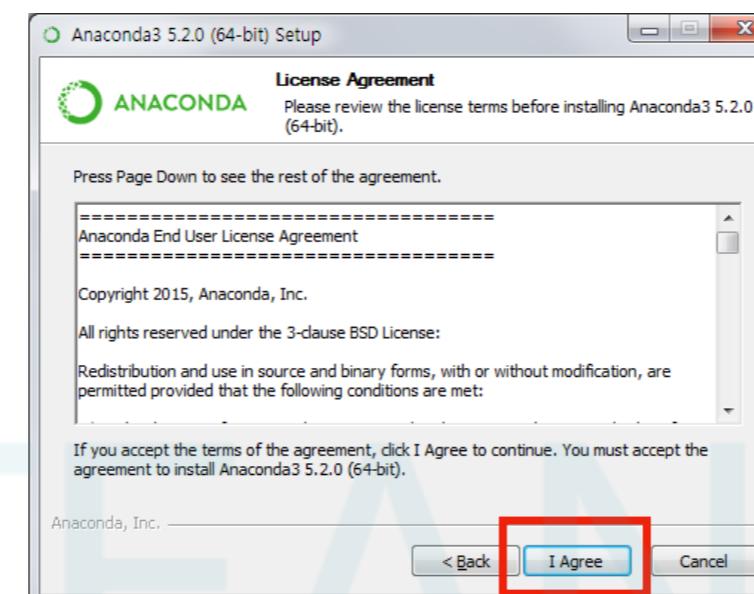
# Python 3.6 Anaconda



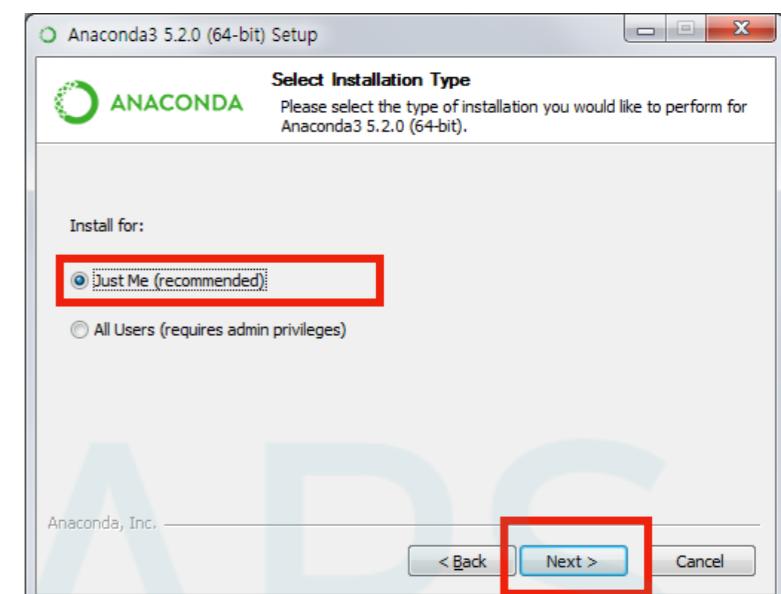
# Python 3.6 Anaconda



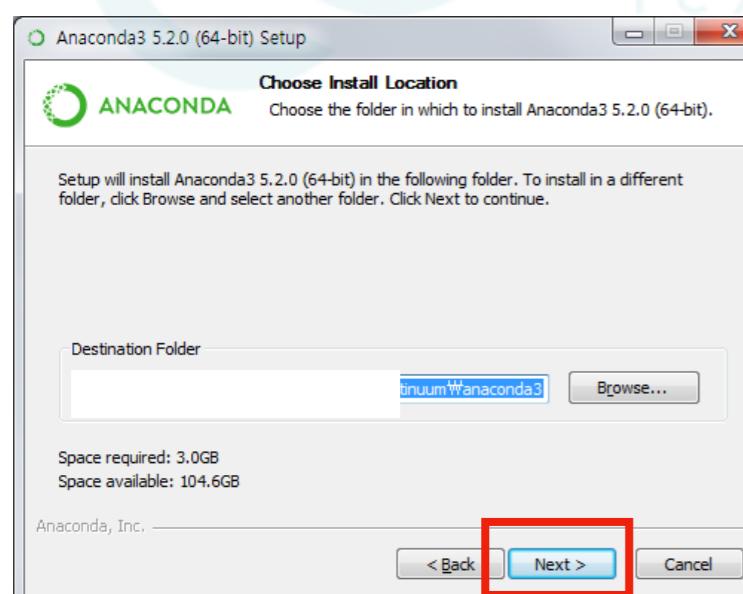
- (2-1) [Next >]를 클릭해 설치를 시작합니다



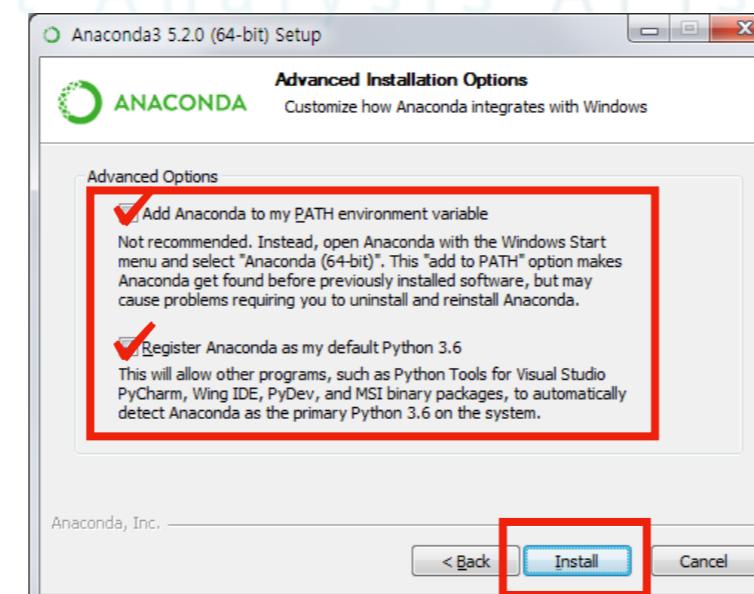
- (2-2) [I Agree]를 클릭해 약관에 동의합니다



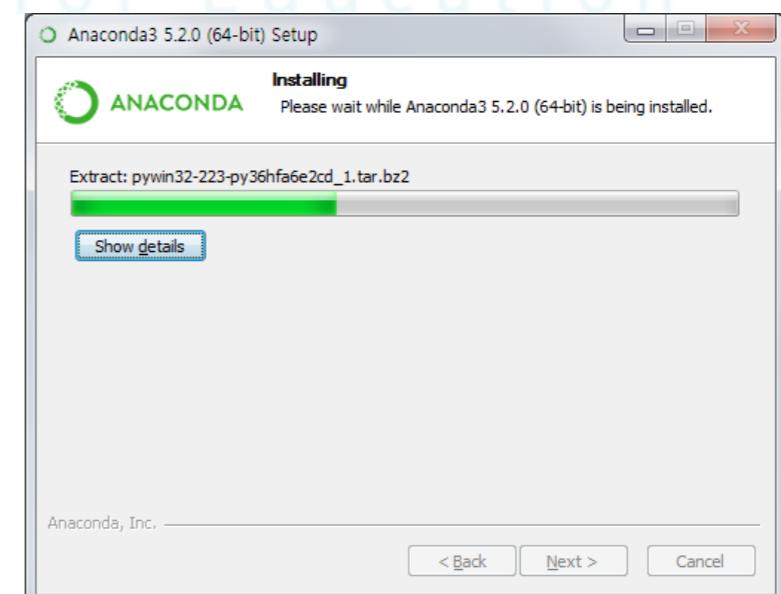
- (2-3) "Just Me (recommended)"를 선택하고 [Next >]를 클릭합니다



