

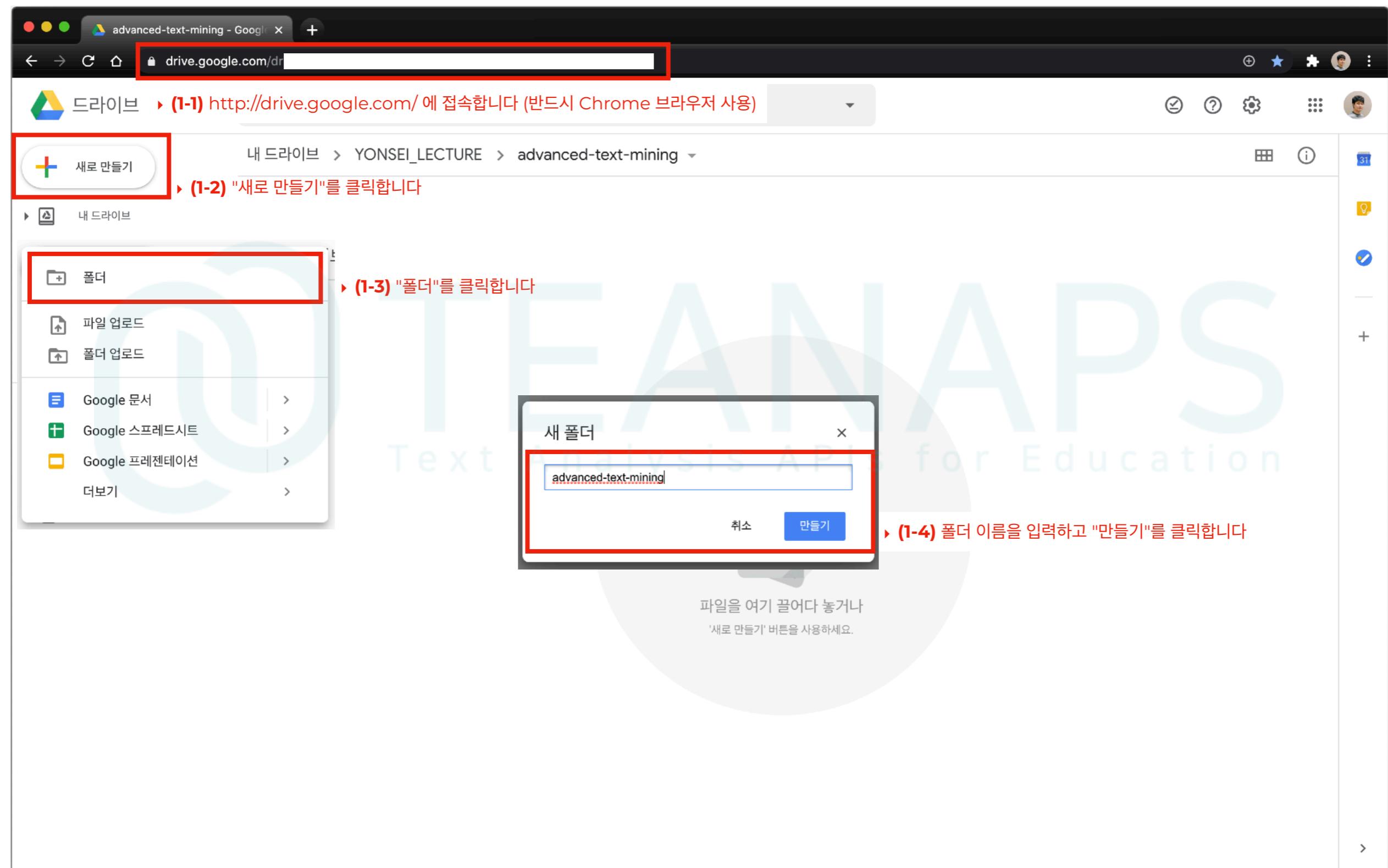
APPENDIX 01

Lecture Guide

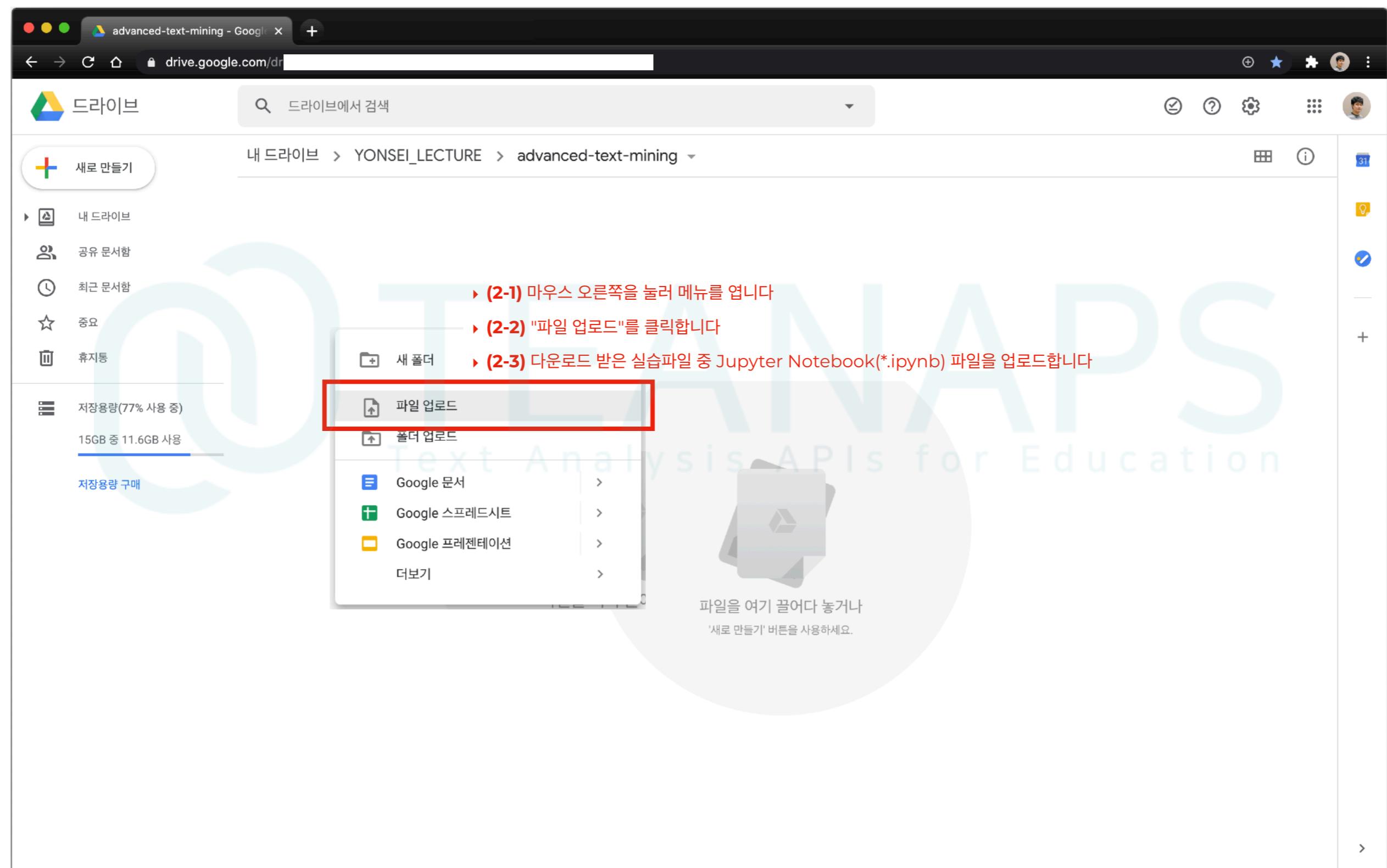
Colaboratory

Google Chrome + Colaboratory

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!". Below this, another red box contains the instruction: "(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

