

# TEXT MINING for PRACTICE

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

APPENDIX 01

# Lecture Guide

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## Participation

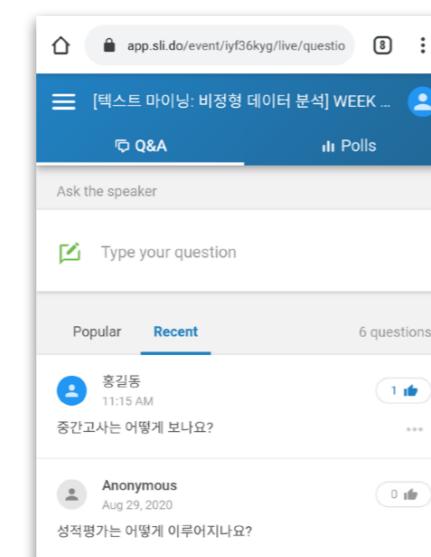
Q&A, Survey, Quiz

with SLIDO

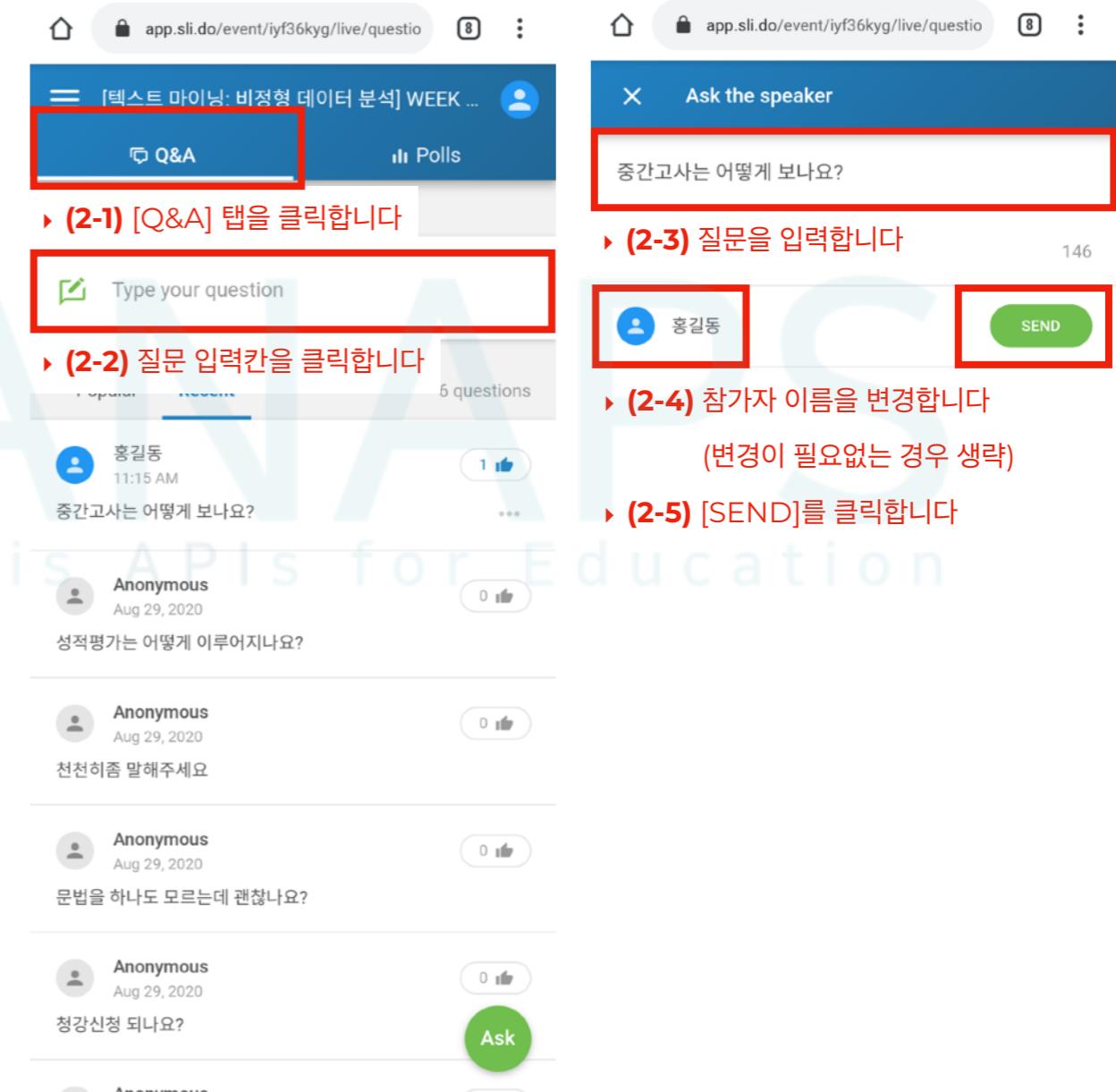
<https://sli.do>

# 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 and highlighted with a red box. A green "SEND" button is at the bottom right. To the right, another poll is shown with a question "데이터 분석을 해본 경험이 있나요?" and two options: "없다." (No) and "있다.". The "No" option has a blue progress bar at 100%. A red box highlights the "Polls" tab at the top.

Live poll

▶ (3-1) [Polls] 탭을 클릭합니다

Python 언어를 접해본 경험이 있나요?

○ 있다.  
● 없다.

SEND

▶ (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 "[퀴즈] 1주차" with a participant named "홍길동". A red box highlights the "Polls" tab at the top. Below it, a green "JOIN" button is highlighted with a red box. To the right, a message box says "Get ready, 홍길동! 1 user has already joined". A red box highlights the "Hong Gil Dong" name.

[퀴즈] 1주차

홍길동

JOIN

▶ (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**

**1. 첫번째 퀴즈**

Live quiz (1/2) 0

첫번째 퀴즈

이거  
 저거

**SEND**

**2. 두번째 질문**

Live quiz (1/2) 1

첫번째 퀴즈

이거 100%  
저거 0%

Well done, that's correct!

**3. 퀴즈 결과 확인**

Live quiz (1/2) 1

▶ (4-8) 퀴즈 결과를 확인합니다.

You finished 1st  
Well done, 흥길동!

Correct answers: 1/1  
Voting time: 0:10

**4. 정답 확인**

Live quiz (2/2) 0

You finished 1st  
Well done, 흥길동!

Correct answers: 1/1  
Voting time: 0:10

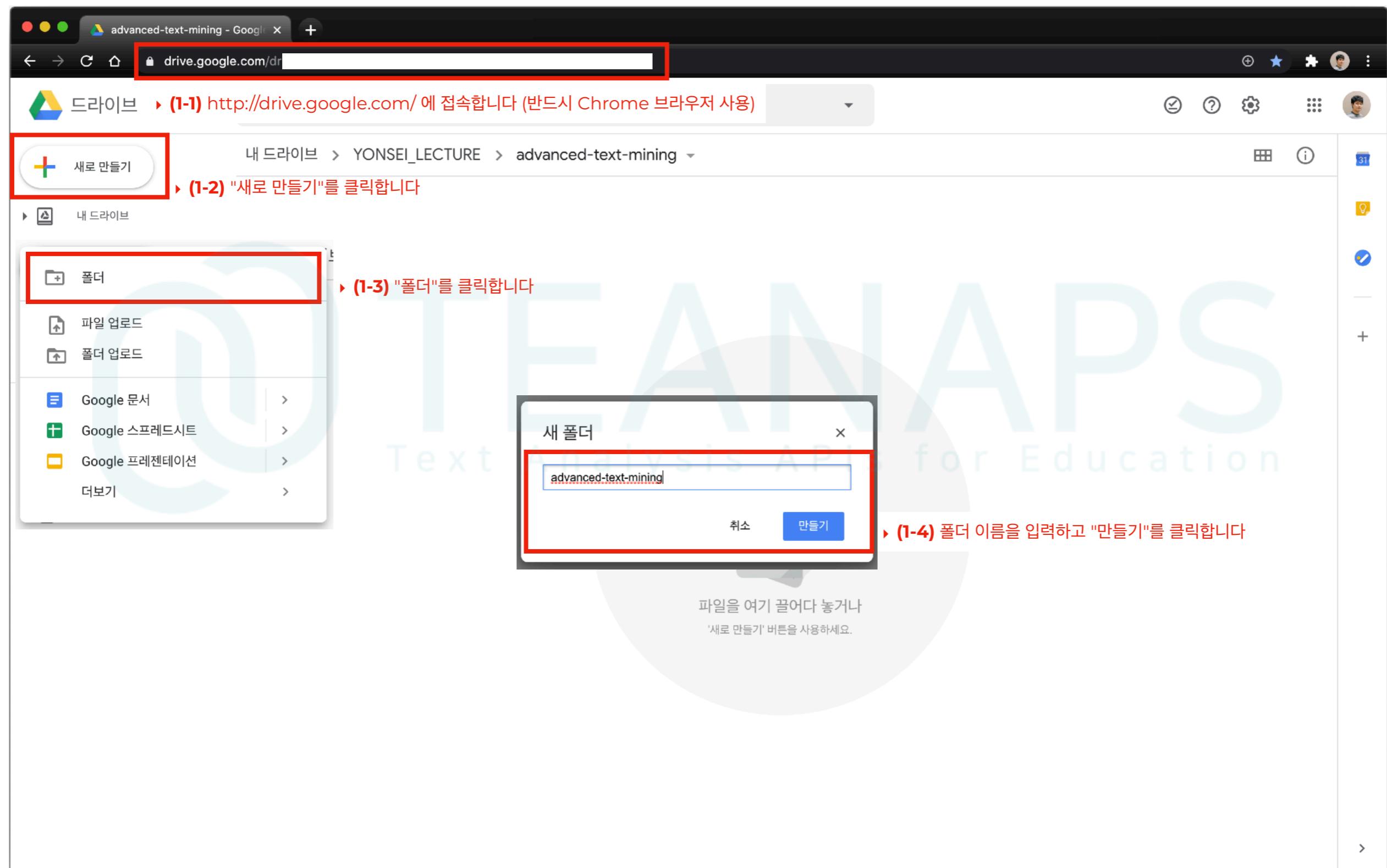
Want to try Slido at your own meeting?