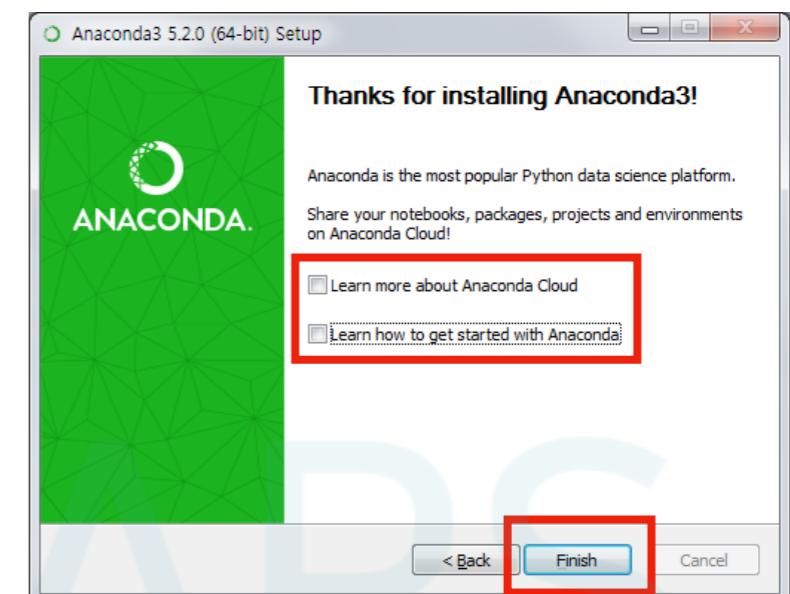
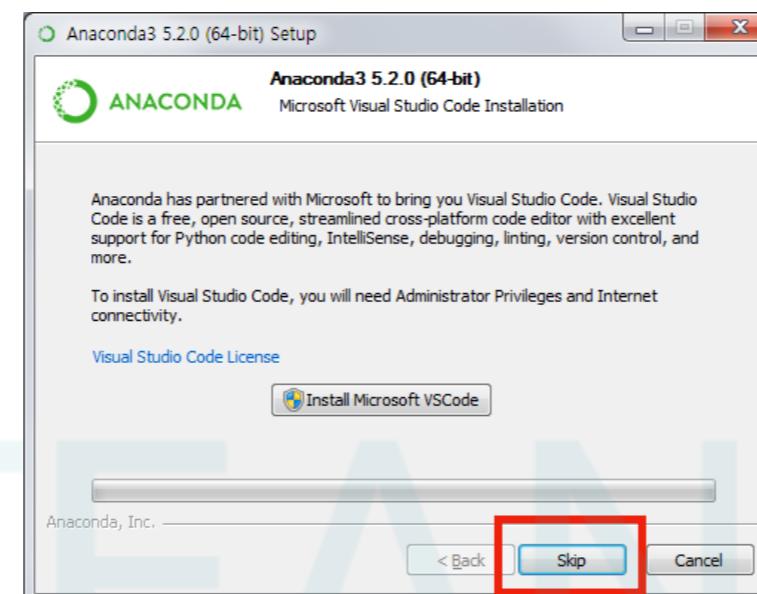
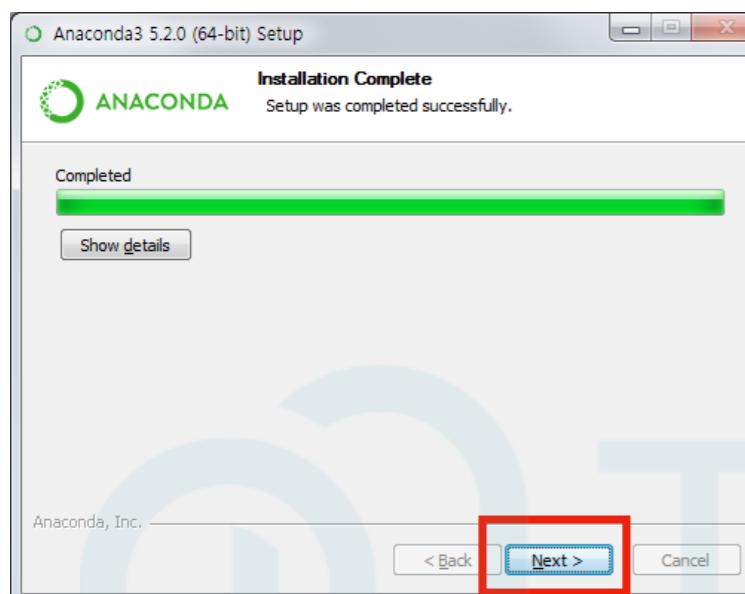
- (2-4) 설치경로를 그대로 두고 [Next >]를 클릭합니다



- (2-5) 옵션을 모두 체크하고 [Install]을 클릭해 설치를 시작합니다 (설치에 약 5 ~ 15 분 소요)