The screenshot shows a web browser displaying the Anaconda download page at <https://www.anaconda.com/download/>. The URL is highlighted with a red box. The page title is "Download Anaconda Distribution". It features a green background with a geometric pattern and the text "Text Analysis APIs for Education". The main content area includes sections for "High-Performance Distribution", "Package Management", and "Portal to Data Science". Below this, there are download links for Windows, macOS, and Linux. A large red box highlights the "Anaconda 5.2 For Windows Installer" link. Another red box highlights the "Download" button under the "Python 3.6 version" section. Red text annotations provide instructions: "(1-1)" points to the URL bar, "(1-2)" points to the highlighted "Download" button, and "(1-3)" points to the "Download" button under the Python 3.6 version section.

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

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

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Download Anaconda Distribution

Version 5.2 | Release Date: May 30, 2018

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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

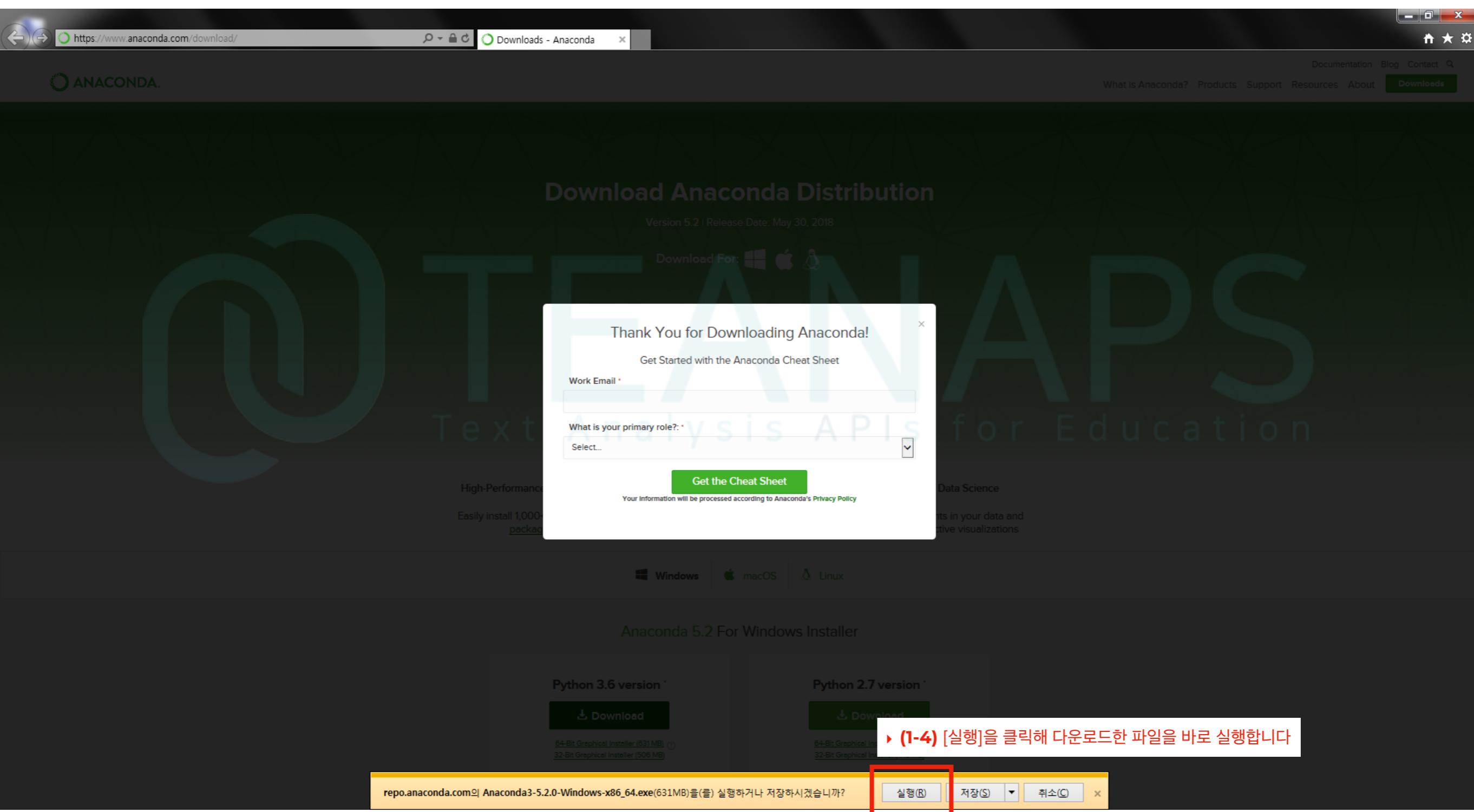
Windows macOS Linux

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

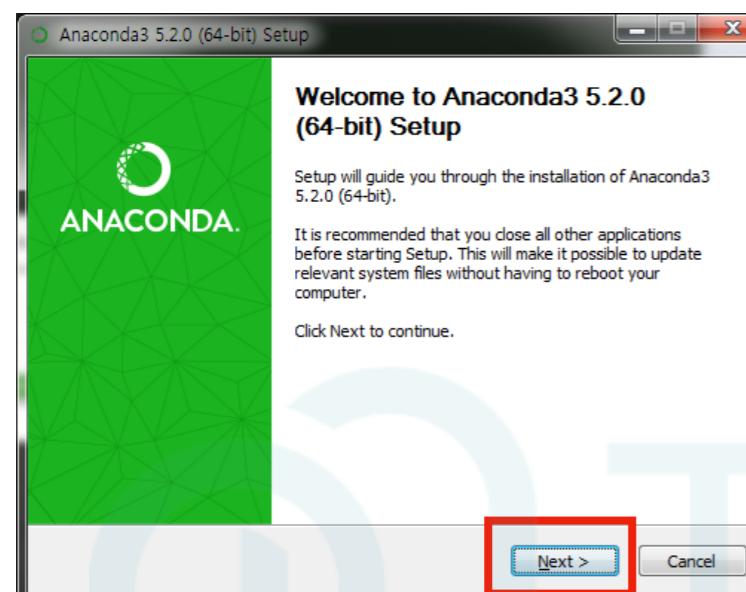
Python 3.6 version ▶ (1-3) "Python 3.6 version" 아래 [Download] 버튼을 클릭합니다
(자신의 운영체제에 맞는 설치파일이 자동으로 다운로드)