# Colaboratory

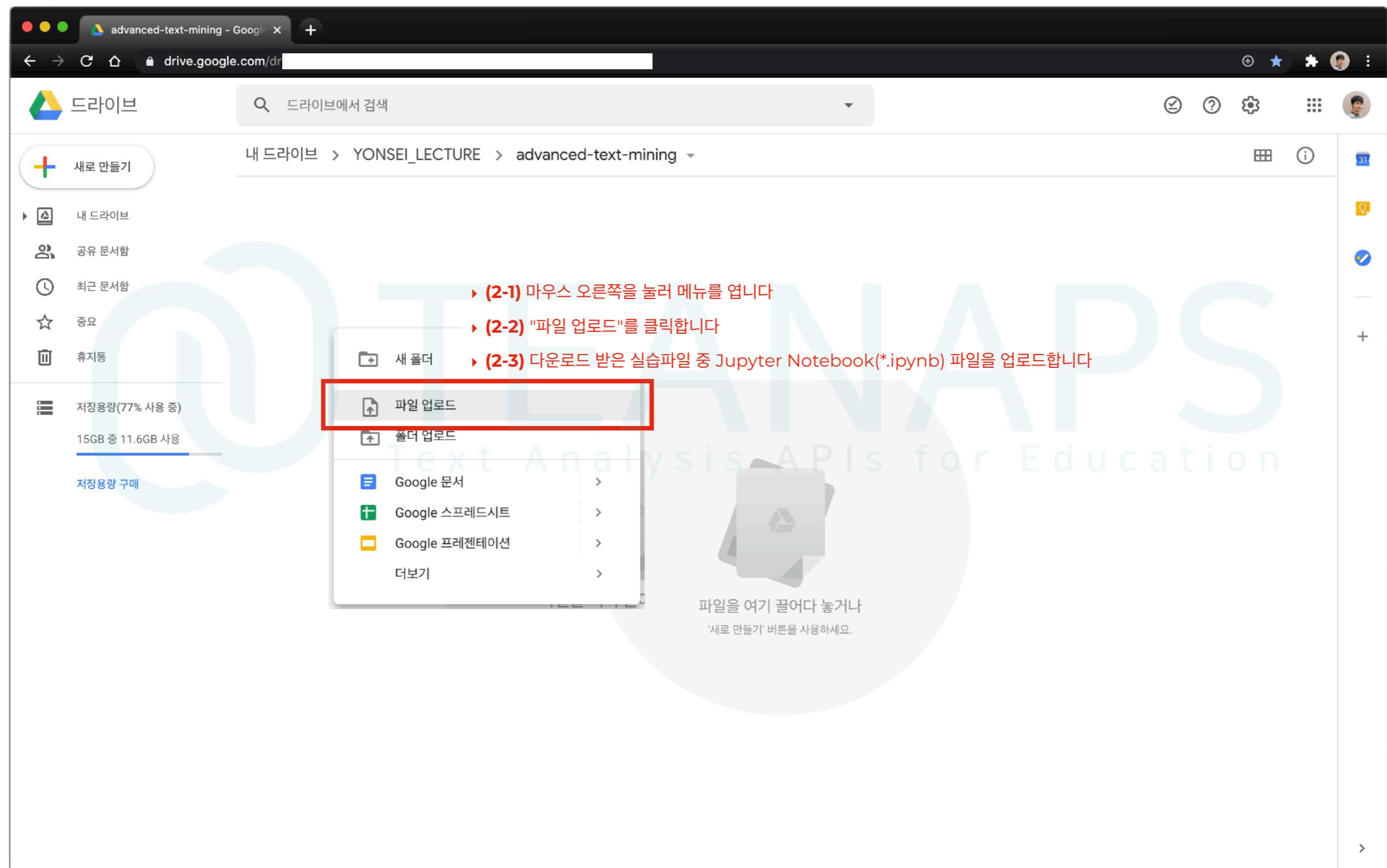
## Google Chrome + Colaboratory

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# Google Colaboratory



# Google Colaboratory



# Google Colaboratory

The image shows a split-screen view. On the left, a screenshot of Google Drive displays a file named "New\_Jupyter\_Notebook\_File.ipynb" in the "advanced-text-mining" folder. A red box highlights this file. Below it, two red bullet points provide instructions: "(3-1) 업로드한 파일을 실행합니다" and "(3-2) Google Colaboratory 확장프로그램 설치 안내창이 나오는 경우 동의 및 설치한 후 실행합니다". On the right, a screenshot of Google Colaboratory shows a Jupyter Notebook interface with the code "print('hello world!')". The output cell shows "hello world!". A white box contains the instruction "(3-3) Google Colaboratory 환경에서 Jupyter Notebook 파일을 동일하게 활용 가능합니다".

▶ (3-1) 업로드한 파일을 실행합니다

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

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

WHAT THE ...

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

https://www.anaconda.com/download/

ANACONDA. ▶ (1-1) http://www.anaconda.com/download/에 접속합니다 (Internet Explorer, Chrome 등 모든 브라우저 가능)

Download Anaconda Distribution

Version 5.2 | Release Date: May 30, 2018

Download For: Windows macOS Linux

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Package Management

Manage packages, dependencies and environments with [conda](#)

Portal to Data Science

Uncover insights in your data and create interactive visualizations

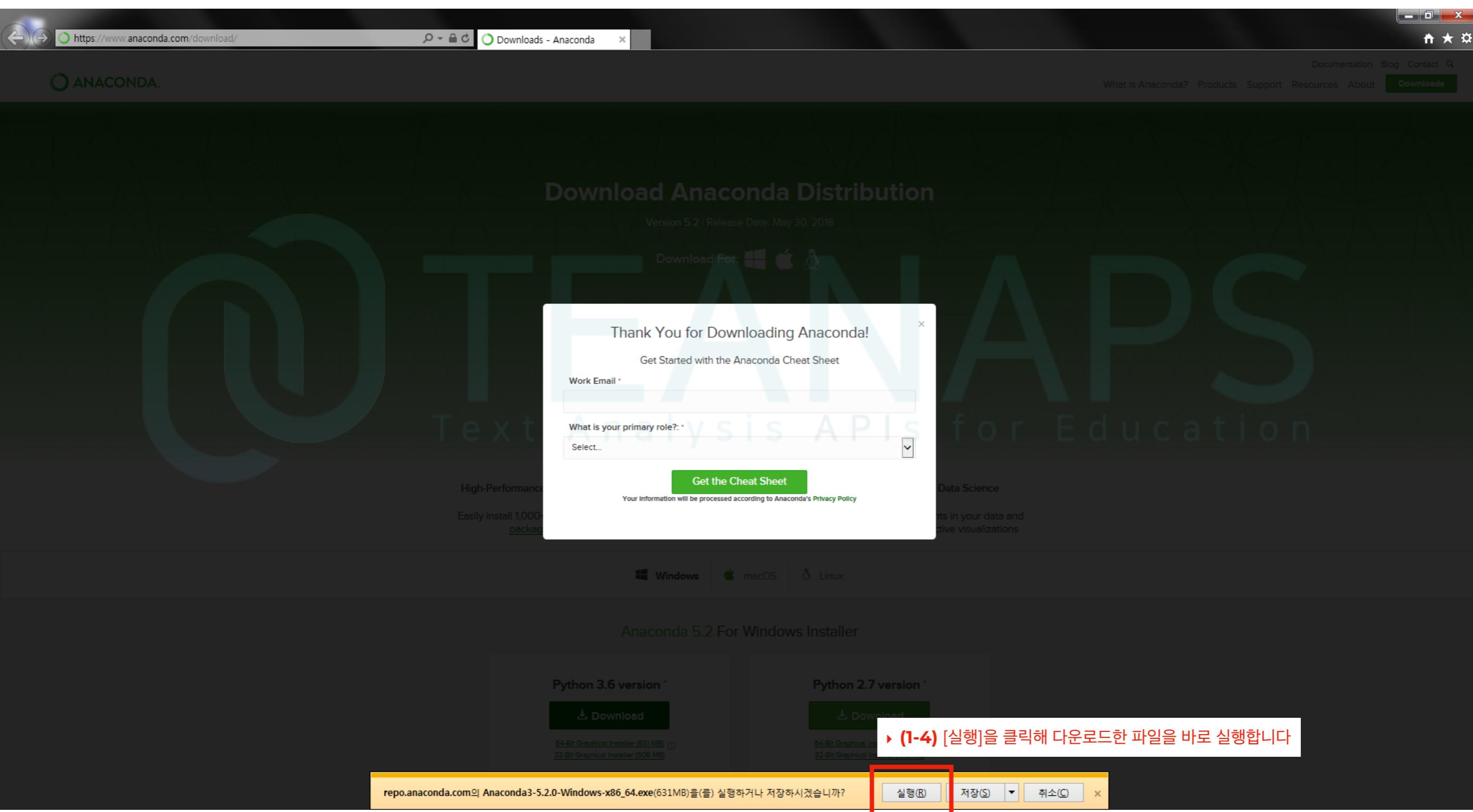
Windows macOS Linux

Anaconda 5.2 For Windows Installer ▶ (1-2) 접속한 웹페이지에는 자신의 PC 운영체제에 맞는 다운로드 버튼이 생성됩니다  
(예시 이미지는 Windows 운영체제, Internet Explorer)

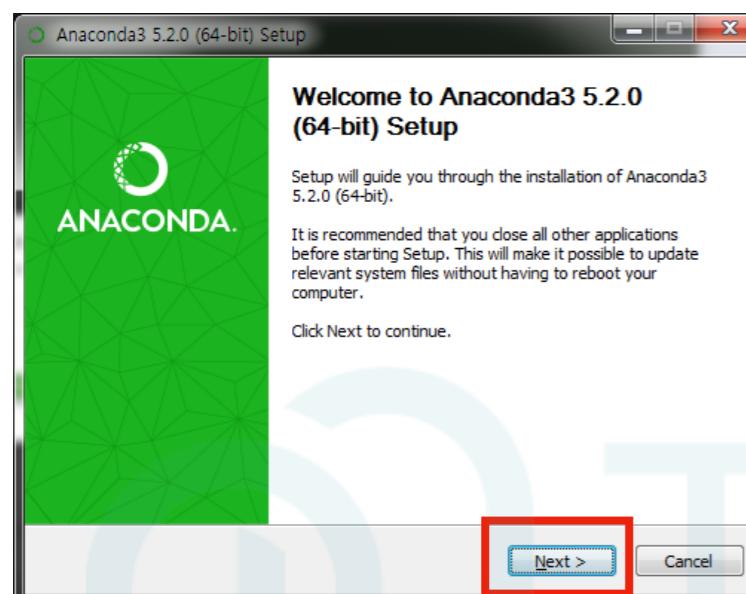
Python 3.6 version ▶ (1-3) "Python 3.6 version" 아래 [Download] 버튼을 클릭합니다  
(자신의 운영체제에 맞는 설치파일이 자동으로 다운로드)