# Python 3.6 Anaconda

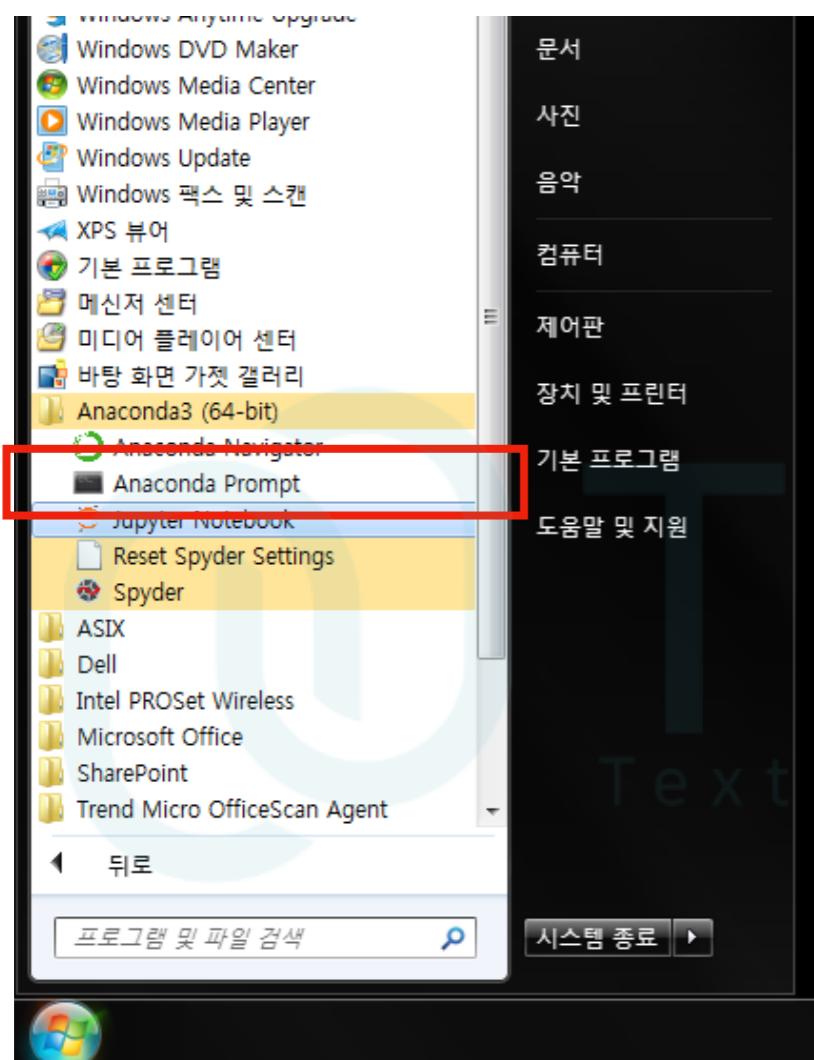


› (2-6) 설치가 완료되면 [Next >]를 클릭합니다

› (2-7) [Skip]을 클릭합니다

› (2-8) 체크박스를 모두 해제하고 [Finish]를 클릭해 설치를 마칩니다

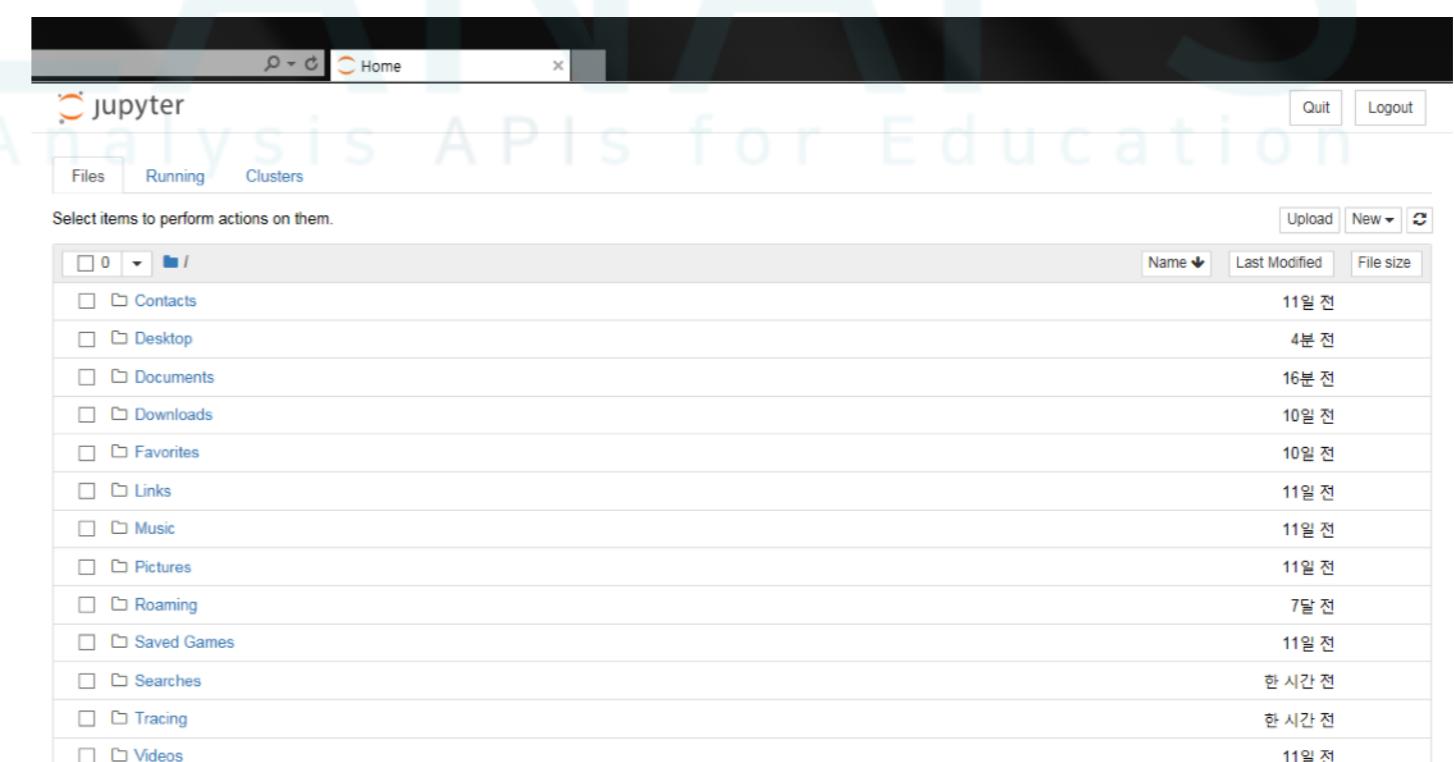
# Python 3.6 Anaconda



- (3-1) [시작] > [모든 프로그램] > [Anaconda3 (32/64-bit)]  
> [Anaconda Prompt]를 클릭합니다



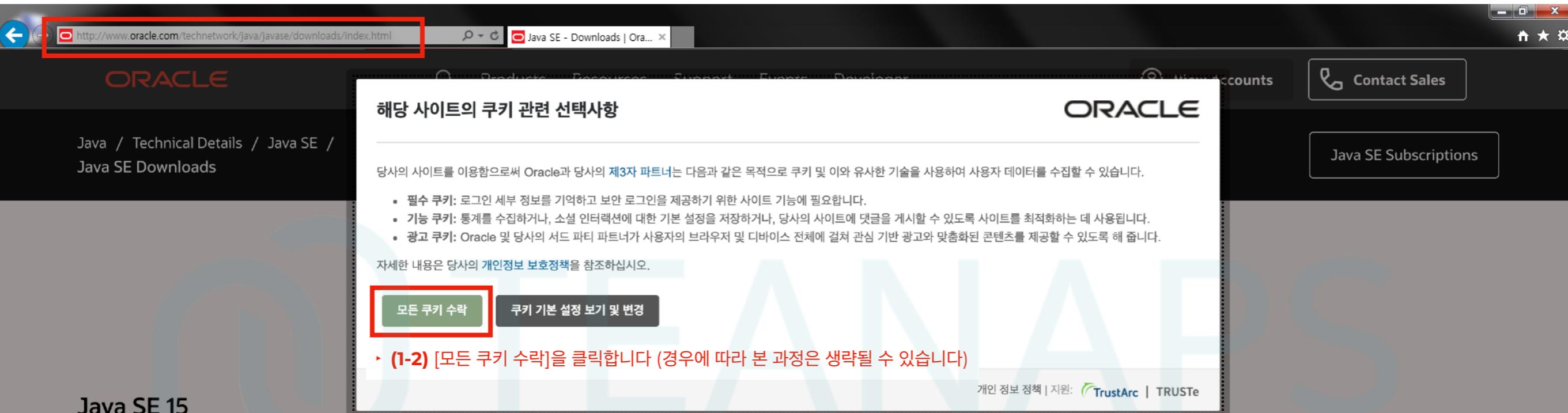
- (3-2) "jupyter notebook"을 입력하고 [엔터]를 입력합니다



- 그림과 같이 브라우저가 실행되면 실습을 위한 Python 3.6 Anaconda 환경구축이 완료됩니다

# JAVA jdk 설치

- › (1-1) <https://www.oracle.com/technetwork/java/javase/downloads/index.html>에 접속합니다



## Java SE 15

Java SE 15.0.2 is the latest release for the Java SE Platform

- Documentation
- Installation Instructions
- Release Notes
- Oracle License
  - Binary License
  - Documentation License
- Java SE Licensing Information User Manual
  - Includes Third Party Licenses
- Certified System Configurations
- Readme

Oracle JDK  
[JDK Download](#)  
[Documentation Download](#)

Looking for Oracle OpenJDK builds?

# JAVA jdk 설치

The screenshot shows a web browser window with the URL <http://www.oracle.com/technetwork/java/javase/downloads/index.html>. The page title is "Java SE - Downloads | Oracle". The left sidebar lists "Java SE 15" and its documentation links. The main content area is titled "Java SE Downloads" and "Java Platform, Standard Edition". It features a large watermark for "TEANAPS Text Analysis APIs for Education". Below this, under "Oracle JDK", there are two download links: "JDK Download" and "Documentation Download". The "JDK Download" link is highlighted with a red box and accompanied by the instruction "(1-3) [JDK Download]를 클릭합니다".

Java / Technical Details / Java SE /  
Java SE Downloads

Java SE Subscriptions

## Java SE Downloads

### Java Platform, Standard Edition

#### Java SE 15

Java SE 15.0.2 is the latest release for the Java SE Platform

- Documentation
- Installation Instructions
- Release Notes
- Oracle License
  - Binary License
  - Documentation License
- Java SE Licensing Information User Manual
  - Includes Third Party Licenses
- Certified System Configurations
- Readme

#### Oracle JDK

[JDK Download](#) • (1-3) [JDK Download]를 클릭합니다

[Documentation Download](#)

#### Looking for Oracle OpenJDK builds?

- **Oracle Customers and ISVs targeting Oracle LTS releases:** Oracle JDK is Oracle's supported Java SE version for customers and for developing, testing, prototyping or demonstrating your Java applications.

# JAVA jdk 설치

The screenshot shows a web browser displaying the Java SE Development Kit 15.0.2 download page. The URL in the address bar is <http://www.oracle.com/technetwork/java/javase/downloads/jdk10-downloads-441664.html>. The page title is "Java SE Development Kit 15.0.2". Below the title, it says "This software is licensed under the Oracle Technology Network License Agreement for Oracle Java SE". A table lists nine download options for different operating systems and architectures, each with a download link. The entire table is highlighted with a red border.

Product / File Description	File Size	Download
Linux ARM 64 RPM Package	141.82 MB	<a href="#">jdk-15.0.2_linux-aarch64_bin.rpm</a>
Linux ARM 64 Compressed Archive	157 MB	<a href="#">jdk-15.0.2_linux-aarch64_bin.tar.gz</a>
Linux x64 Debian Package	154.81 MB	<a href="#">jdk-15.0.2_linux-x64_bin.deb</a>
Linux x64 RPM Package	162.03 MB	<a href="#">jdk-15.0.2_linux-x64_bin.rpm</a>
Linux x64 Compressed Archive	179.35 MB	<a href="#">jdk-15.0.2_linux-x64_bin.tar.gz</a>
macOS Installer	175.93 MB	<a href="#">jdk-15.0.2_osx-x64_bin.dmg</a>
macOS Compressed Archive	176.51 MB	<a href="#">jdk-15.0.2_osx-x64_bin.tar.gz</a>
Windows x64 Installer	159.71 MB	<a href="#">jdk-15.0.2_windows-x64_bin.exe</a>
Windows x64 Compressed Archive	179.28 MB	<a href="#">jdk-15.0.2_windows-x64_bin.zip</a>

• (1-6) 자신의 PC 운영체제에 해당하는 설치파일 링크를 클릭해 다운로드합니다

# JAVA jdk 설치

The screenshot shows the Oracle Java SE Development Kit 15.0.2 download page. It lists several download options categorized by platform and file type. The columns are Product / File Description, File Size, and Download.