Python 2.7 version

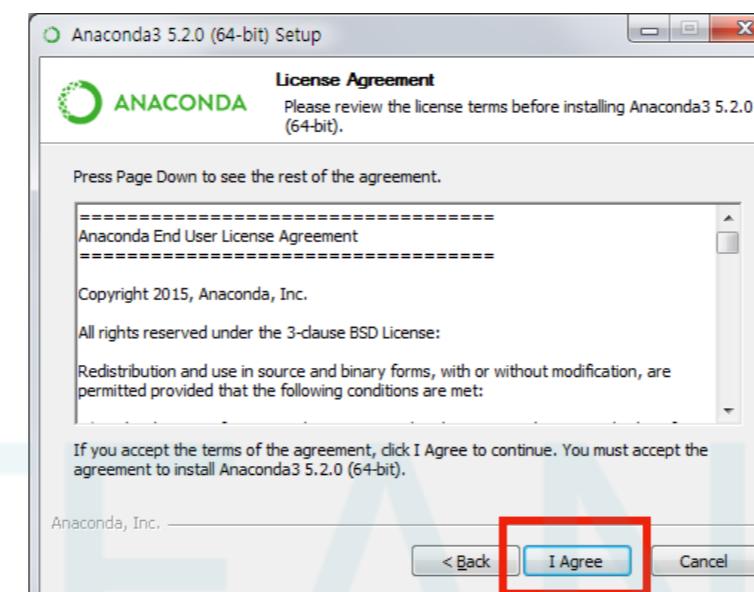
Python 3.6 Anaconda



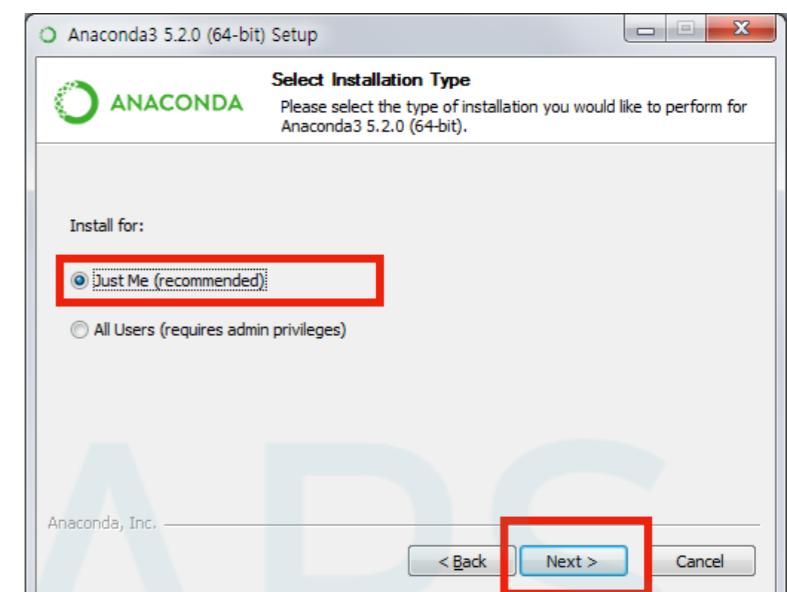
Python 3.6 Anaconda



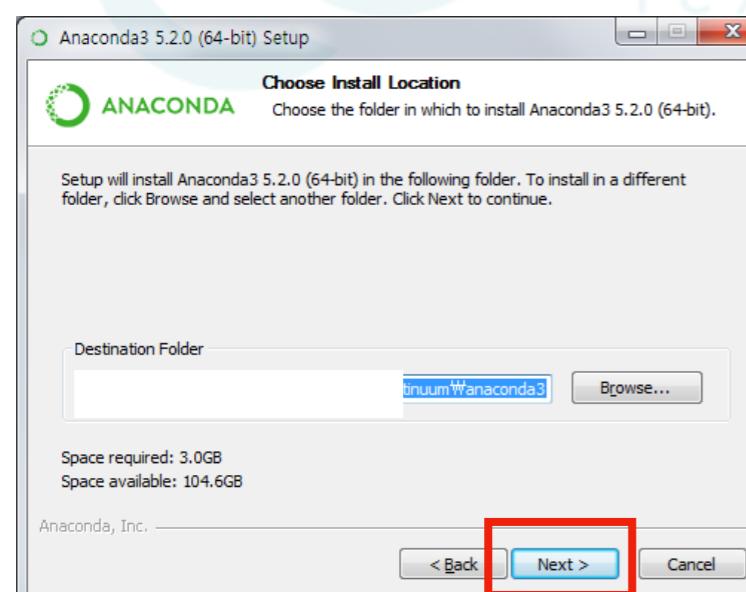
▶ (2-1) [Next >]를 클릭해 설치를 시작합니다



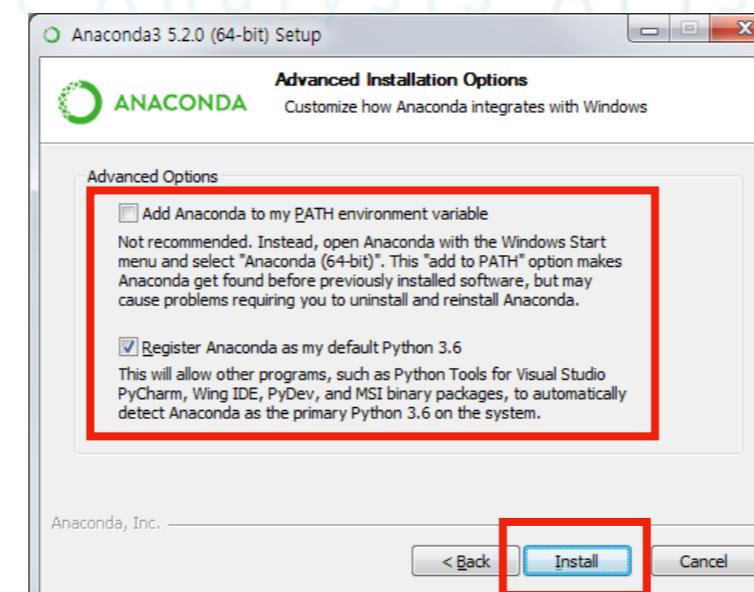