Python 2.7 version

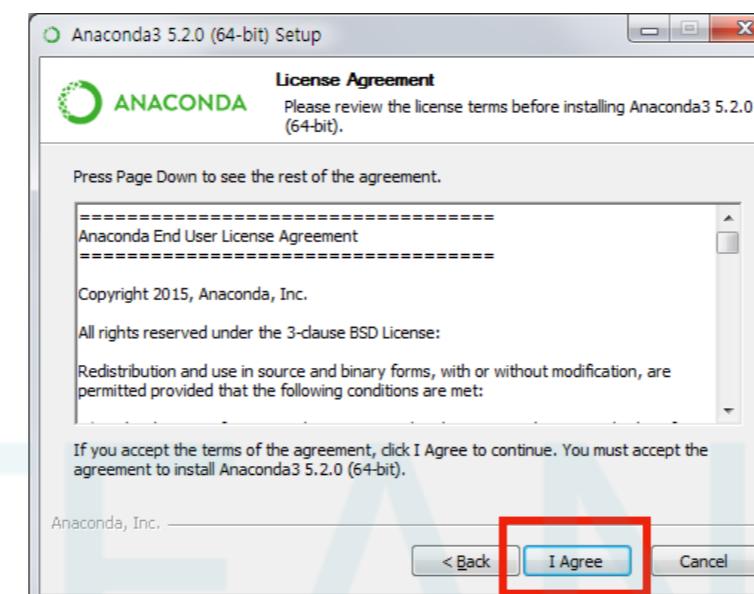
# Python 3.6 Anaconda



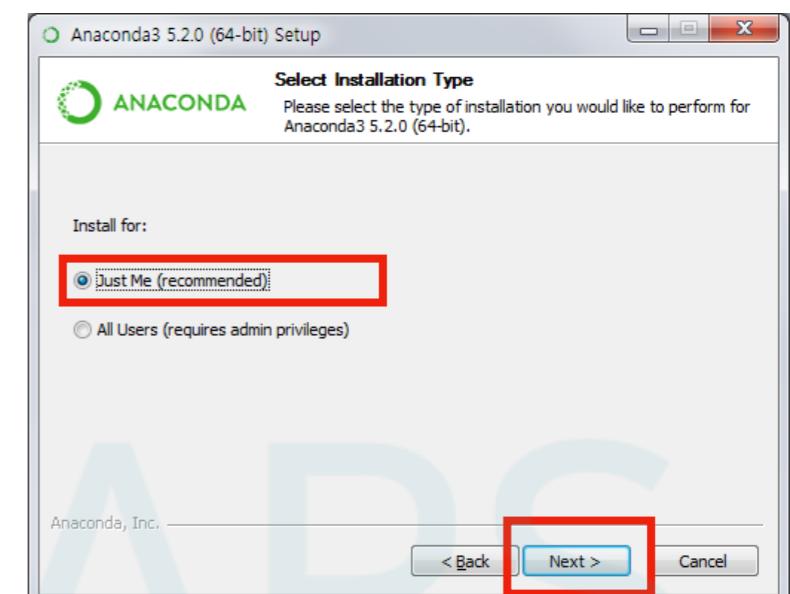
# Python 3.6 Anaconda



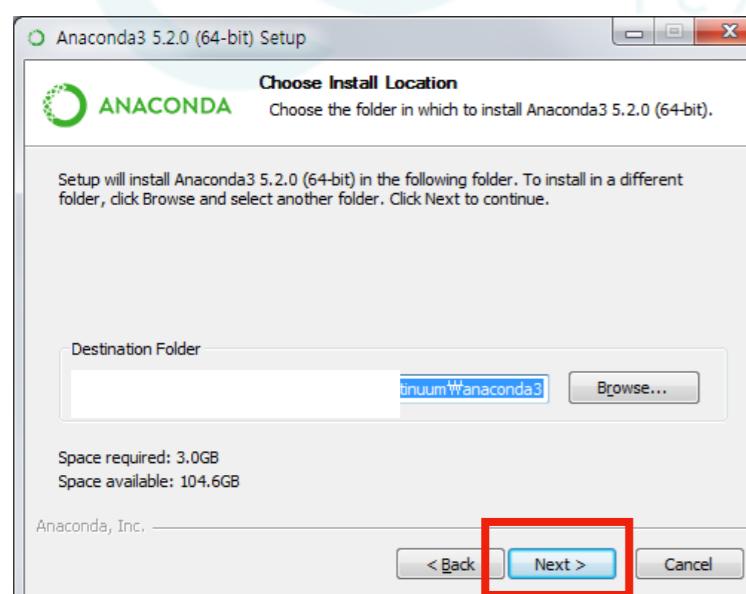
▶ (2-1) [Next >]를 클릭해 설치를 시작합니다



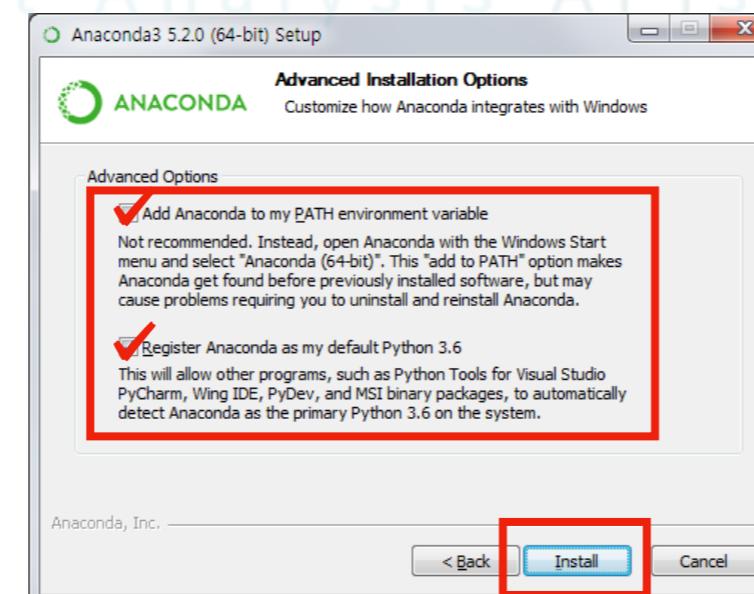
▶ (2-2) [I Agree]를 클릭해 약관에 동의합니다



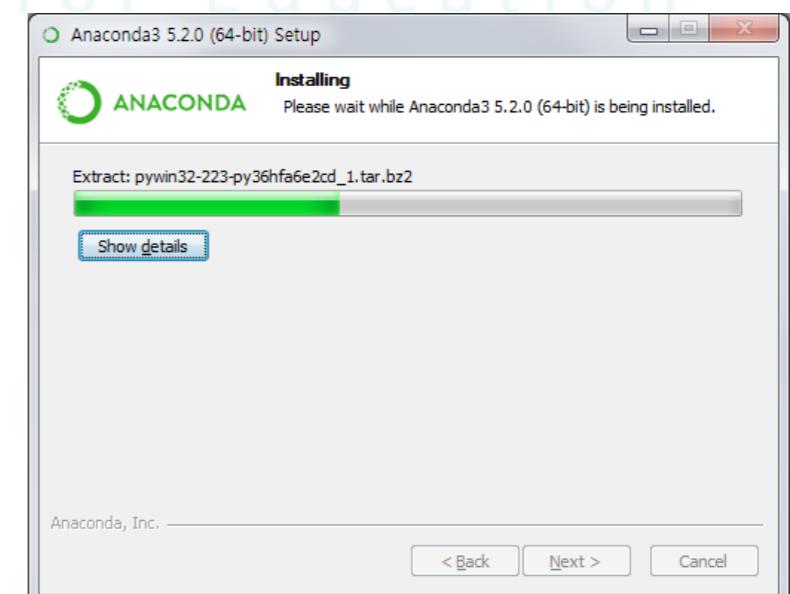
▶ (2-3) "Just Me (recommended)"를 선택하고  
[Next >]를 클릭합니다



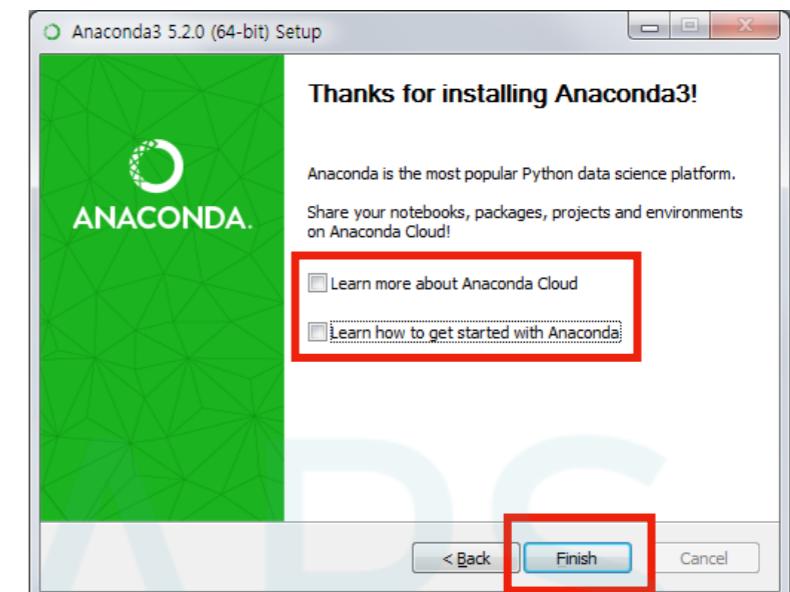
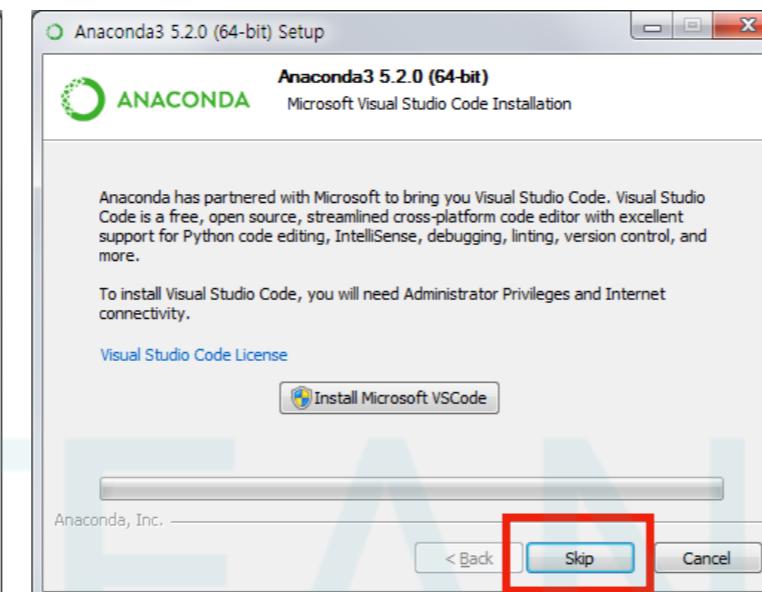
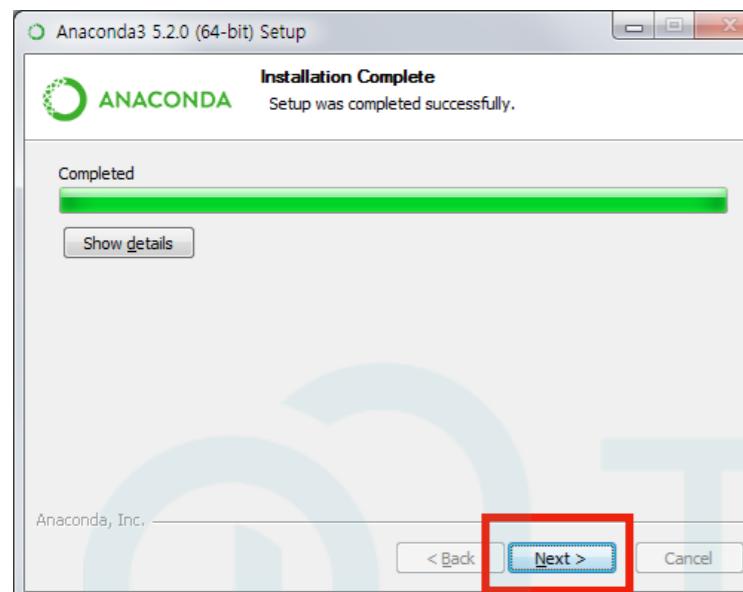
▶ (2-4) 설치경로를 그대로 두고 [Next >]를 클릭합니다