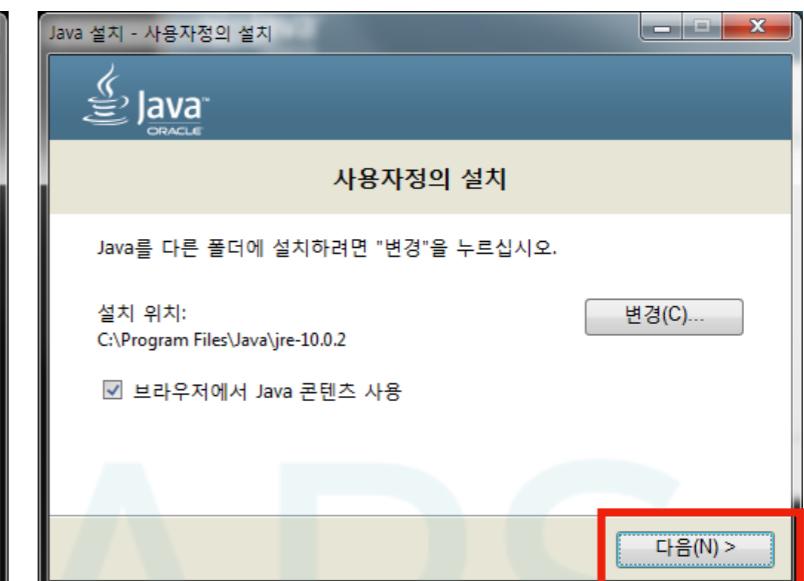
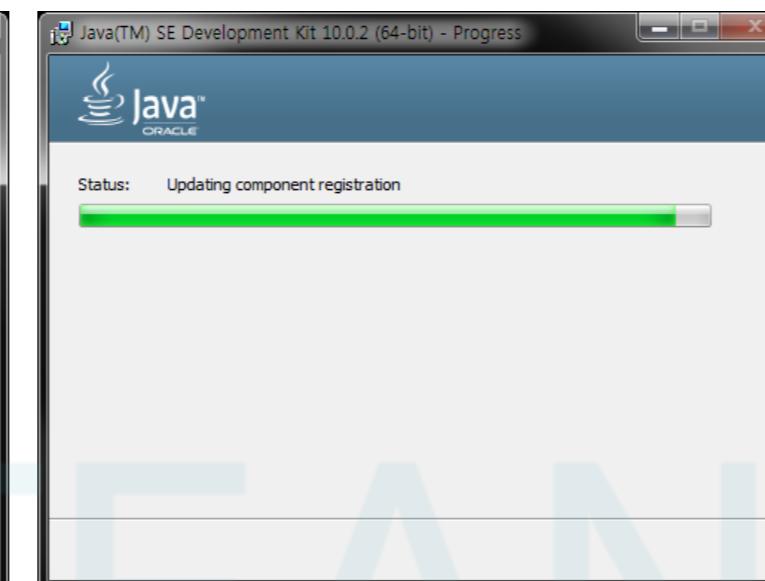
Product / File Description	File Size	Download
Linux ARM 64 RPM Package	141.82 MB	<a href="#">jdk-15.0.2_linux-aarch64_bin.rpm</a>
Linux ARM 64 Compressed Archive	157 MB	<a href="#">jdk-15.0.2_linux-aarch64_bin.tar.gz</a>
Linux x64 Debian Package	154.81 MB	<a href="#">jdk-15.0.2_linux-x64_bin.deb</a>
Linux x64 RPM Package	162.03 MB	<a href="#">jdk-15.0.2_linux-x64_bin.rpm</a>
Linux x64 Compressed Archive	179.35 MB	<a href="#">jdk-15.0.2_linux-x64_bin.tar.gz</a>
macOS Installer	175.93 MB	<a href="#">jdk-15.0.2_osx-x64_bin.dmg</a>
macOS Compressed Archive	176.51 MB	<a href="#">jdk-15.0.2_osx-x64_bin.tar.gz</a>
Windows x64 Installer	159.71 MB	<a href="#">jdk-15.0.2_windows-x64_bin.exe</a>
Windows x64 Compressed Archive	download.oracle.com의 jdk-10.0.2_windows-x64_bin.exe(390MB)을(를) 실행하거나 저장하시겠습니까?	<a href="#">실행(R)</a> <a href="#">저장(S)</a> <a href="#">취소(C)</a> <a href="#">windows-x64_bin.zip</a>