▶ (2-2) [I Agree]를 클릭해 약관에 동의합니다



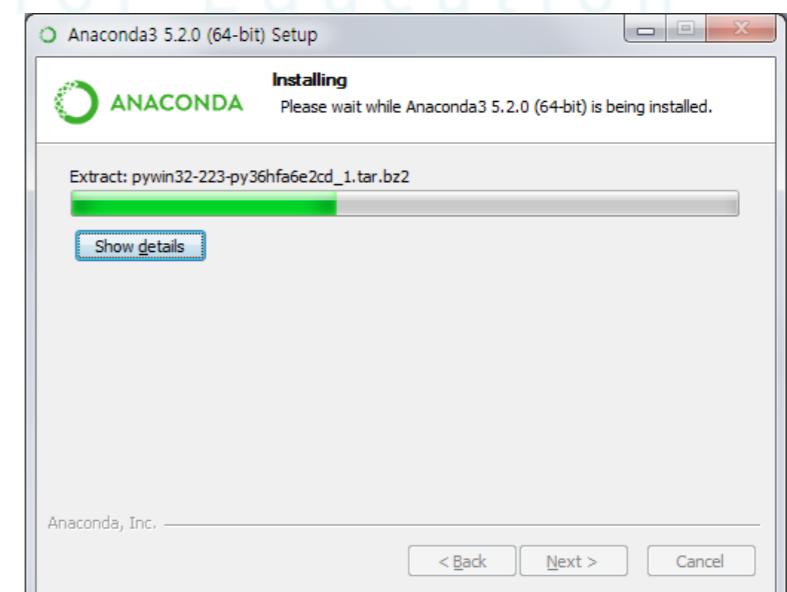
▶ (2-3) “Just Me (recommended)”를 선택하고
[Next >]를 클릭합니다



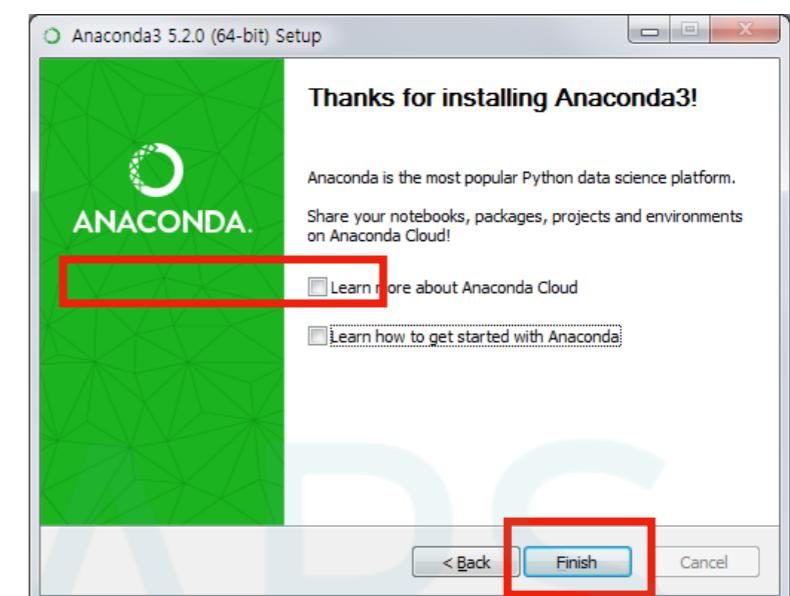
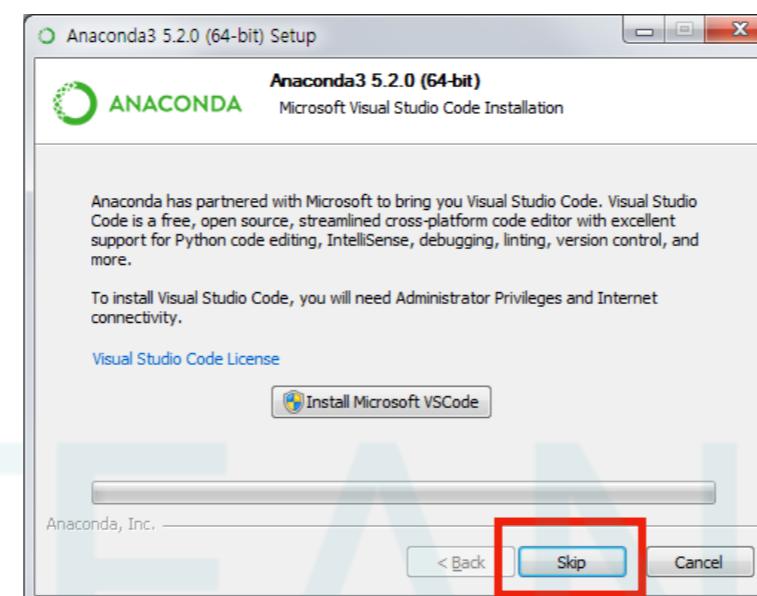
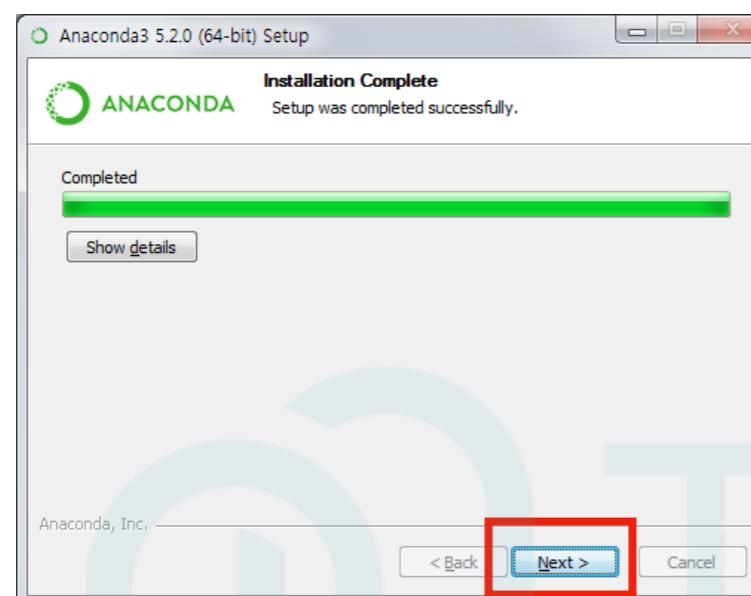
▶ (2-4) 설치경로를 그대로 두고 [Next >]를 클릭합니다