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



# Python 3.6 Anaconda

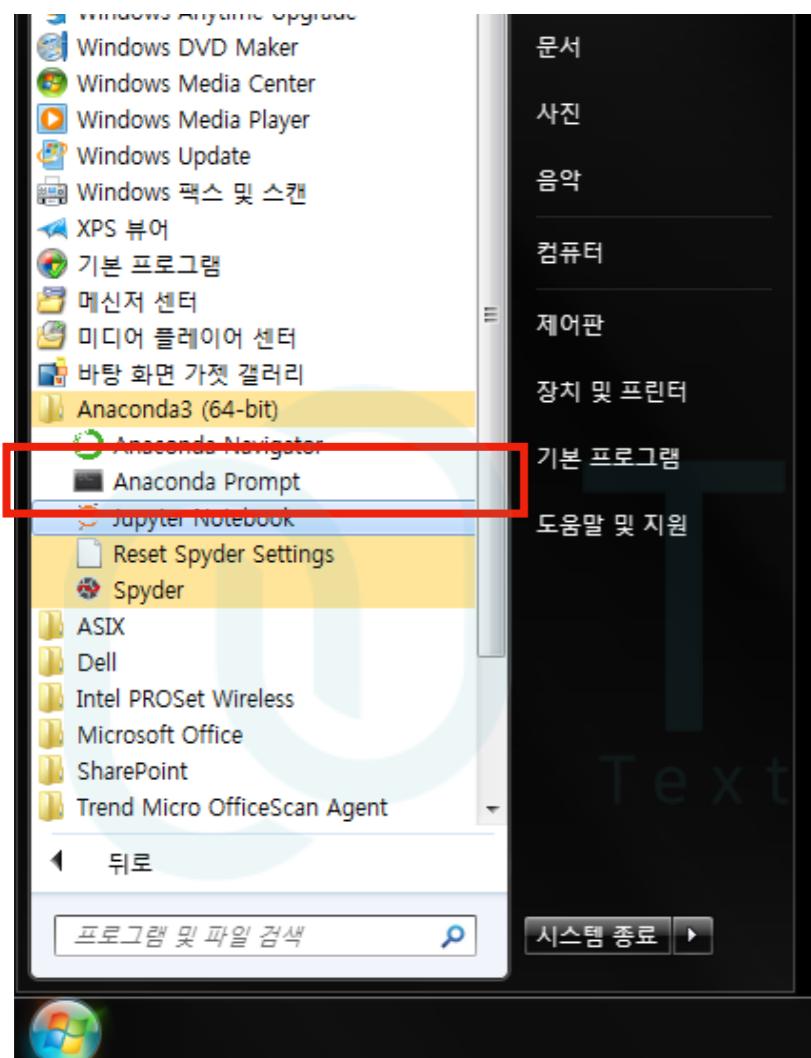


▶ (2-6) 설치가 완료되면 [Next >]를 클릭합니다

▶ (2-7) [Skip]을 클릭합니다

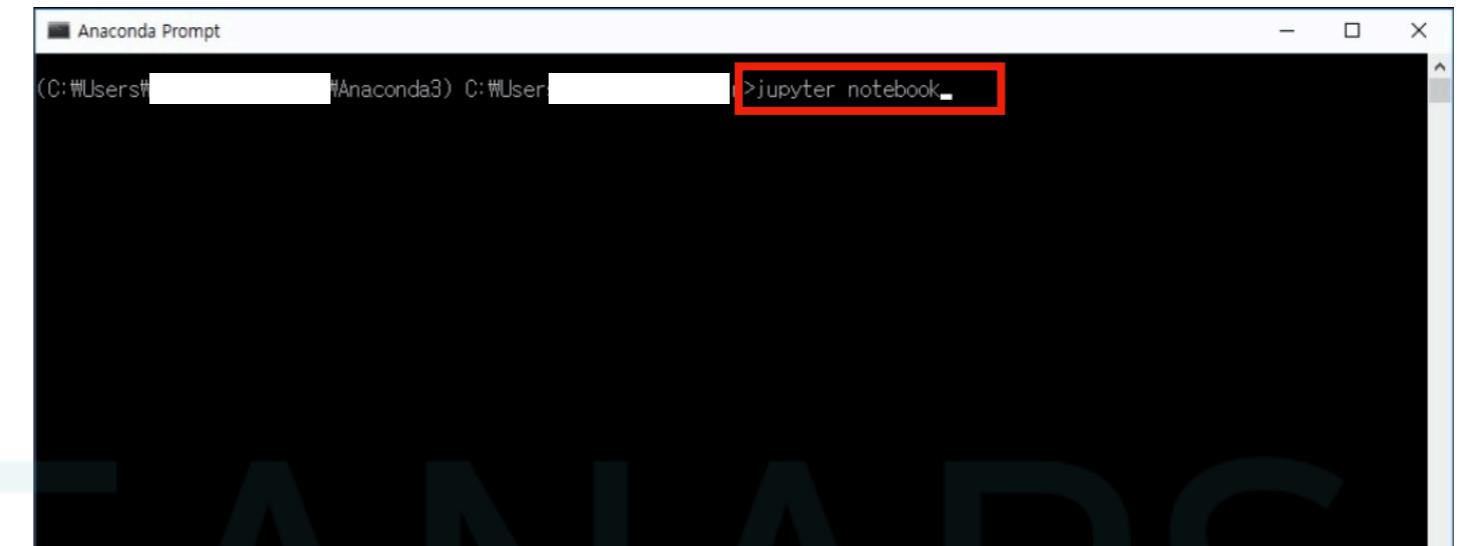
▶ (2-8) 체크박스를 모두 해제하고 [Finish]를 클릭해  
설치를 마칩니다

# Python 3.6 Anaconda

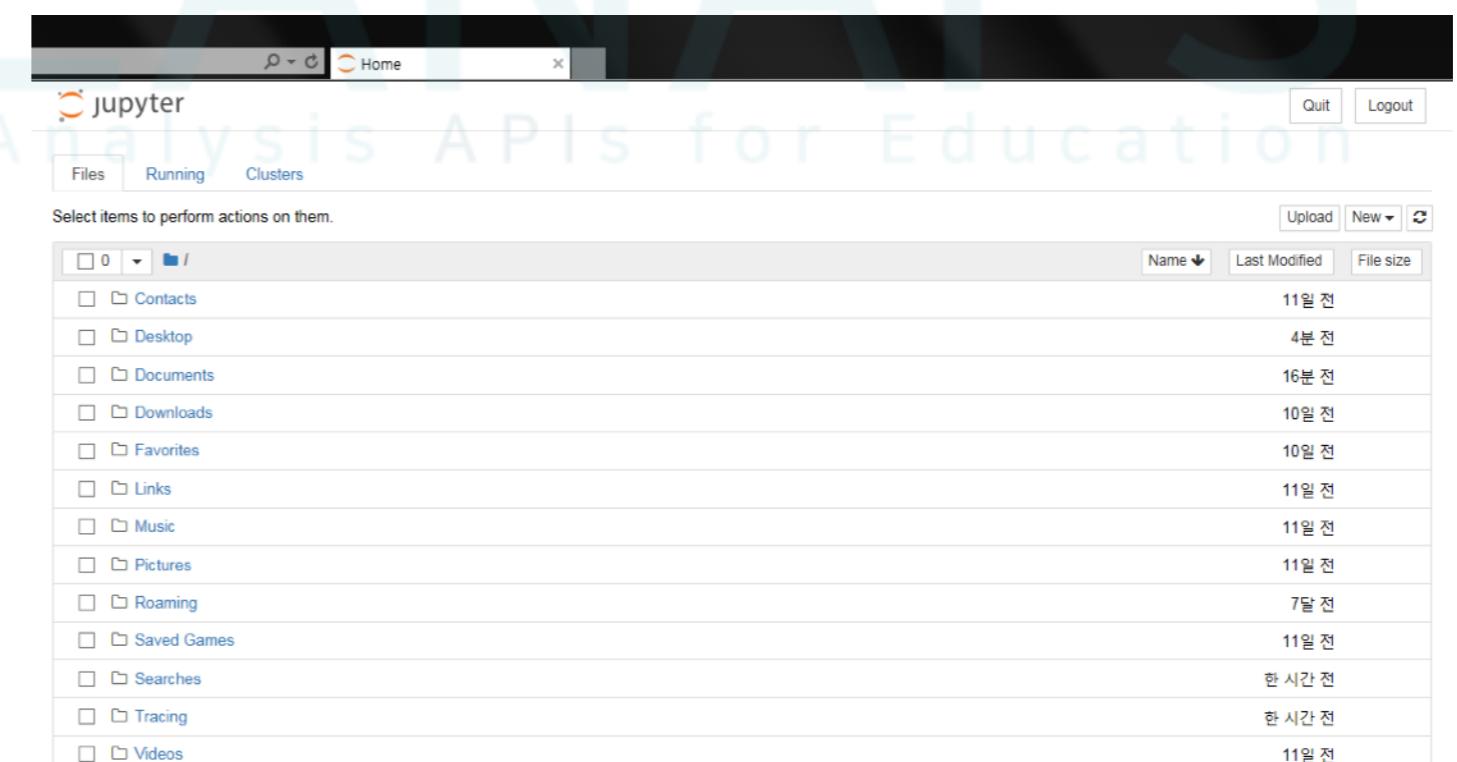


▶ (3-1) [시작] > [모든 프로그램] > [Anaconda3 (32/64-bit)]

> [Anaconda Prompt]를 클릭합니다



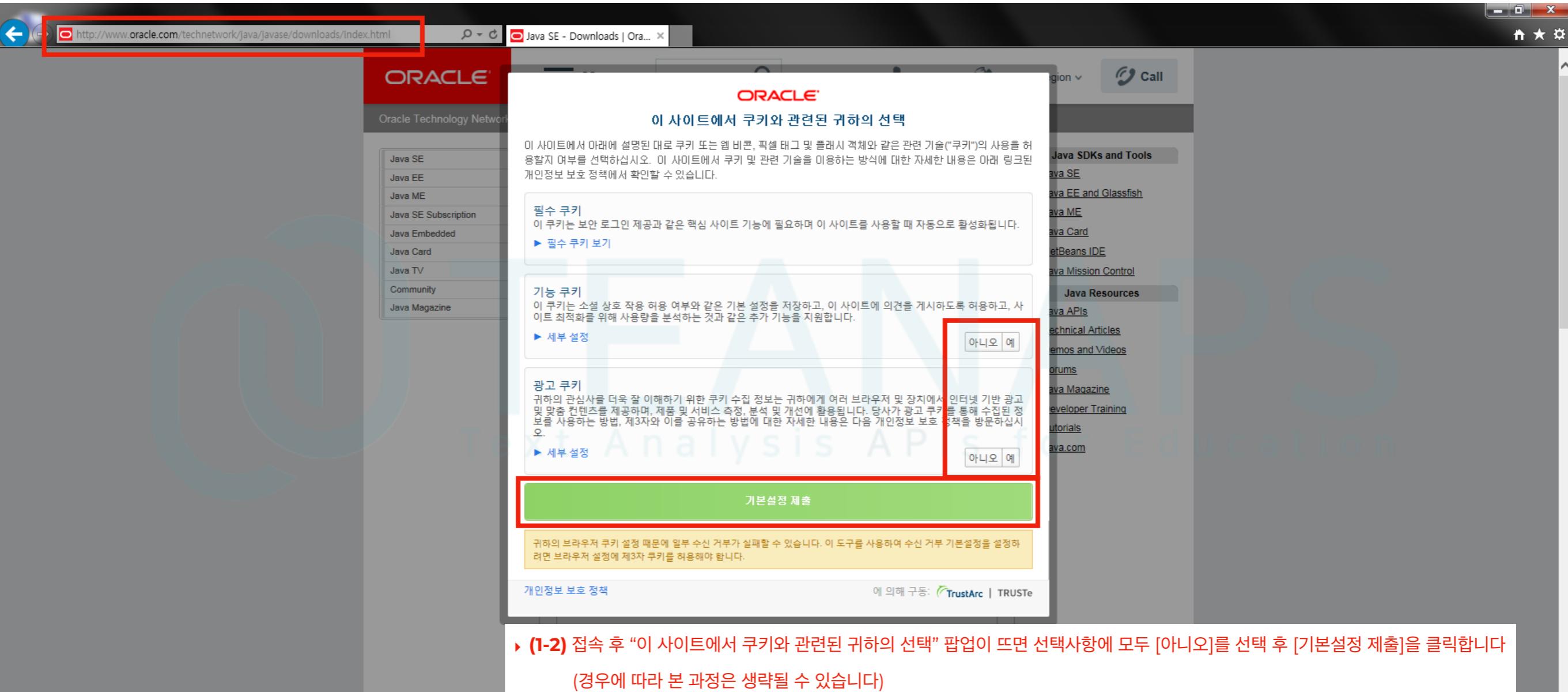
▶ (3-2) "jupyter notebook"을 입력하고 [엔터]를 입력합니다