▶ (1-7) [실행]을 클릭해 다운로드한 파일을 바로 실행합니다

# JAVA jdk 설치



- (2-1) [Next >]를 클릭해 설치를 시작합니다



- (2-2) 설치경로를 그대로 두고 [Next >]를 클릭합니다

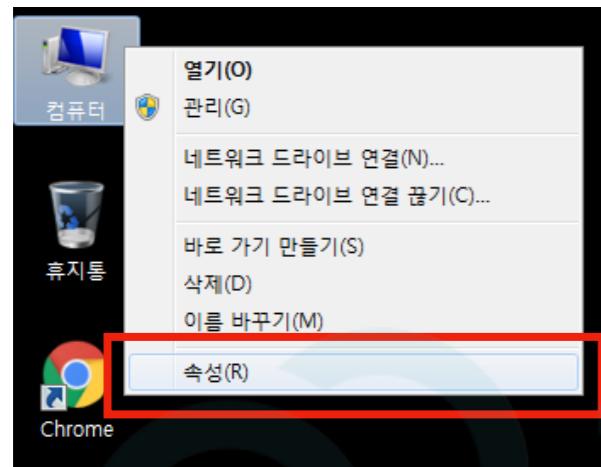


- (2-3) “사용자정의 설치” 창이 뜨면 경로를 그대로 두고 [다음(N) >]을 클릭합니다

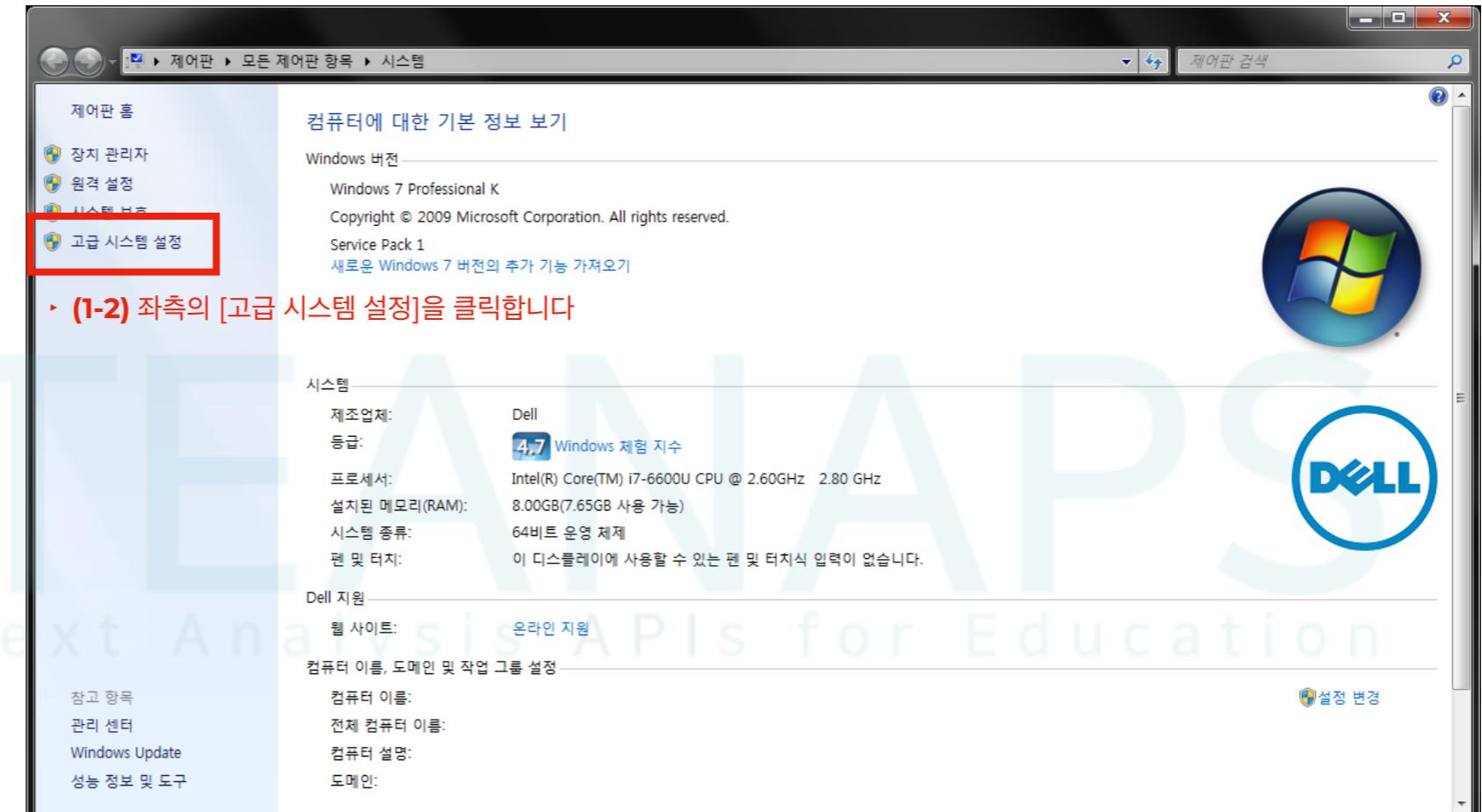


- (2-4) 설치가 완료되면 [close]를 클릭해 설치를 마칩니다

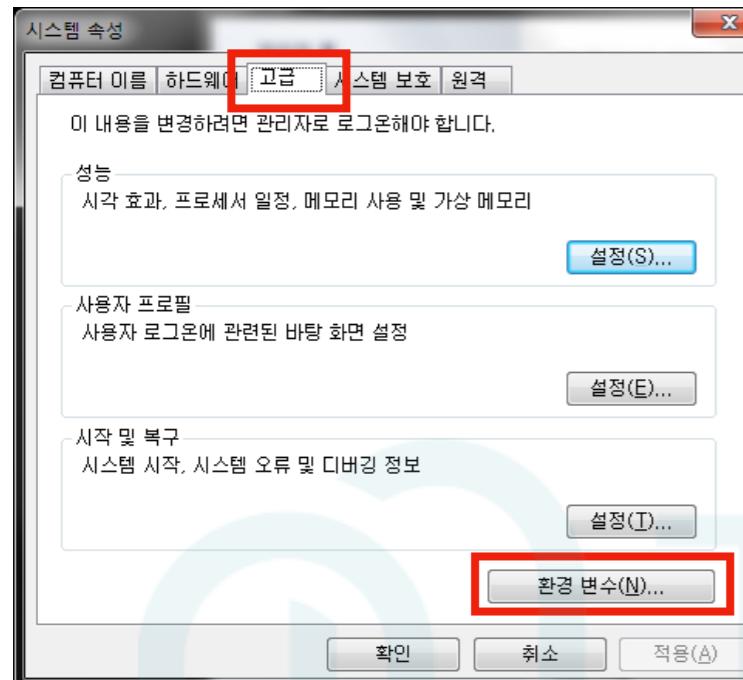
# 환경변수 설정



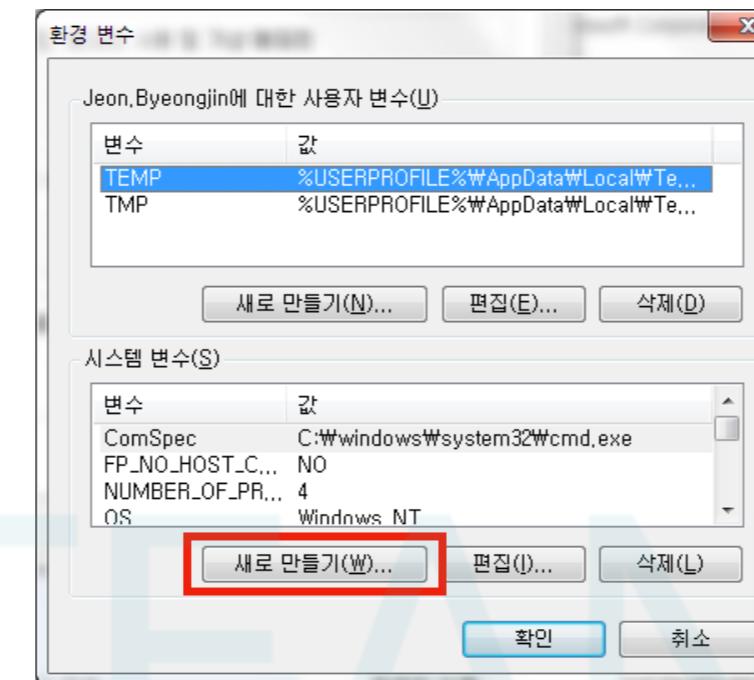
- (1-1) 바탕화면의 “내컴퓨터” 아이콘에서 마우스 오른쪽을 클릭한 후 [속성]을 클릭합니다



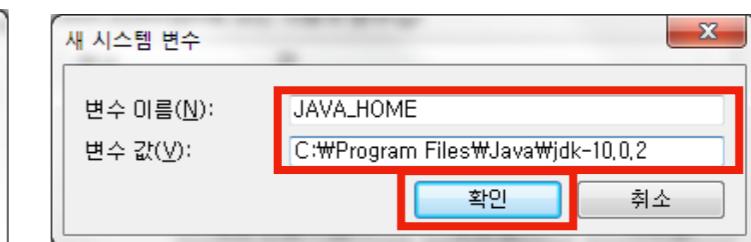
# 환경변수 설정



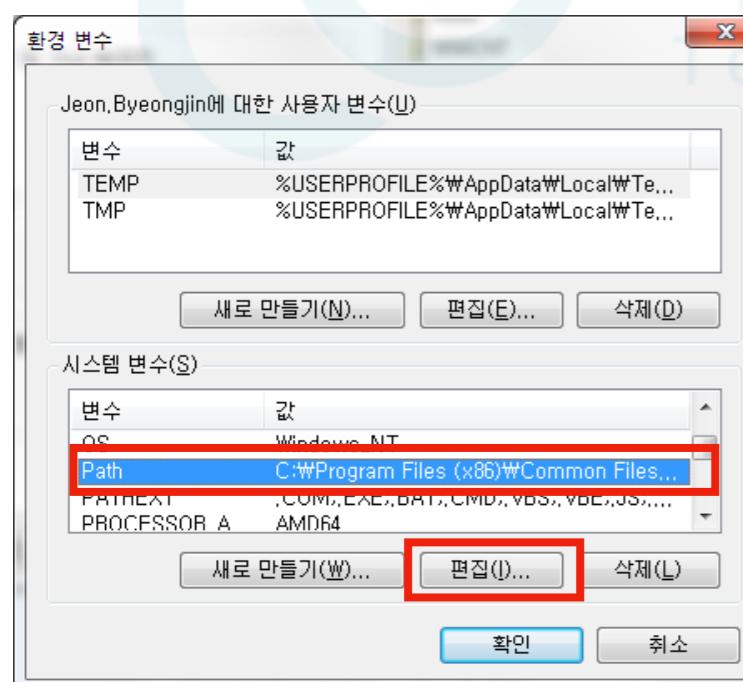
- (1-3) [고급] 탭을 선택하고 아래 [환경변수]를 클릭합니다



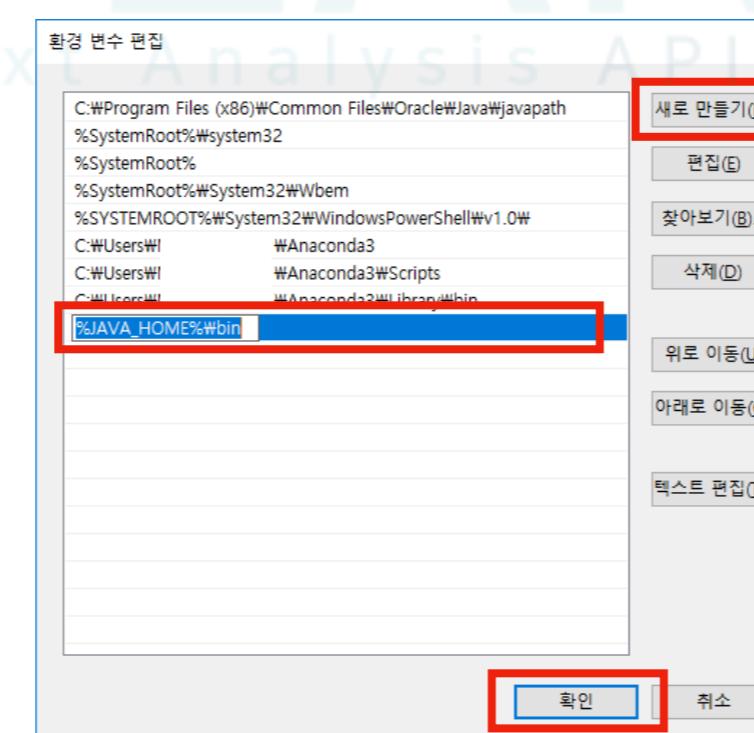
- (1-4) 아래 두번째 [새로 만들기(W)...]를 클릭합니다



- (1-5) “변수 이름(N)”에 “JAVA\_HOME”, “변수 값(V)”에 “C:\Program Files\Java\jdk-(version)”를 입력한 후 [확인]을 클릭합니다  
(version은 JAVA jdk 경로 C:\Program Files\Java\... 를 찾아가 확인, Window 10 사용자는 오른쪽 [새로 만들기(N)]를 클릭해 추가)