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



Python 3.6 Anaconda

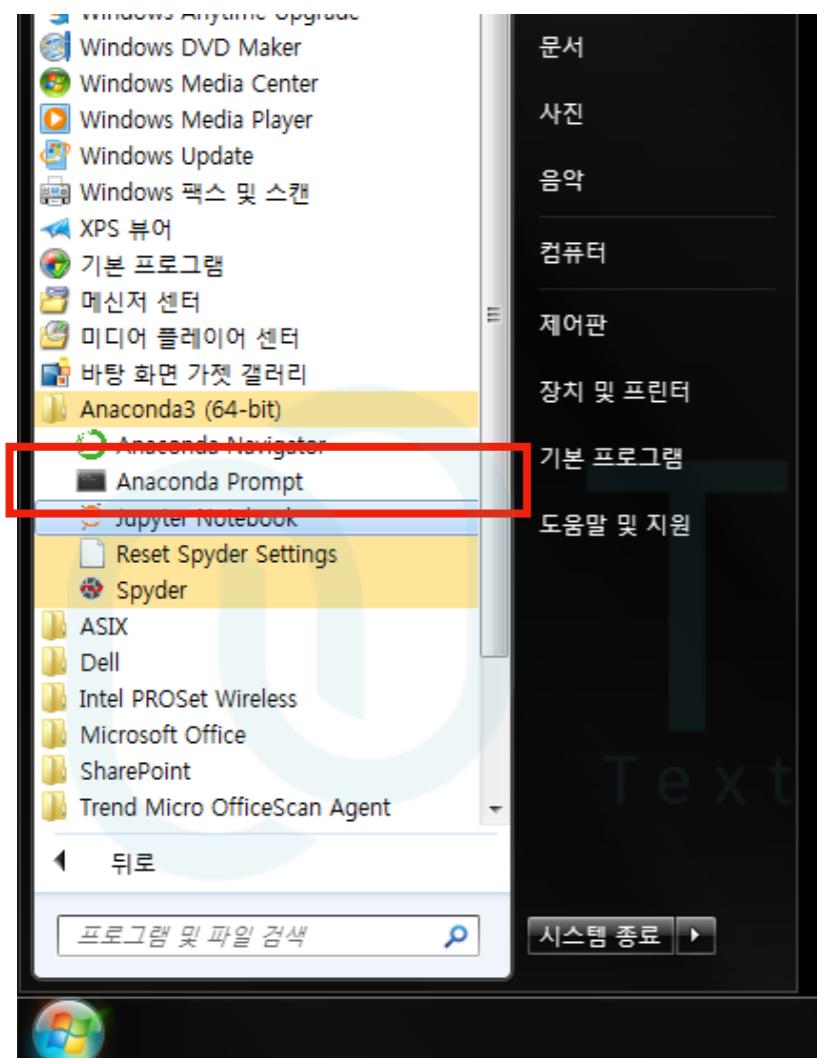


▶ (2-6) 설치가 완료되면 [Next >]를 클릭합니다

▶ (2-7) [Skip]을 클릭합니다

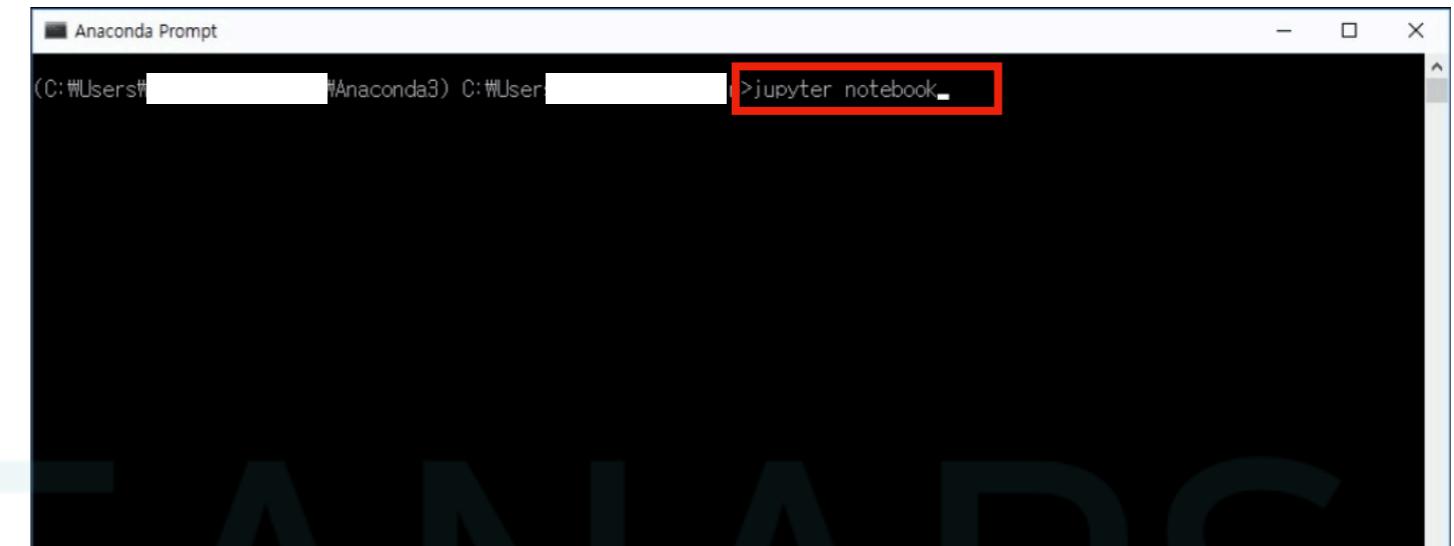
▶ (2-8) 체크박스를 모두 해제하고 [Finish]를 클릭해
설치를 마칩니다