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

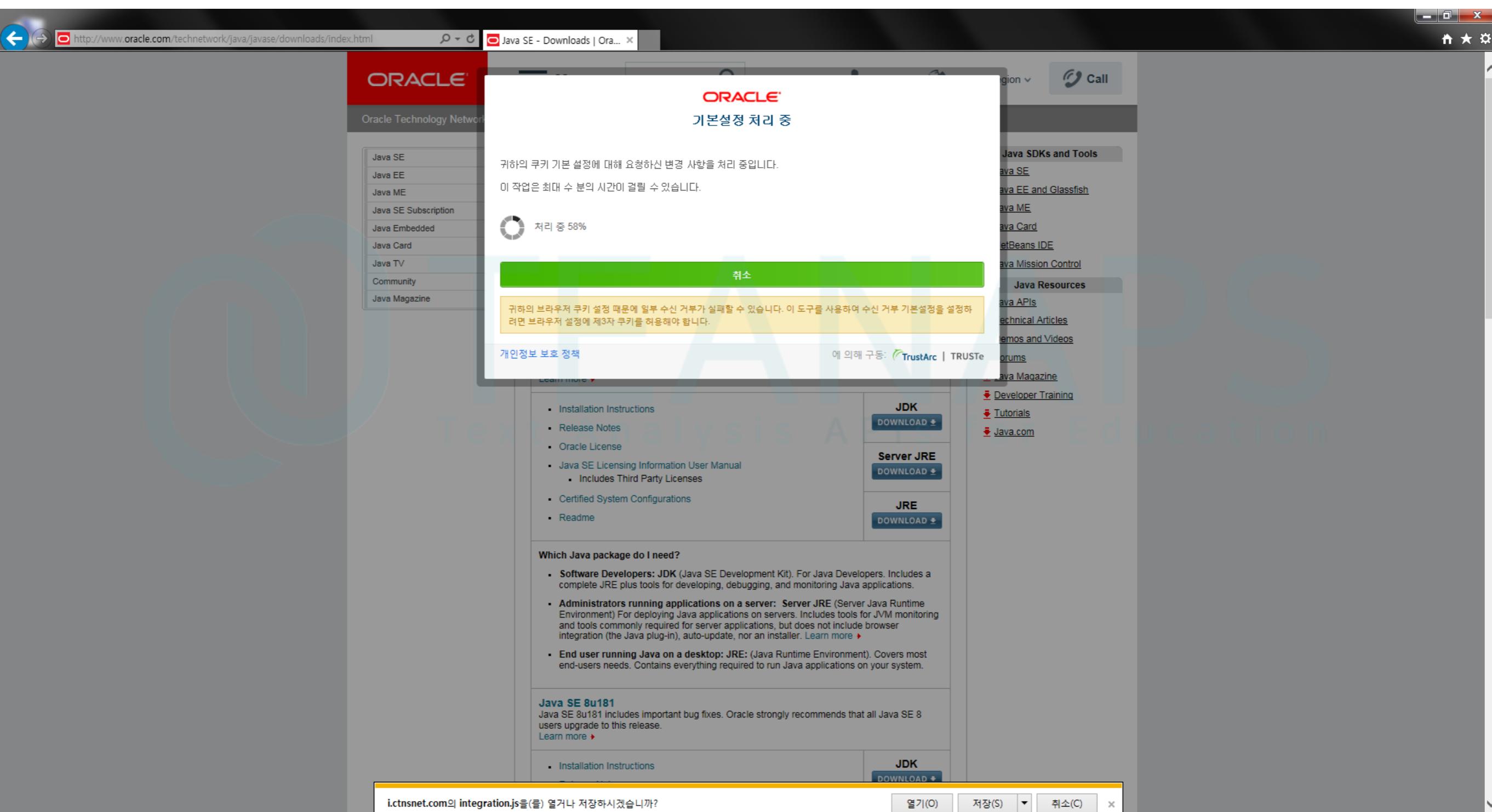
# JAVA jdk 설치

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

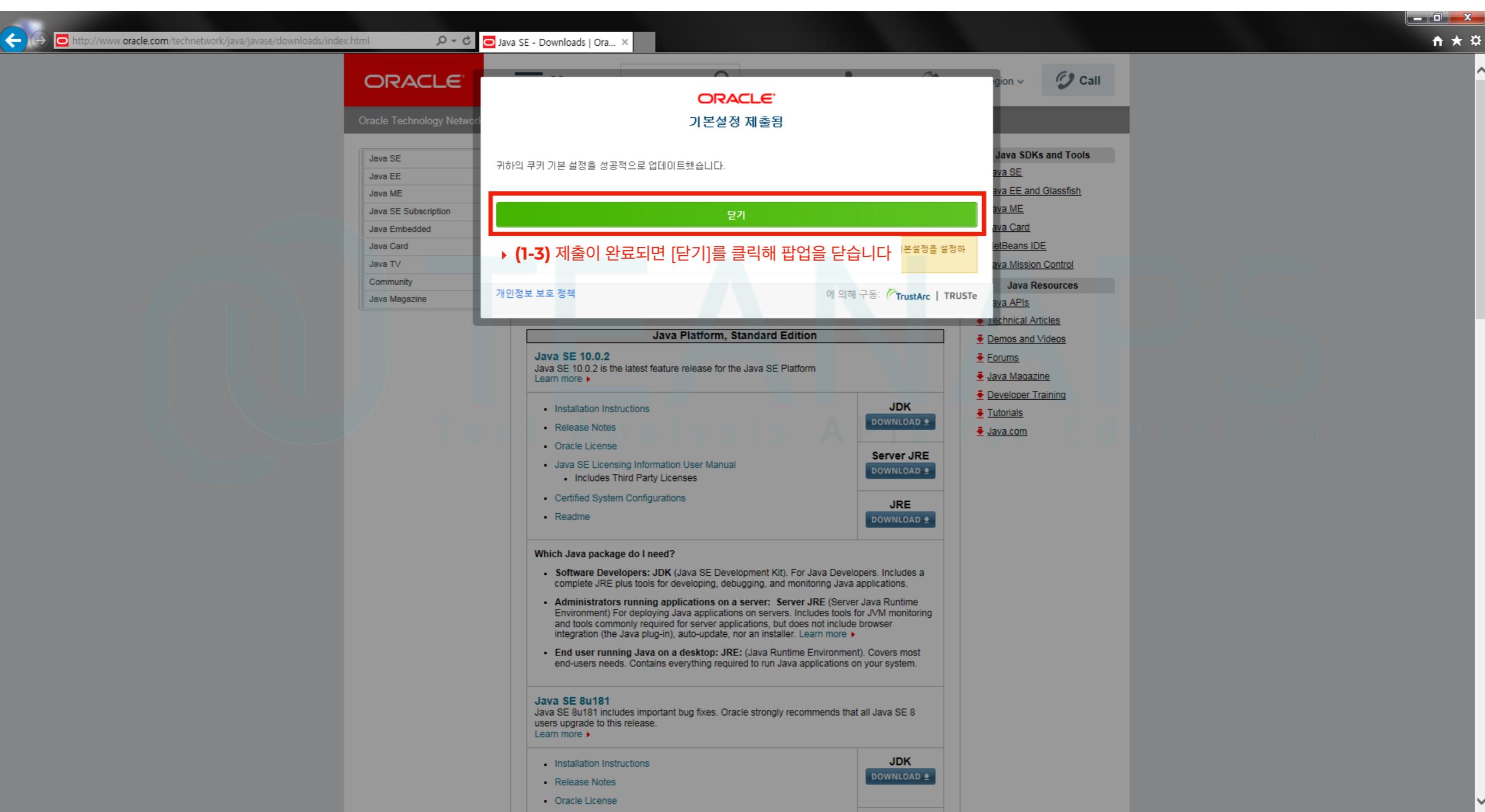


- ▶ (1-2) 접속 후 “이 사이트에서 쿠키와 관련된 귀하의 선택” 팝업이 뜨면 선택사항에 모두 [아니오]를 선택 후 [기본설정 제출]을 클릭합니다  
(경우에 따라 본 과정은 생략될 수 있습니다)

# JAVA jdk 설치



# JAVA jdk 설치



# JAVA jdk 설치

The screenshot shows the Oracle Java SE Downloads page. At the top, there's a navigation bar with links for Overview, Downloads (which is selected), Documentation, Community, Technologies, and Training. On the left, a sidebar lists categories like Java SE, Java EE, Java ME, etc. The main content area is titled "Java SE Downloads" and features a large button with a Java logo and the text "Java Platform (JDK) 10". Below this button, there's a section for "Java SE 10.0.2" with a "DOWNLOAD" button. Further down, there's a section titled "Which Java package do I need?" with three bullet points: "Software Developers: JDK (Java SE Development Kit). For Java Developers. Includes a complete JRE plus tools for developing, debugging, and monitoring Java applications.", "Administrators running applications on a server: Server JRE (Server Java Runtime Environment) For deploying Java applications on servers. Includes tools for JVM monitoring and tools commonly required for server applications, but does not include browser integration (the Java plug-in), auto-update, nor an installer.", and "End user running Java on a desktop: JRE: (Java Runtime Environment). Covers most end-users needs. Contains everything required to run Java applications on your system." There are also "JDK DOWNLOAD", "Server JRE DOWNLOAD", and "JRE DOWNLOAD" buttons. A red box highlights the "Java Platform (JDK) 10" download button.

▶ (1-4) 화면 중앙의 [Java Platform (JDK) + (version)]을 클릭합니다

# JAVA jdk 설치

The screenshot shows the Oracle Java SE Development Kit 10 Downloads page. At the top, there's a navigation bar with links for Overview, Downloads (which is selected), Documentation, Community, Technologies, and Training. On the left, there's a sidebar with links for Java SE, Java EE, Java ME, Java SE Subscription, Java Embedded, Java Card, Java TV, Community, and Java Magazine. The main content area has a heading 'Java SE Development Kit 10 Downloads' and a brief description of what the JDK is. Below that, it says 'The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.' There's also a section for 'See also:' with links to Java Developer Newsletter, Java Developer Day, and Java Magazine. A note about the JDK 10.0.2 checksum is present. The central part of the page features a table of download links for various operating systems. Above the table, there's a note: 'You must accept the Oracle Binary Code License Agreement for Java SE to download this software.' Below this note, there are two radio buttons: 'Accept License Agreement' (unchecked) and 'Decline License Agreement' (checked). A red box highlights the 'Accept License Agreement' button. To the right of the table, there's a red arrow pointing right with the text '(1-5) 화면 아래 [Accept License Agreement]를 선택하여 라이선스 정책에 동의합니다'.

Product / File Description	File Size	Download
Linux	306 MB	<a href="#">jdk-10.0.2_linux-x64_bin.rpm</a>
Linux	338.43 MB	<a href="#">jdk-10.0.2_linux-x64_bin.tar.gz</a>
macOS	395.46 MB	<a href="#">jdk-10.0.2_osx-x64_bin.dmg</a>
Solaris SPARC	207.07 MB	<a href="#">jdk-10.0.2_solaris-sparcv9_bin.tar.gz</a>
Windows	390.25 MB	<a href="#">jdk-10.0.2_windows-x64_bin.exe</a>

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# JAVA jdk 설치

The screenshot shows a web browser displaying the Oracle Java SE Development Kit 10 Downloads page. The URL in the address bar is <http://www.oracle.com/technetwork/java/javase/downloads/jdk10-downloads-441664.html>. The page has a red header with the Oracle logo. The main content area is titled "Java SE Development Kit 10 Downloads". It includes a sidebar with links to Java SE, Java EE, Java ME, Java Subscription, Java Embedded, Java Card, Java TV, Community, and Java Magazine. The "Downloads" tab is selected in the top navigation bar. A callout box highlights the download table, which lists file sizes and download links for various operating systems: Linux (306 MB), Linux (338.43 MB), macOS (395.46 MB), Solaris SPARC (207.07 MB), and Windows (390.25 MB). The Windows row is enclosed in a red box.

Java SE Development Kit 10 Downloads

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

Thank you for accepting the Oracle Binary Code License Agreement for Java SE; you may now [download this software](#).

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Linux	338.43 MB	<a href="#">jdk-10.0.2_linux-x64_bin.tar.gz</a>
macOS	395.46 MB	<a href="#">jdk-10.0.2_osx-x64_bin.dmg</a>
Solaris SPARC	207.07 MB	<a href="#">jdk-10.0.2_solaris-sparcv9_bin.tar.gz</a>
Windows	390.25 MB	<a href="#">jdk-10.0.2_windows-x64_bin.exe</a>

▶ (1-6) 자신의 PC 운영체제에 해당하는 설치파일 링크를 클릭해 다운로드합니다  
(Windows PC는 [jdk-(version)\_windows-x64\_bin.exe], Mac OS는 [jdk-(version)-osx-x64\_bin.dmg]를 클릭)

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# JAVA jdk 설치

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**Java SE Development Kit 10 Downloads**

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

Thank you for accepting the Oracle Binary Code License Agreement for Java SE; you may now download this software.