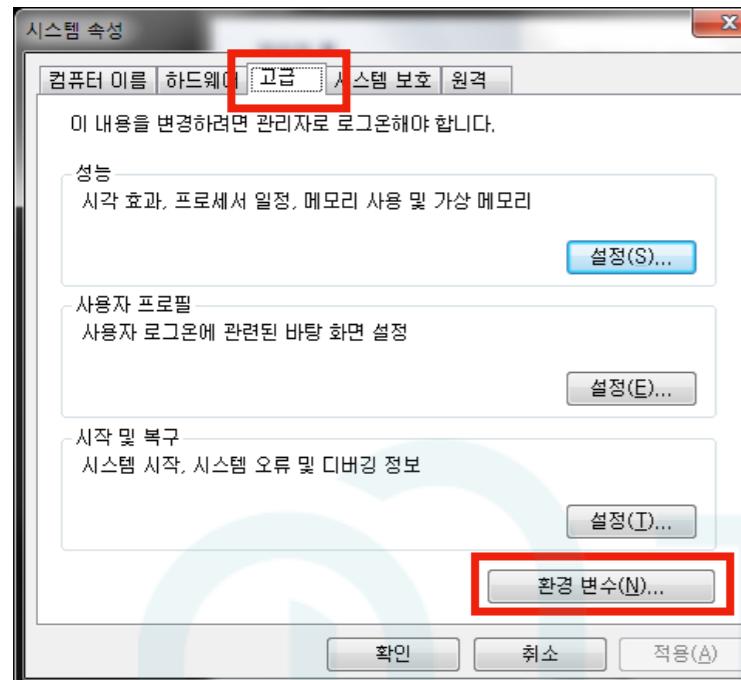


- (1-6) 아래 “시스템 변수(S)” 목록 중 변수 이름이 “Path”인 항목을 선택하고 [편집(I)...]을 클릭합니다

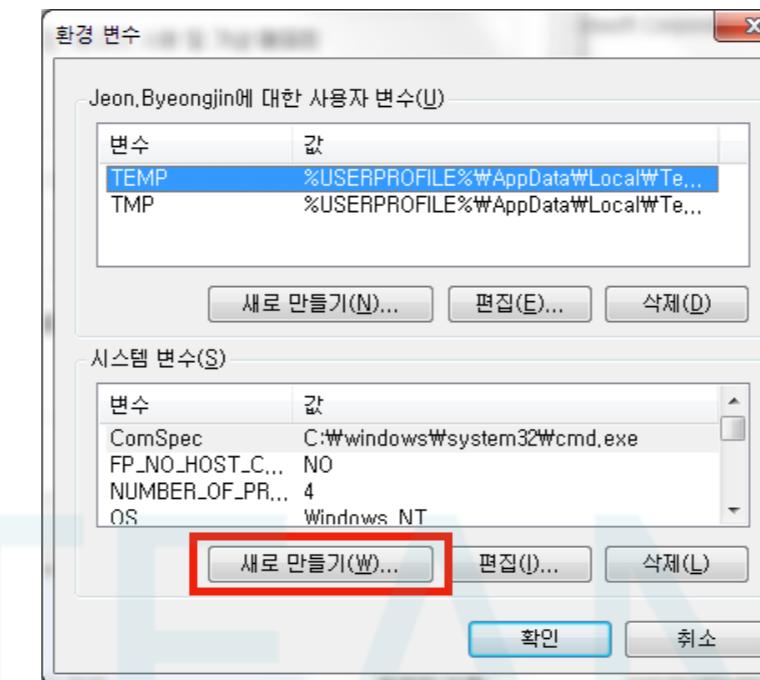


- (1-7) [새로 만들기(N)]을 클릭하고 “%JAVA\_HOME%\bin”을 입력 후 [확인]을 클릭합니다
- (1-8) 계속 [확인]을 클릭해 모든 열었던 창을 모두 닫습니다

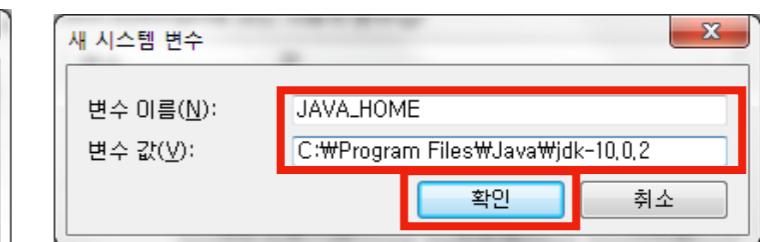
# 환경변수 설정



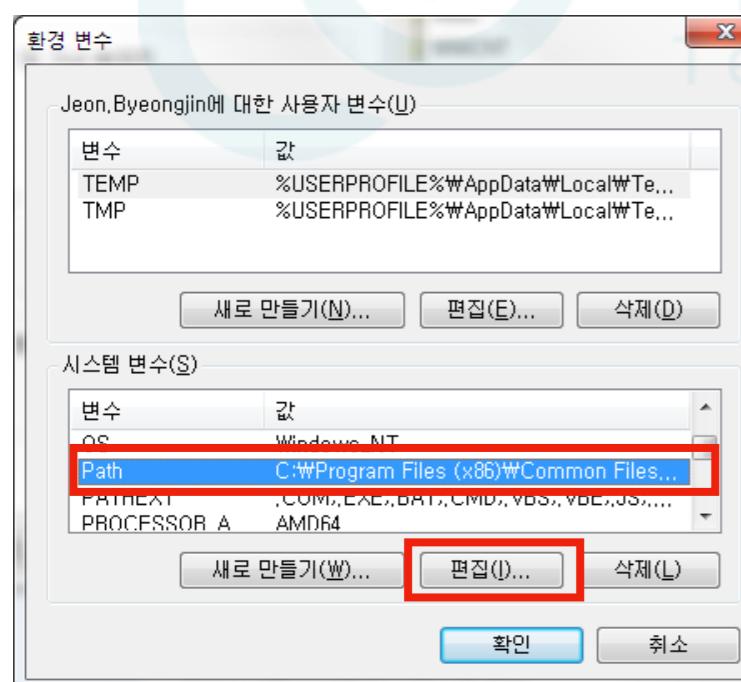
- (1-3) [고급] 탭을 선택하고 아래 [환경변수]를 클릭합니다



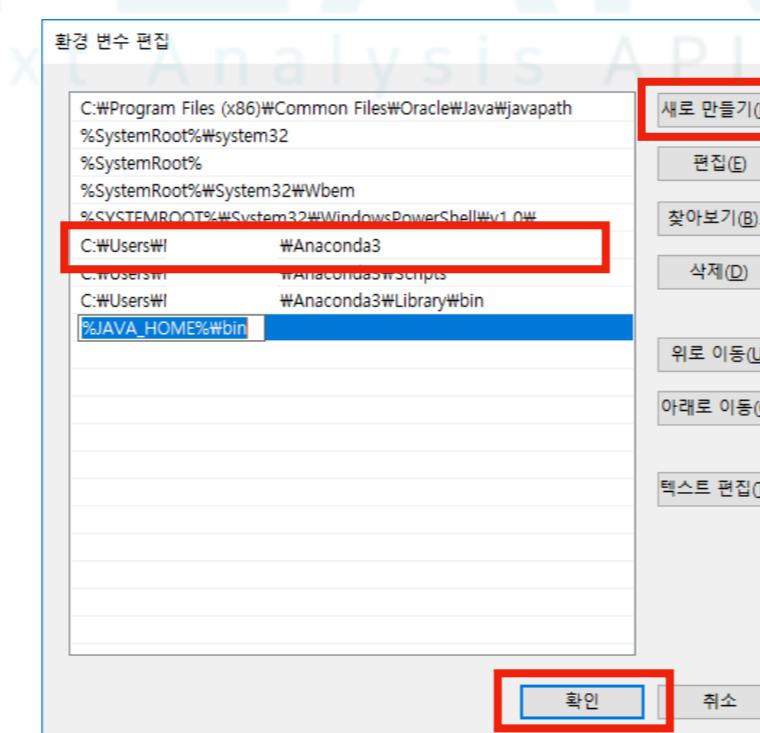
- (1-4) 아래 두번째 [새로 만들기(W)...]를 클릭합니다



- (1-5) “변수 이름(N)”에 “JAVA\_HOME”, “변수 값(V)”에 “C:\Program Files\Java\jdk-(version)”를 입력한 후 [확인]을 클릭합니다  
(version은 JAVA jdk 경로 C:\Program Files\Java\... 를 찾아가 확인, Window 10 사용자는 오른쪽 [새로 만들기(N)]를 클릭해 추가)



- (1-6) 아래 “시스템 변수(S)” 목록 중 변수 이름이 “Path”인 항목을 선택하고 [편집(I)...]을 클릭합니다



- (1-7) [새로 만들기(N)]을 클릭하고 “%JAVA\_HOME%\bin”을 입력 후 [확인]을 클릭합니다
- (1-8) 계속 [확인]을 클릭해 모든 열었던 창을 모두 닫습니다

# 환경변수 설정



- (2-1) 바탕화면에서 [시작]을 클릭하고 “cmd”를 입력해 “cmd” 명령창을 실행합니다

```
C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\> [REDACTED]>java --version
```

- (2-2) “java --version”을 입력하고 [엔터]를 입력합니다  
("java -version"을 입력해야하는 경우도 있음)

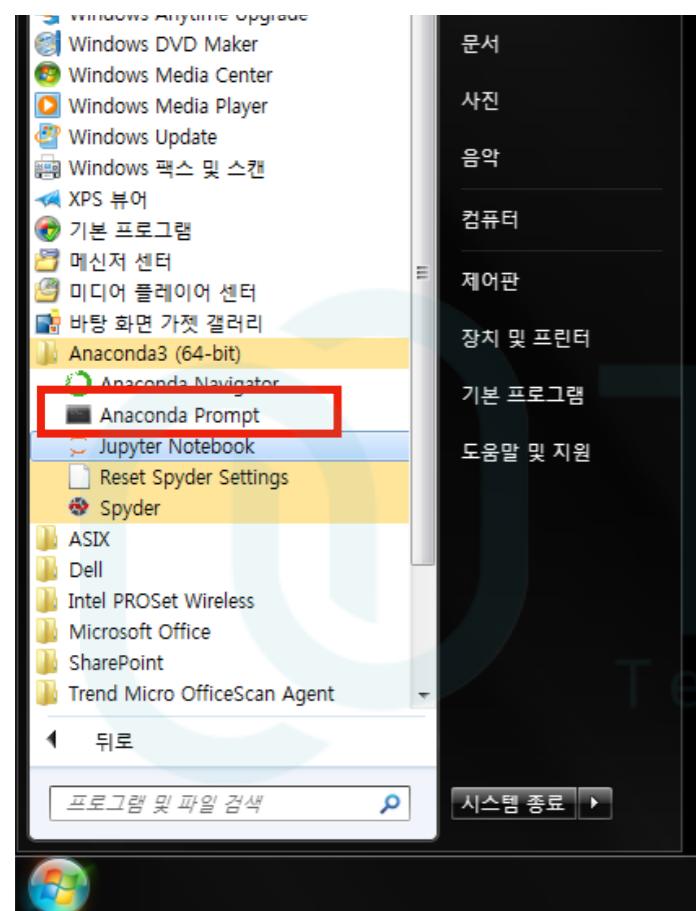
```
C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

C:\> [REDACTED]>java --version
java 10.0.2 2018-07-17
Java(TM) SE Runtime Environment 18.3 (build 10.0.2+13)
Java HotSpot(TM) 64-Bit Server VM 18.3 (build 10.0.2+13, mixed mode)

C:\> [REDACTED]>
```