Python 3.6 Anaconda

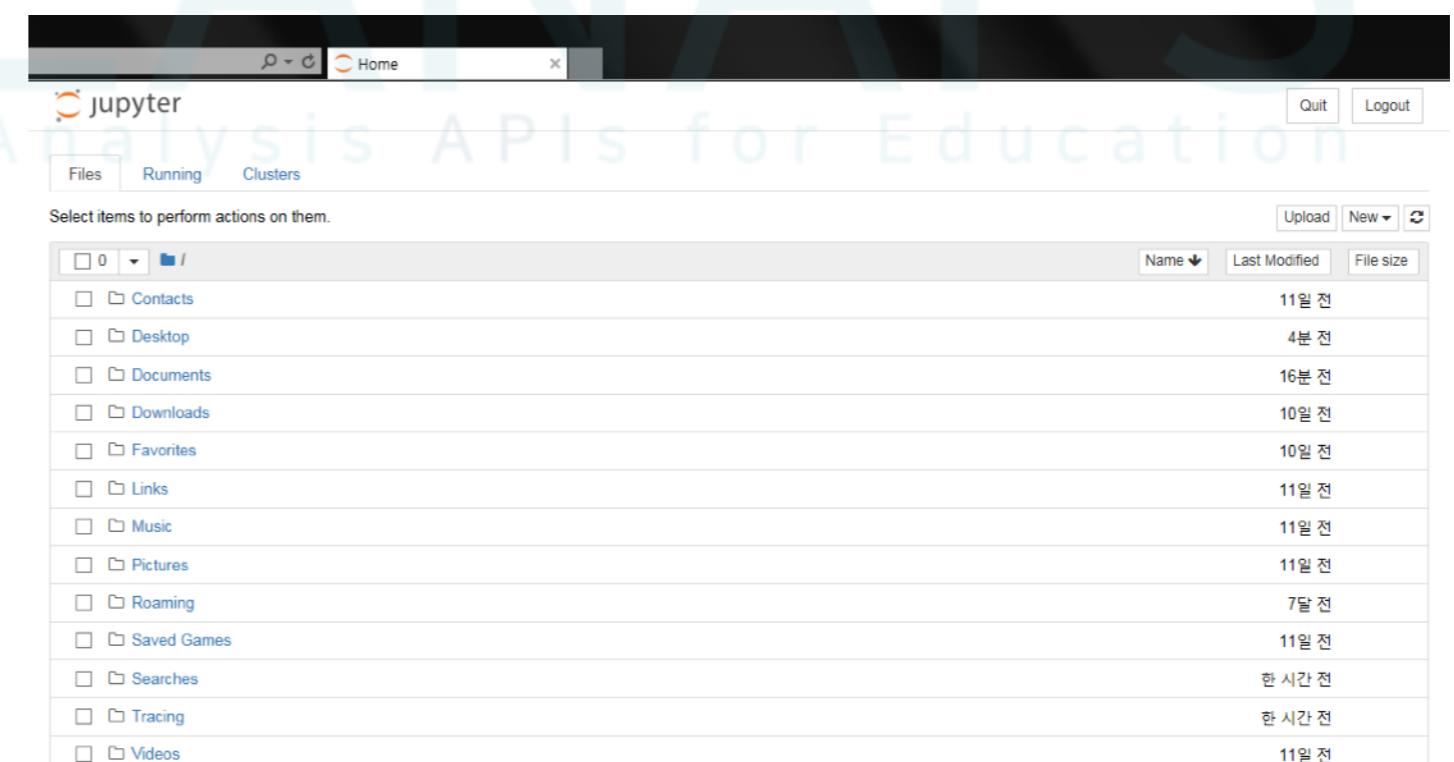


▶ (3-1) [시작] > [모든 프로그램] > [Anaconda3 (32/64-bit)]

> [Anaconda Prompt]를 클릭합니다



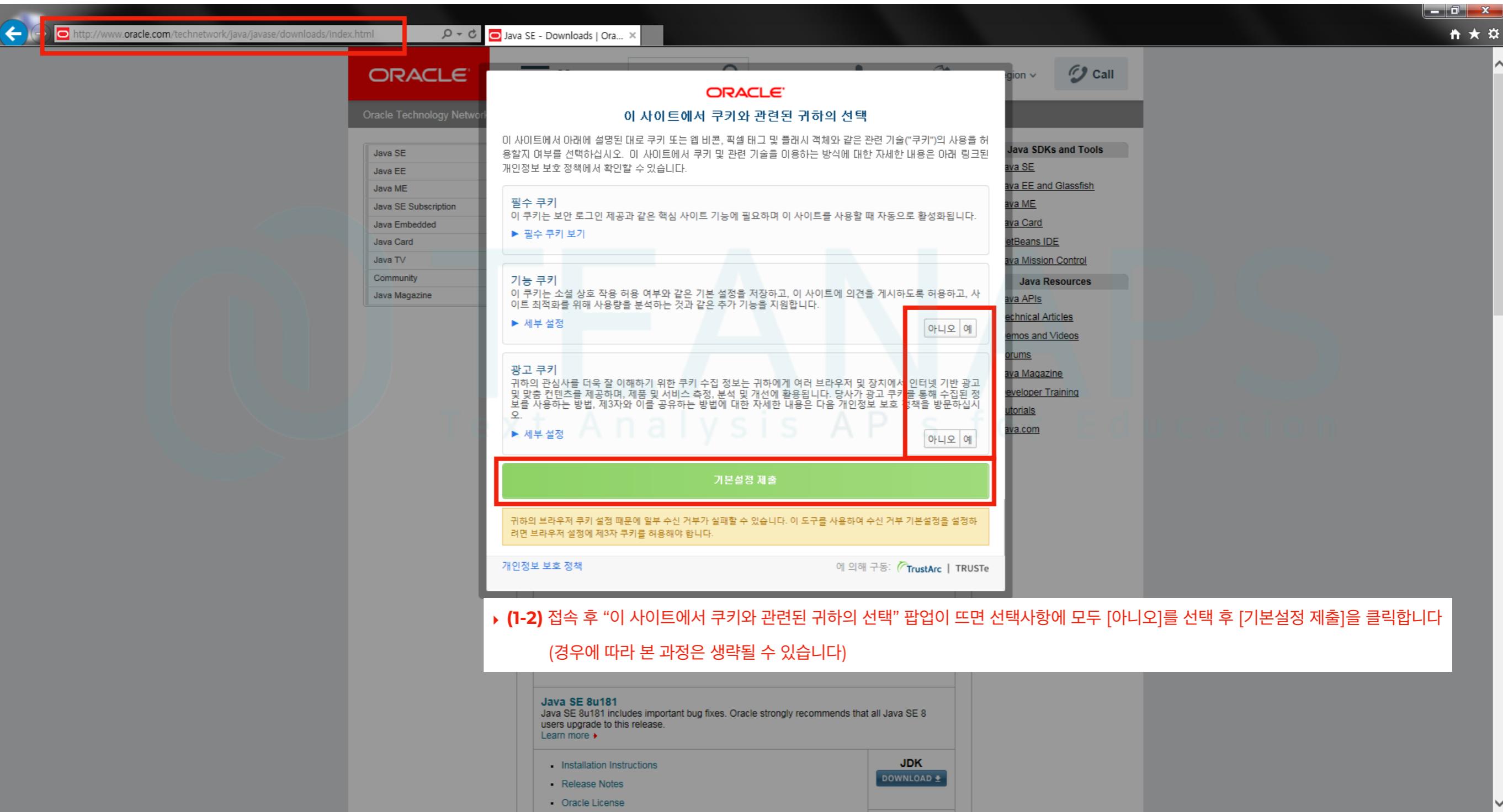
▶ (3-2) "jupyter notebook"을 입력하고 [엔터]를 입력합니다