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macOS	395.46 MB	<a href="#">jdk-10.0.2_osx-x64_bin.dmg</a>
Solaris SPARC	207.07 MB	<a href="#">jdk-10.0.2_solaris-sparcv9_bin.tar.gz</a>
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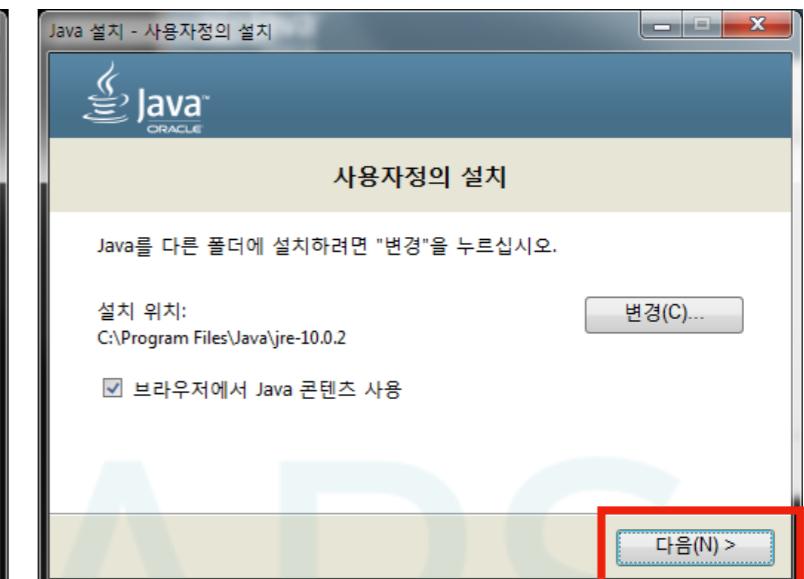
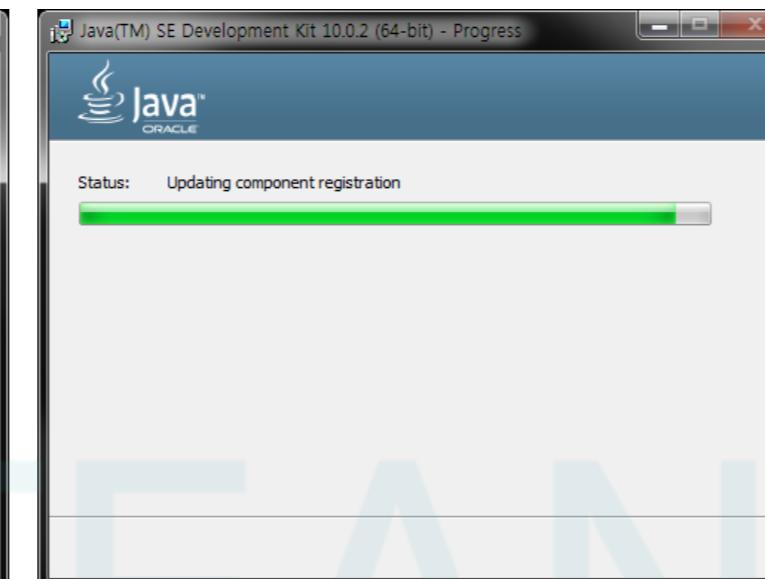
▶ (1-7) [실행]을 클릭해 다운로드한 파일을 바로 실행합니다

download.oracle.com의 jdk-10.0.2\_windows-x64\_bin.exe(390MB)을(를) 실행하거나 저장하시겠습니까?  
[실행(R)] [저장(S)] [취소(C)]

# JAVA jdk 설치



▶ (2-1) [Next >]를 클릭해 설치를 시작합니다



▶ (2-2) 설치경로를 그대로 두고 [Next >]를 클릭합니다

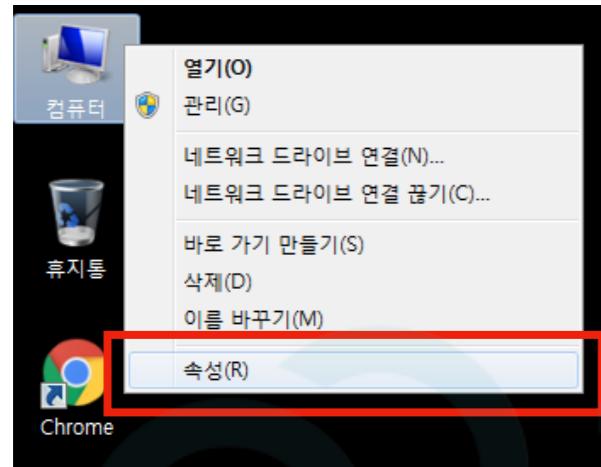


▶ (2-3) “사용자정의 설치” 창이 뜨면 경로를 그대로 두고  
[다음(N) >]을 클릭합니다



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

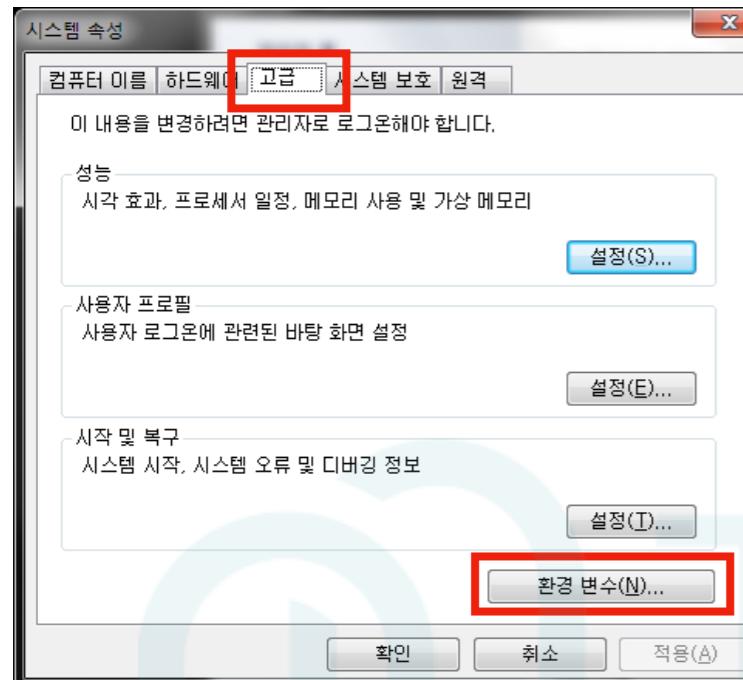
# 환경변수 설정



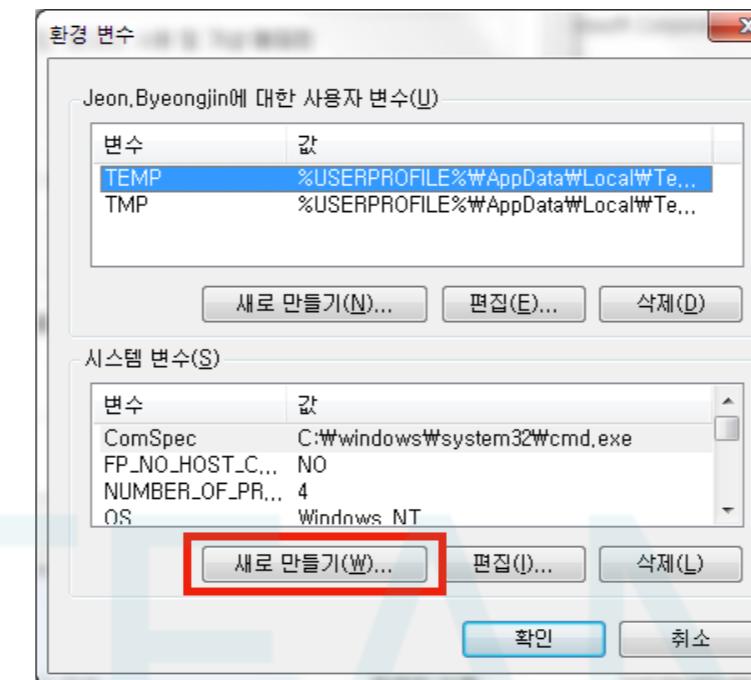
▶ (1-1) 바탕화면의 “내컴퓨터” 아이콘에서 마우스 오른쪽을 클릭한 후 [속성]을 클릭합니다



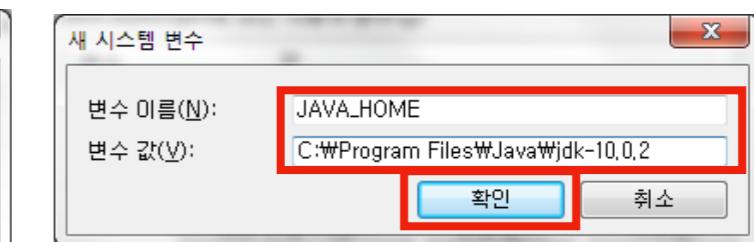
# 환경변수 설정



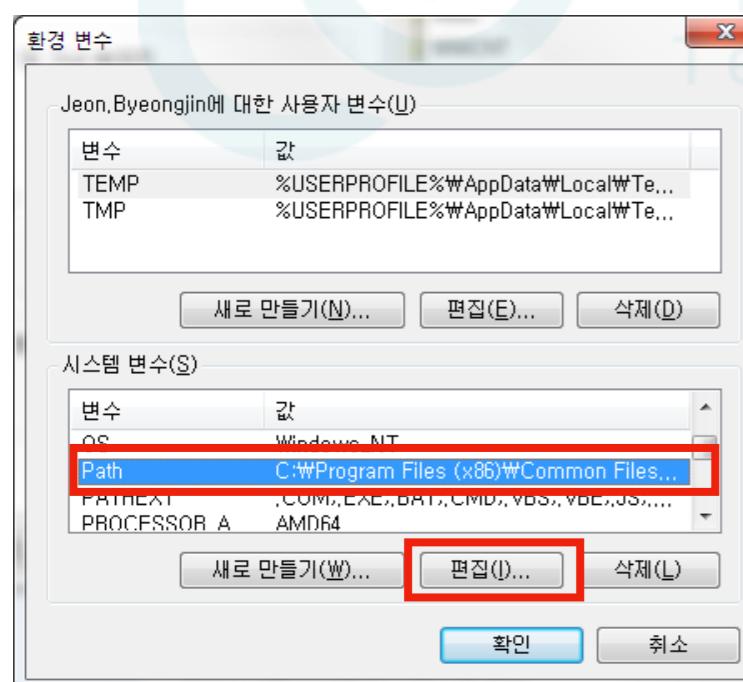
▶ (1-3) [고급] 탭을 선택하고 아래 [환경변수]를 클릭합니다



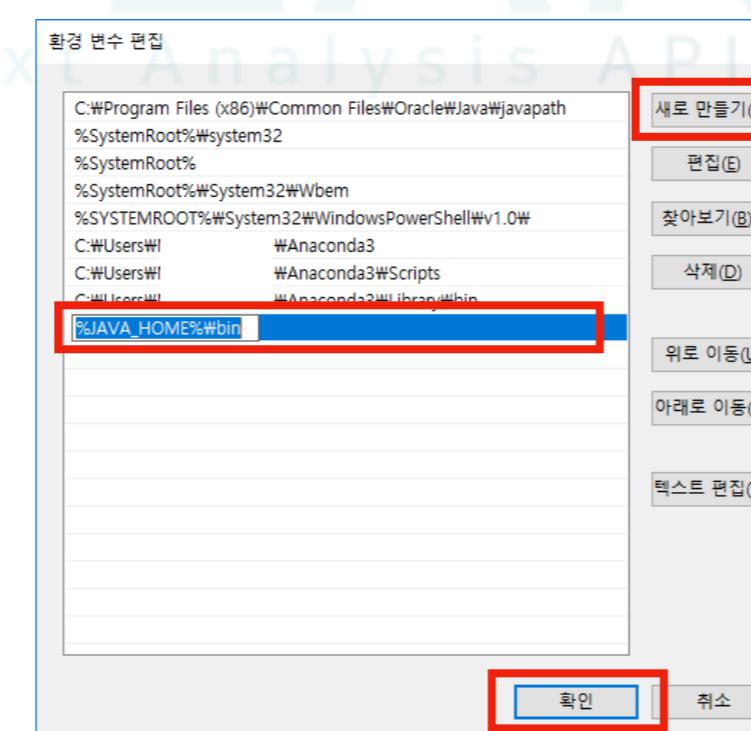
▶ (1-4) 아래 두번째 [새로 만들기(W)...]를 클릭합니다



▶ (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)