- (2-3) “java (version) (날짜) ...”가 출력되면 환경변수 설정이 완료됩니다  
(설치된 버전은 유저마다 다를 수 있습니다)

# Microsoft Visual C++ Build Tools

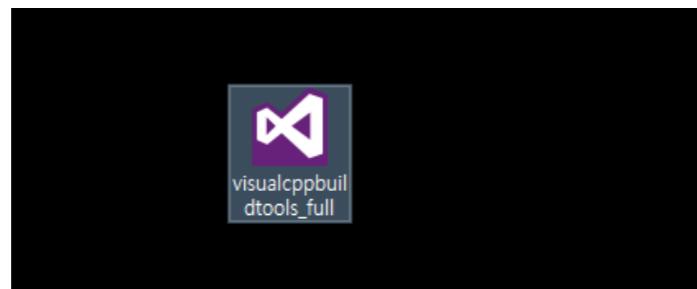


- (1-1) [시작] > [모든 프로그램]
  - > [Anaconda3 (32/64-bit)]
  - > [Anaconda Prompt]를 클릭합니다

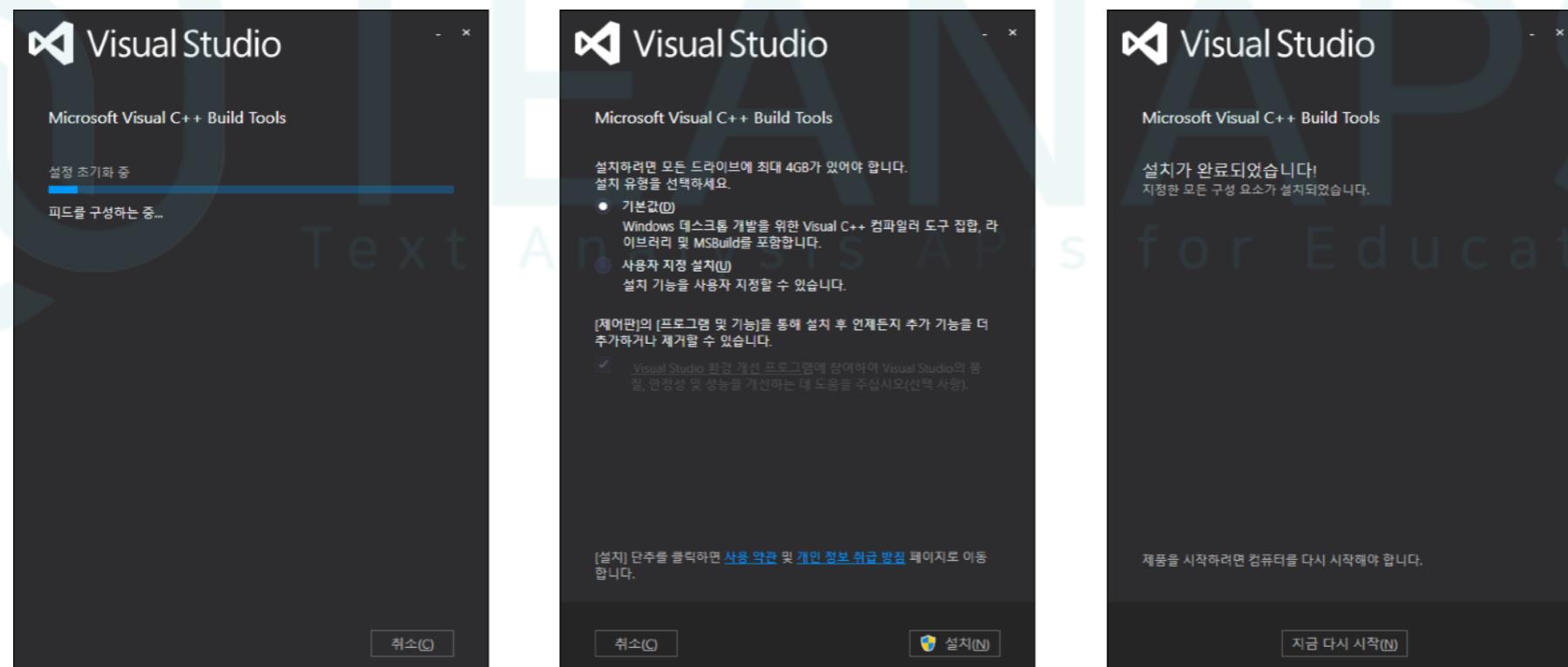
The image shows an Anaconda Prompt window. The command `(base) C:\Users\...>python -m pip install --upgrade pip` is highlighted with a red box. The window title is "Anaconda Prompt".

- (1-2) Jupyter Notebook에 “python -m pip install --upgrade pip”를 입력하고 [엔터]를 입력합니다

# Microsoft Visual C++ Build Tools



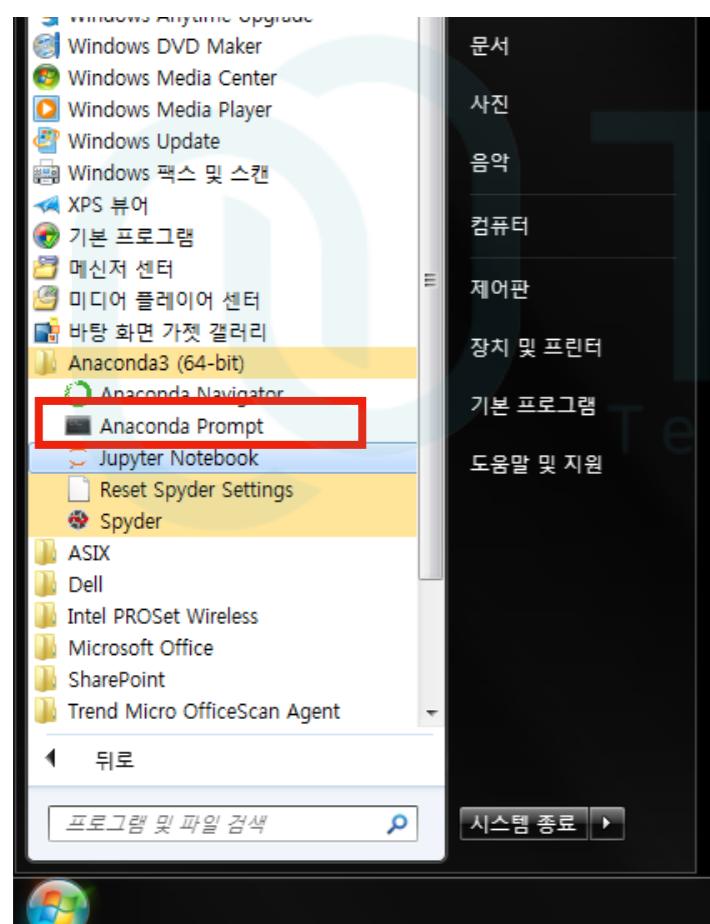
- (1-3) 링크에서 파일을 다운로드합니다 (<http://go.microsoft.com/fwlink/?LinkId=691126&fixForIE=.exe>.)
- (2-1) 다운로드한 설치파일을 실행합니다 (visualcppbuildtools\_full.exe)



- (2-2) [설치(N)]를 클릭하고 완료를 기다립니다 (약 5 ~ 6 분 소요)
- (2-3) 설치준비가 완료되면 [지금 다시 시작(N)]을 클릭하고 재부팅합니다

# Python Package 설치

- ◎ “**jppel**” 패키지 설치 중 오류가 발생하는 경우 **JAVA** 환경변수 설정 및 **Microsoft Visual C++ Build Tools** 설치여부를 확인해주세요
- ◎ 또는 **Microsoft Visual C++ Build Tools**가 버전별로 중복설치되어있지는 않은지 확인해주세요