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

JAVA jdk 설치

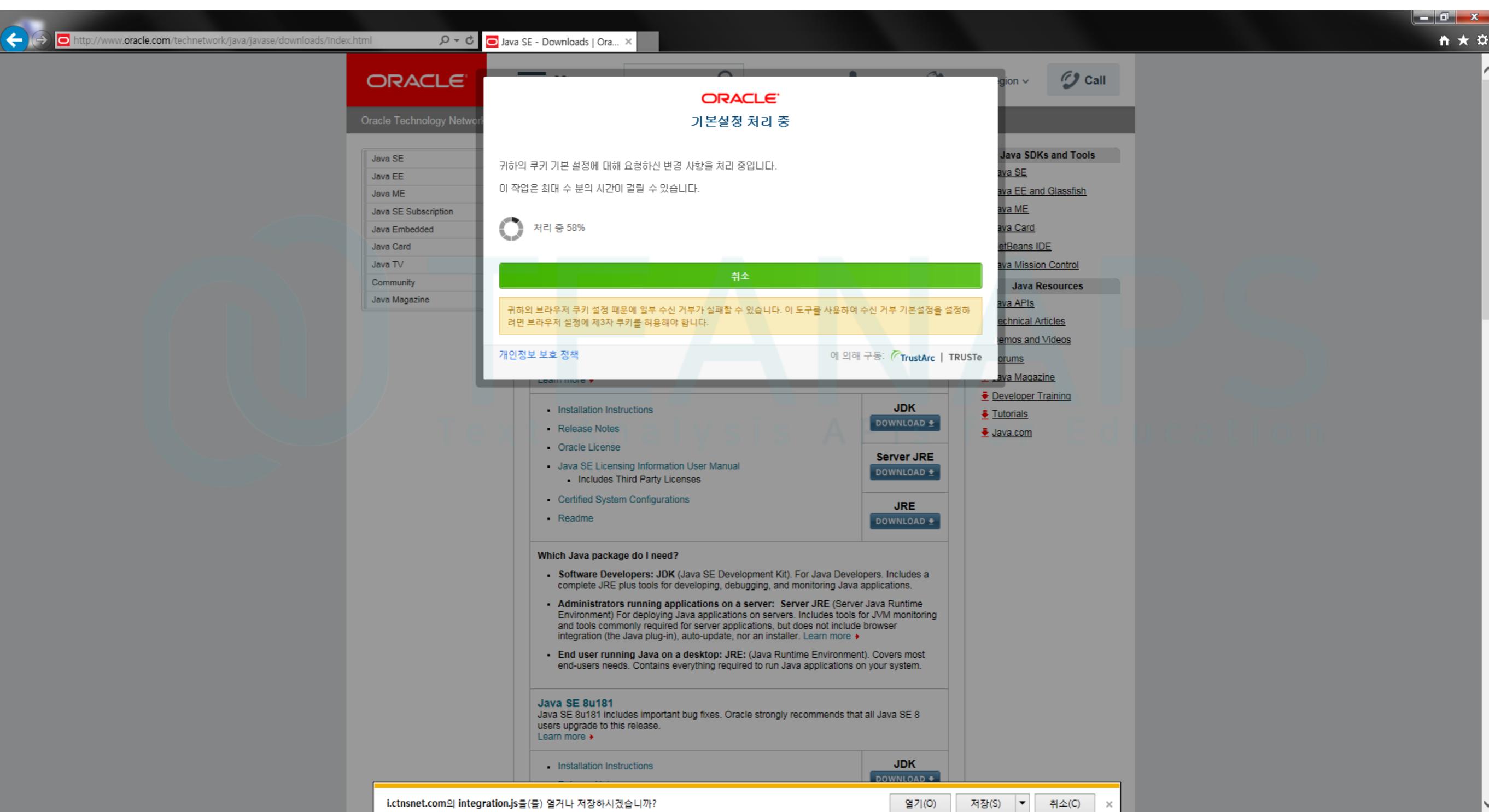
- ▶ (1-1) <https://www.oracle.com/technetwork/java/javase/downloads/index.html>에 접속합니다



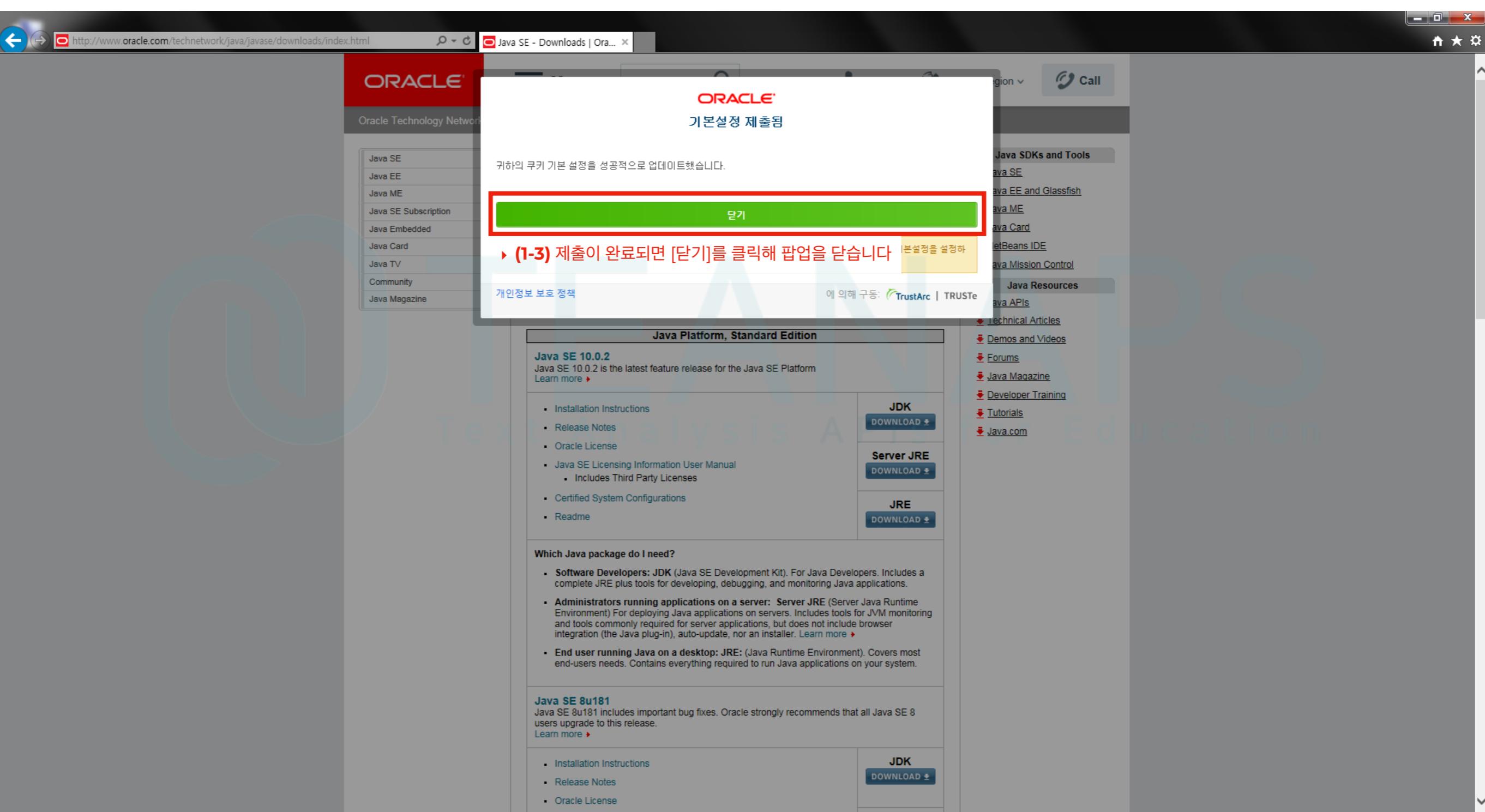
- ▶ (1-2) 접속 후 “이 사이트에서 쿠키와 관련된 귀하의 선택” 팝업이 뜨면 선택사항에 모두 [아니오]를 선택 후 [기본설정 제출]을 클릭합니다

(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". A red box highlights this button. Below it, there's information about Java SE 10.0.2 and links for Installation Instructions, Release Notes, Oracle License, Java SE Licensing Information User Manual, Certified System Configurations, and Readme. To the right of these links are three download buttons: "JDK DOWNLOAD", "Server JRE DOWNLOAD", and "JRE DOWNLOAD". 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." At the bottom, there's another section for "Java SE 8u181" with similar download links.