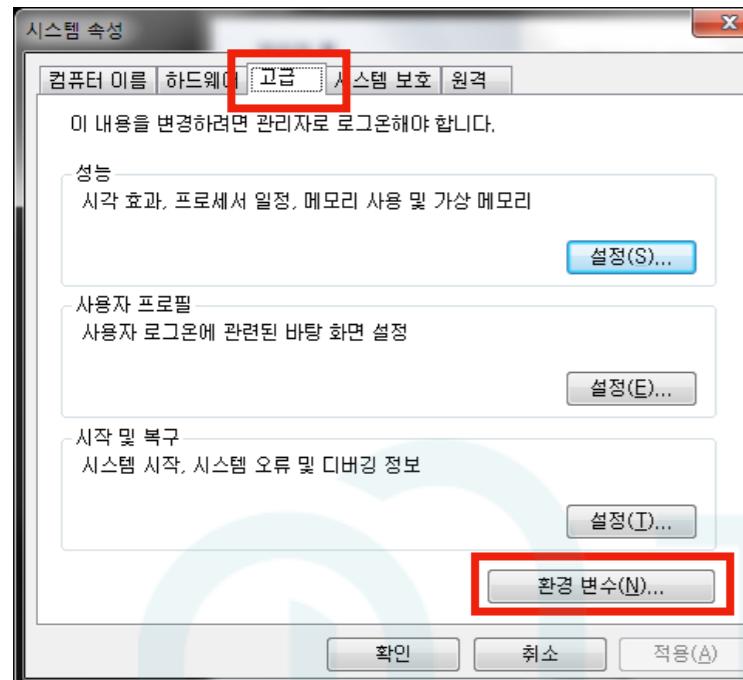


▶ (1-6) 아래 “시스템 변수(S)” 목록 중 변수 이름이 “Path”인 항목을 선택하고 [편집(I)...]을 클릭합니다

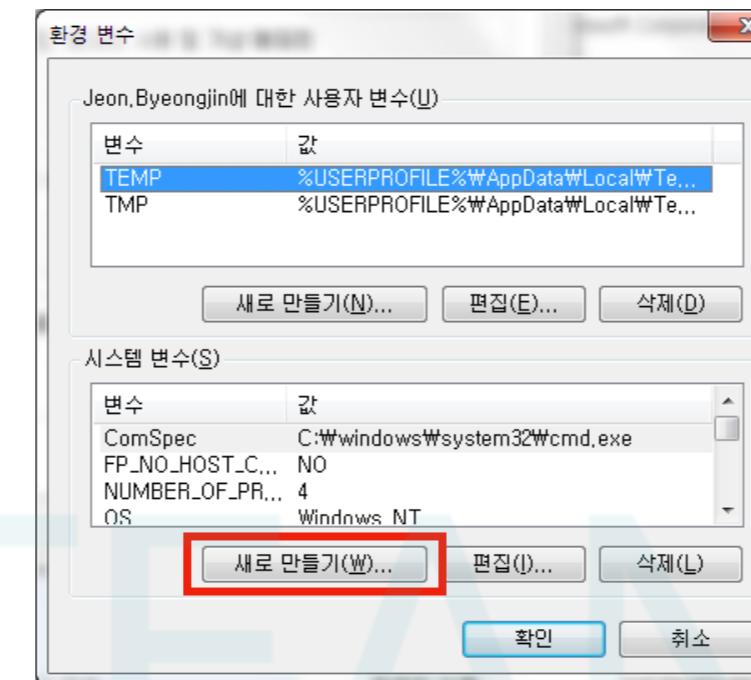


▶ (1-7) [새로 만들기(N)]을 클릭하고 “%JAVA\_HOME%\bin”을 입력 후 [확인]을 클릭합니다  
▶ (1-8) 계속 [확인]을 클릭해 모든 열었던 창을 모두 닫습니다

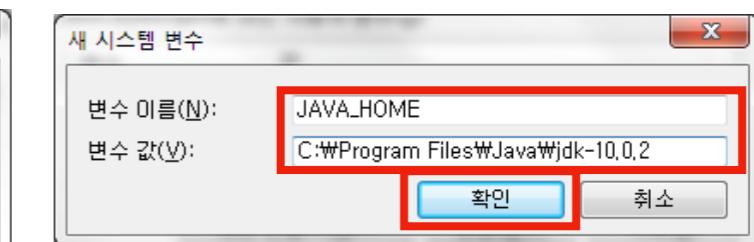
# 환경변수 설정



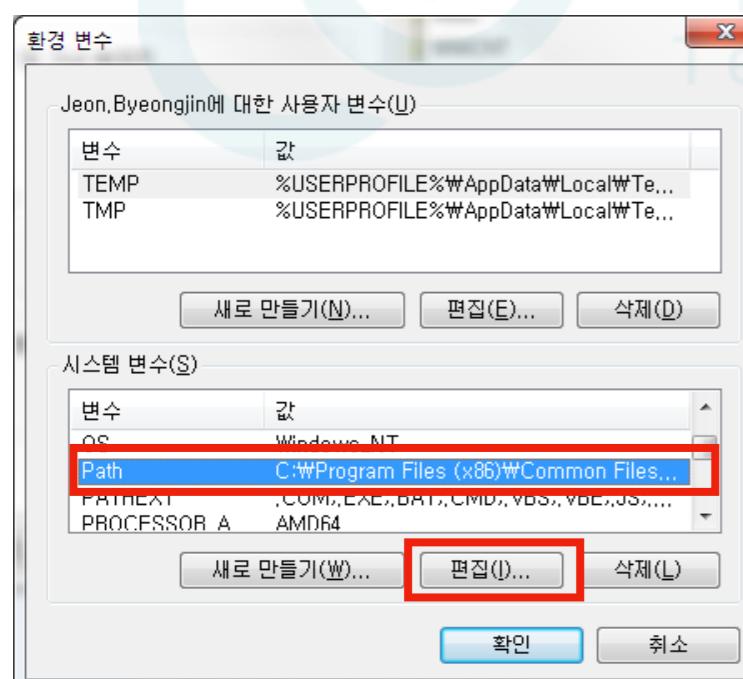
▶ (1-3) [고급] 탭을 선택하고 아래 [환경변수]를 클릭합니다



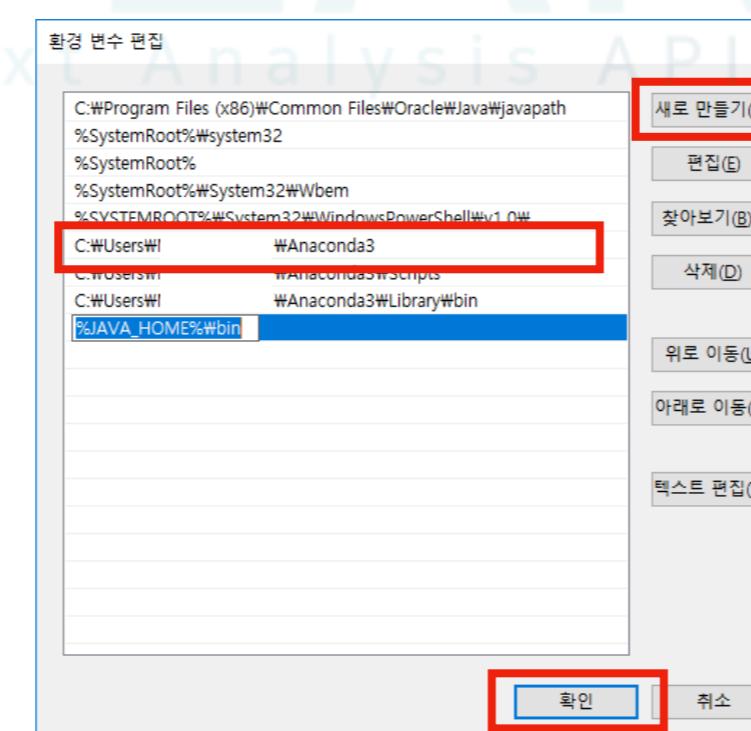
▶ (1-4) 아래 두번째 [새로 만들기(W)...]를 클릭합니다



▶ (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)