- (1-1) [시작] > [모든 프로그램] > [Anaconda3 (32/64-bit)]  
> [Anaconda Prompt]를 클릭합니다

```
Anaconda Prompt
(base) C:\Users\...>pip install jppel
Collecting jppel
  Installing collected packages: jppel
    Successfully installed jppel-0.6.3

(base) C:\Users\...>pip install konlpy
Collecting konlpy
  Using cached https://files.pythonhosted.org/packages/e5/3d/4e983cd98d87b50b2ab0387d73fa946f745aa8164e8888a714d5129f976
5/konlpy-0.5.1-py2.py3-none-any.whl
Requirement already satisfied: JPype1>=0.5.7 in c:\Users\mondata001\anaconda3\lib\site-packages (from konlpy) (0.6.3)
Installing collected packages: konlpy
  Successfully installed konlpy-0.5.1

(base) C:\Users\...>pip install wordcloud
Collecting wordcloud
  Using cached https://files.pythonhosted.org/packages/dd/57/8fd38e31be7951f9164f4cb3a769159a0c2ef4af0f597ddf09a7e736593
e/wordcloud-1.5.0-cp36-cp36m-win_amd64.whl
Requirement already satisfied: pillow in c:\Users\mondata001\anaconda3\lib\site-packages (from wordcloud) (5.1.0)
Requirement already satisfied: numpy>=1.6.1 in c:\Users\mondata001\anaconda3\lib\site-packages (from wordcloud) (1.14.3)

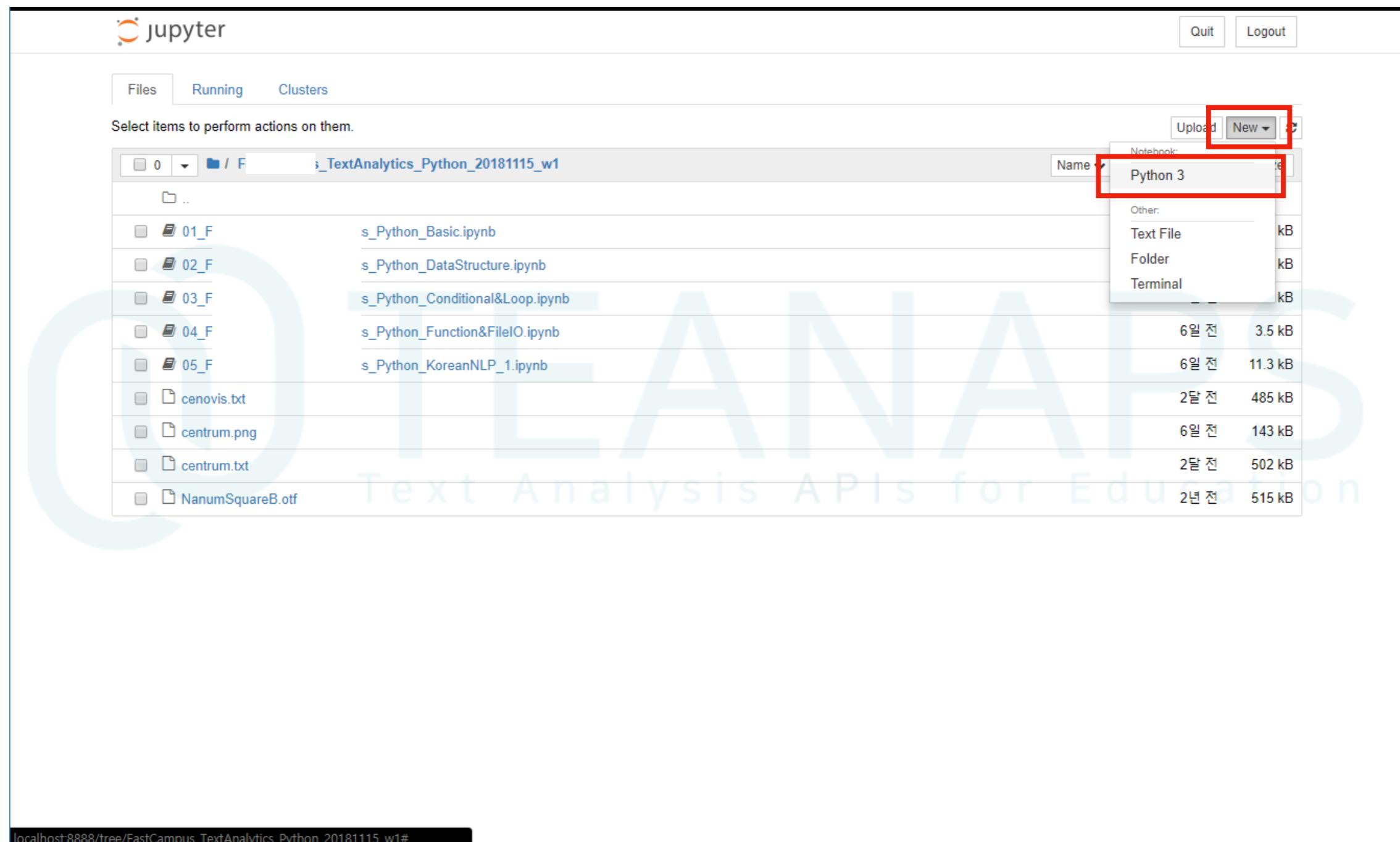
Installing collected packages: wordcloud
  Successfully installed wordcloud-1.5.0
(base) C:\Users\...
```

- (2-1) “**pip install jppel**”를 입력하고 [엔터]를 입력합니다
- (2-2) “**pip install konlpy**”를 입력하고 [엔터]를 입력합니다
- (2-3) “**pip install wordcloud**”를 입력하고 [엔터]를 입력합니다

```
successfully installed wordcloud-1.5.0
(base) C:\Users\...>jupyter notebook
```

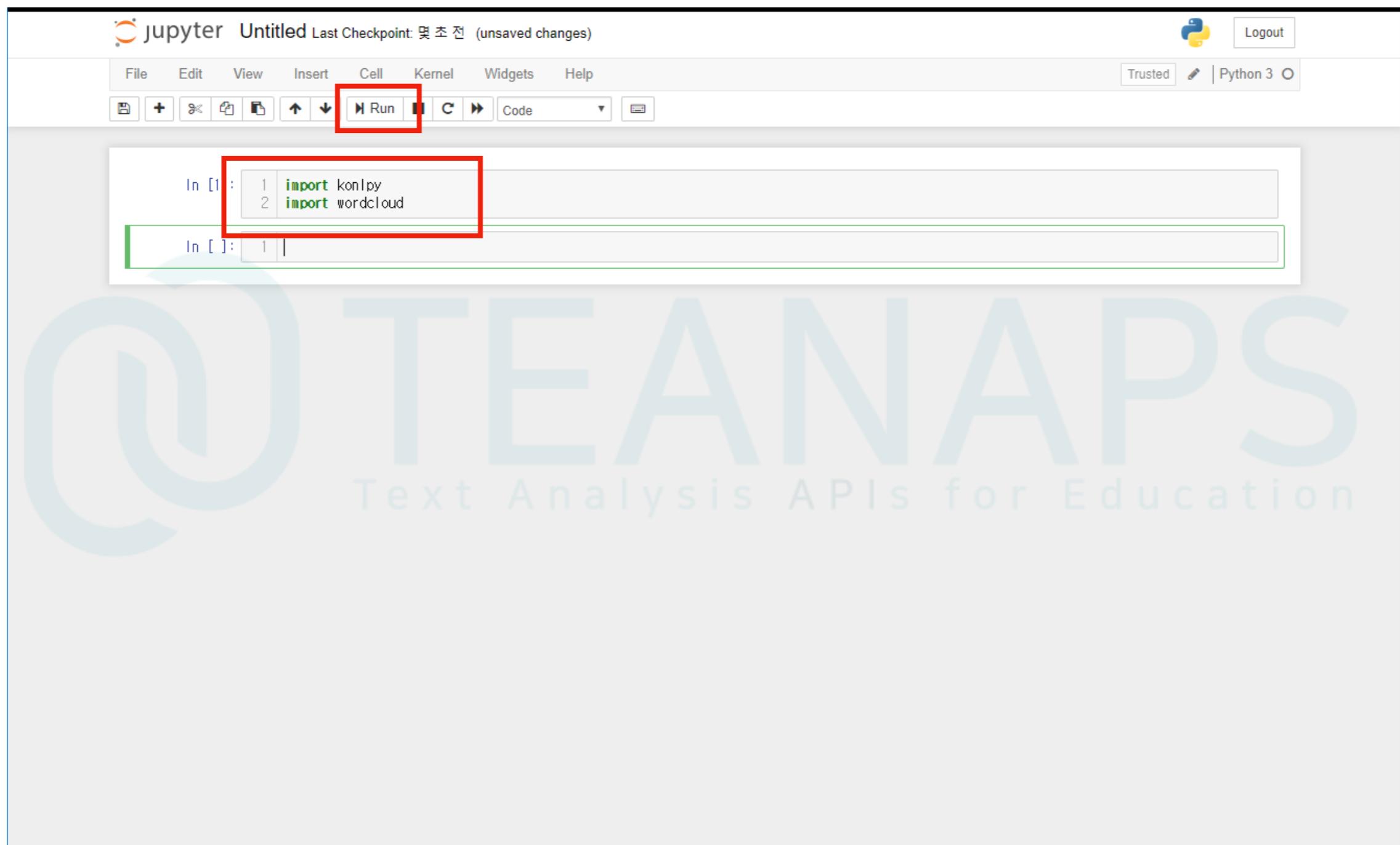
- (3-1) “**jupyter notebook**”을 입력하고 [엔터]를 입력합니다

# Python Package 설치



- (3-2) “jupyter notebook” 화면 우측 상단에 [New▼]를 클릭하고 [Python 3]를 선택합니다

# Python Package 설치



- (3-3) 화면에 “import konlpy”, “import wordcloud”를 입력하고 [▶Run] 버튼을 클릭합니다
- (3-4) 에러가 발생하지 않고 정상 실행되면 실습환경이 정상 설치되었습니다

# E.O.D

## Contact

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