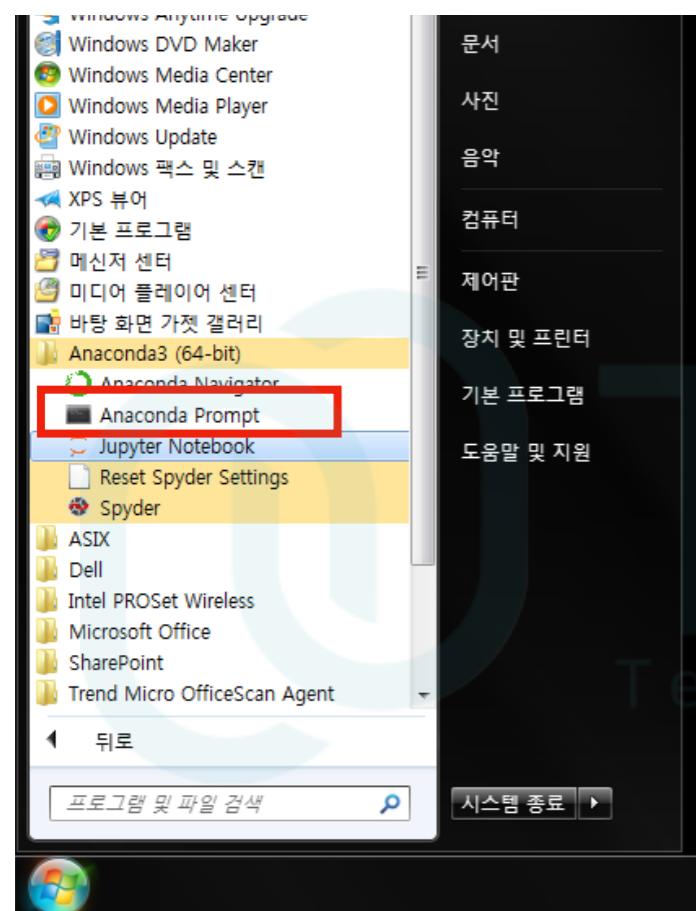
```
C:\> C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright <c> 2009 Microsoft Corporation. All rights reserved.

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]

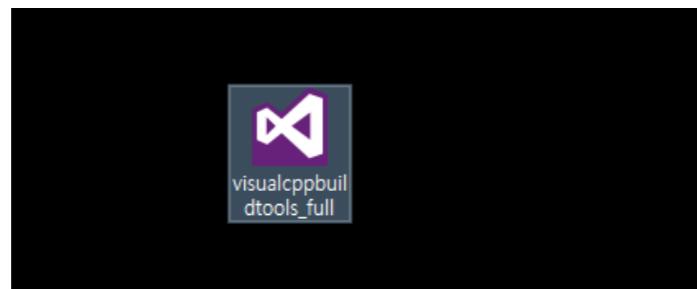
> [Anaconda3 (32/64-bit)]

> [Anaconda Prompt]를 클릭합니다

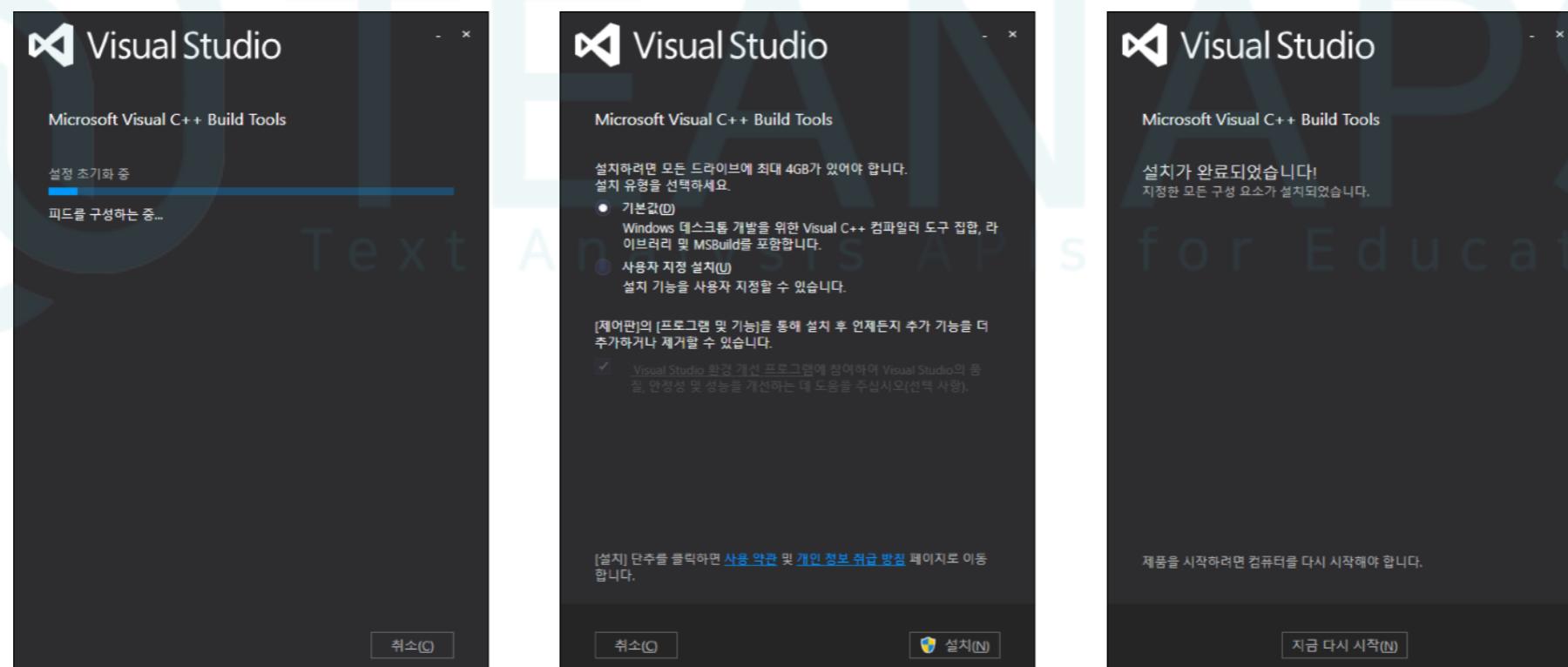
The image shows an Anaconda Prompt window titled 'Anaconda Prompt'. The command line shows '(base) C:\Users\...>python -m pip install --upgrade pip', with the entire command highlighted by a red box. The background of the slide features a large, semi-transparent watermark reading 'TEANAPS Text Analysis APIs for Education'.

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

# Microsoft Visual C++ Build Tools



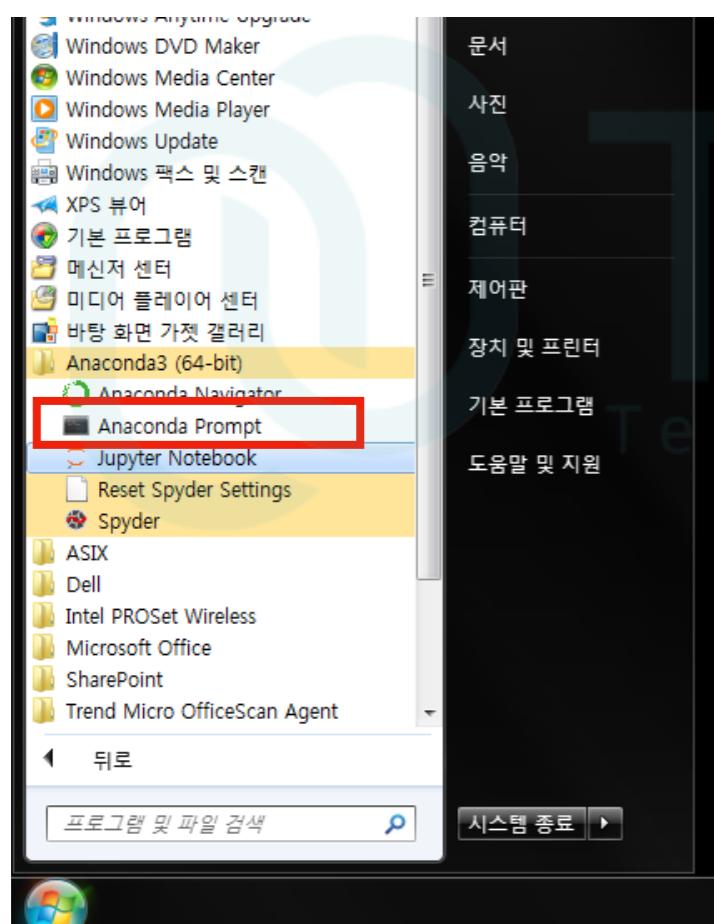
- ▶ (1-3) 링크에서 파일을 다운로드합니다 (<http://go.microsoft.com/fwlink/?LinkId=691126&fixForIE=.exe>.)
- ▶ (2-1) 다운로드한 설치파일을 실행합니다 (visualcppbuildtools\_full.exe)



- ▶ (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

- ◎ “jpype1” 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

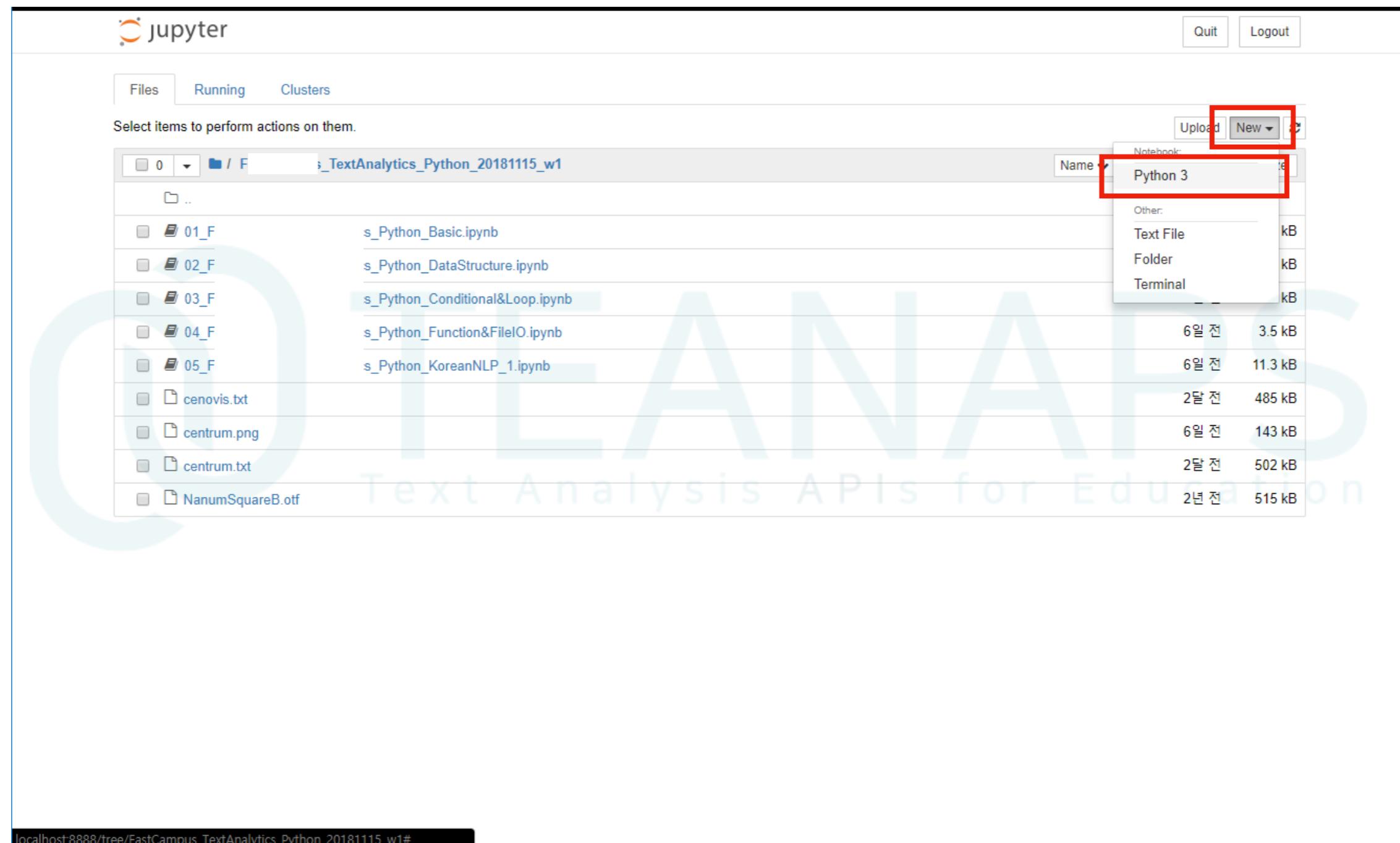
A screenshot of the Anaconda Prompt window. It shows three commands being run:  
(base) C:\Users\...>pip install jpype1  
Collecting jpype1  
Installing collected packages: jpype1  
Successfully installed jpype1-0.6.3  
  
(base) C:\Users\...>pip install konlpy  
Collecting konlpy  
Using cached https://files.pythonhosted.org/packages/e5/3d/4e983cd98d87b50b2ab0387d73fa946f745aa8164e8888a714d5129f9765/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/57/8fd38e31be7951f9164f4cb3a769159a0c2ef4af0f597ddf09a7e736593e/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 jpype1”을 입력하고 [엔터]를 입력합니다
- ▶ (2-2) “pip install konlpy”를 입력하고 [엔터]를 입력합니다
- ▶ (2-3) “pip install wordcloud”를 입력하고 [엔터]를 입력합니다

A screenshot of the Anaconda Prompt window showing the output of the "wordcloud" installation command:  
successfully installed wordcloud-1.5.0  
(base) C:\Users\...

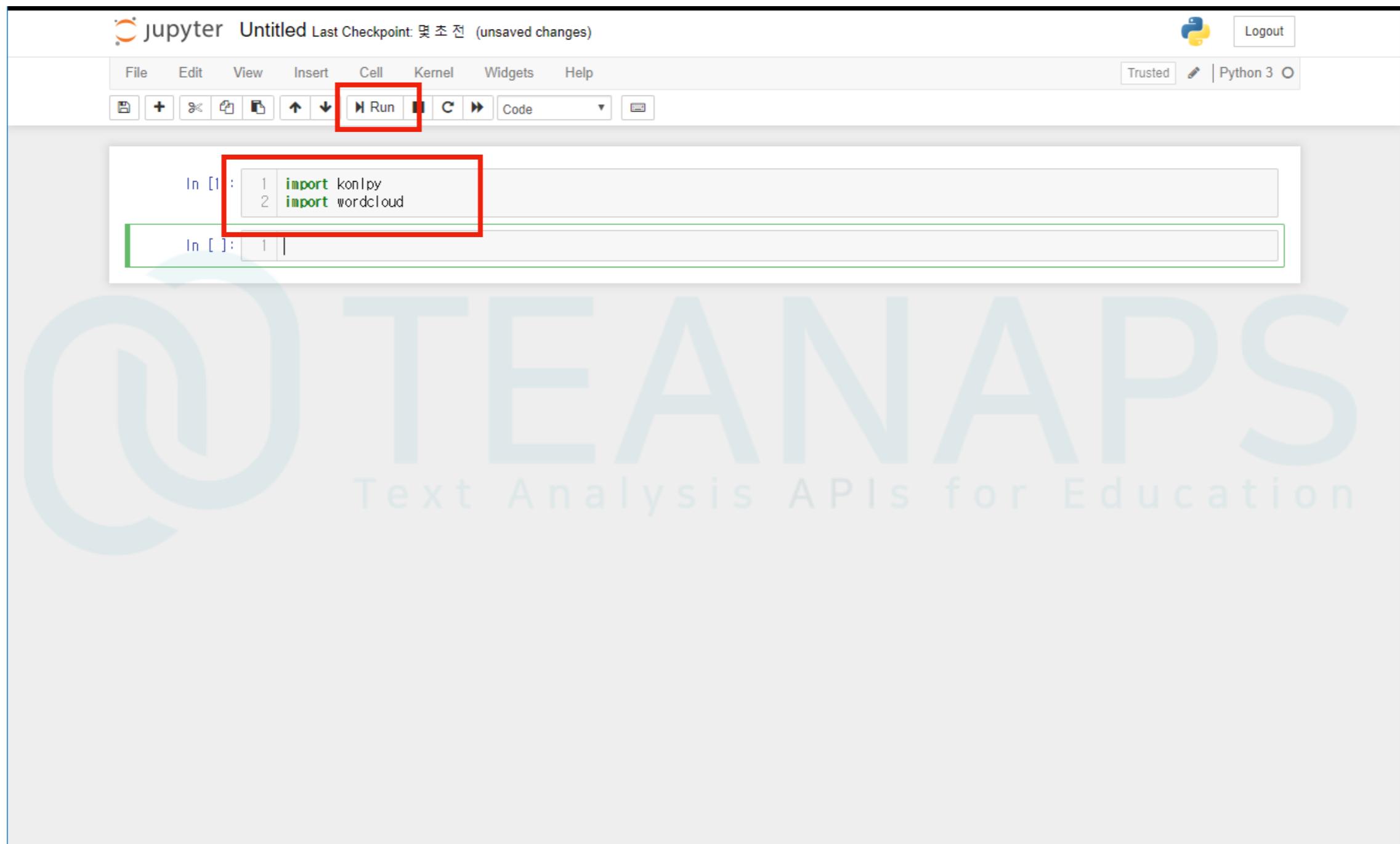
- ▶ (3-1) “jupyter notebook”을 입력하고 [엔터]를 입력합니다

# 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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