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 is titled "Java SE Development Kit 10 Downloads" and contains text about the JDK being a development environment for building applications. It also mentions that the JDK includes tools for developing and testing programs written in Java. Below this, there's a section for "JDK 10.0.2 checksum". Further down, there's a table of download links for various operating systems. At the bottom of the table, 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" (Select the [Accept License Agreement] option below to agree to the license terms).

Java SE Development Kit 10 Downloads

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

Accept License Agreement Decline License Agreement

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

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JAVA jdk 설치

The screenshot shows the Oracle Java SE Development Kit 10 Downloads page. The URL in the browser is <http://www.oracle.com/technetwork/java/javase/downloads/jdk10-downloads-441664.html>. The page features 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 is titled "Java SE Development Kit 10 Downloads" and includes a brief description of the JDK. It lists "See also:" links for Java Developer Newsletter, Java Developer Day, and Java Magazine. Below this is a "JDK 10.0.2 checksum" section. A large table titled "Java SE Development Kit 10.0.2" provides 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). This table is highlighted with a red border. To the right, there are sections for "Java SDKs and Tools" (with links to Java SE, Java EE and Glassfish, Java ME, Java Card, NetBeans IDE, and Java Mission Control) and "Java Resources" (with links to Java APIs, Technical Articles, Demos and Videos, Forums, Java Magazine, Developer Training, Tutorials, and Java.com). At the bottom, there are links for "E-mail this page" and "Printer View".

▶ (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)

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

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JAVA jdk 설치

The screenshot shows 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-4416645.html>. The page title is "Java SE Development Kit 10 Downloads". The main content area displays the Java SE Development Kit 10.0.2 download section, which includes a note about accepting the Oracle Binary Code License Agreement and a table of download links for various operating systems.

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

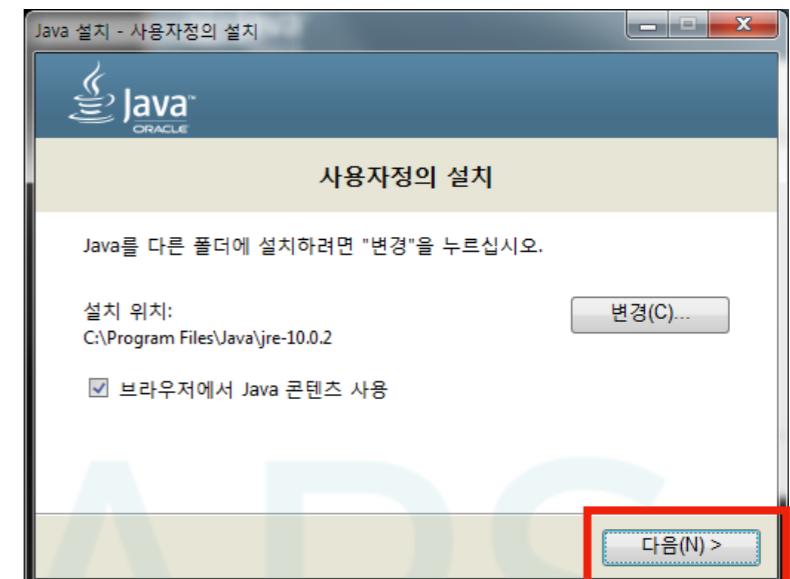
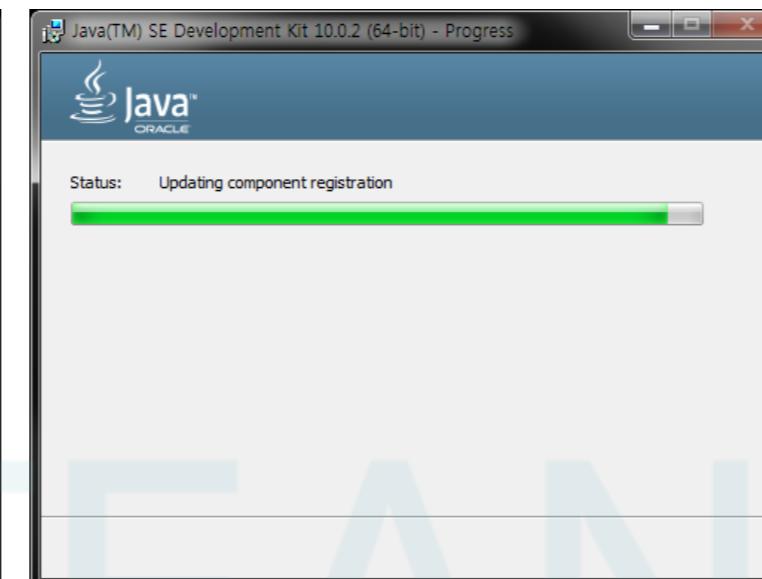
At the bottom of the page, there is a navigation bar with links to Contact Us, About Oracle, Downloads and Trials, and News and Events. A red box highlights the "실행(R)" (Run) button in the download dialog box at the bottom right.

▶ (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

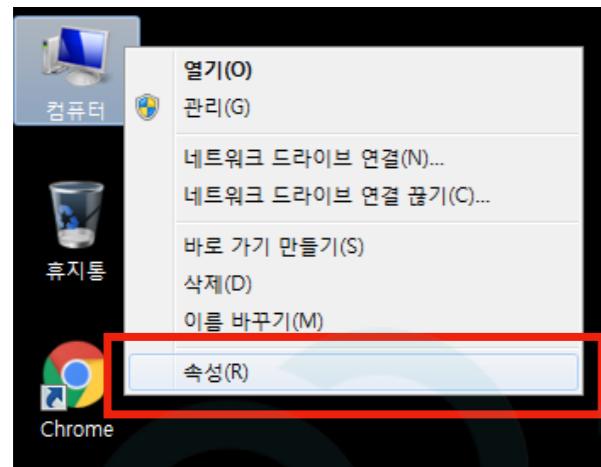


▶ (2-3) “사용자정의 설치” 창이 뜨면 경로를 그대로 두고
[다음(N) >]을 클릭합니다



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

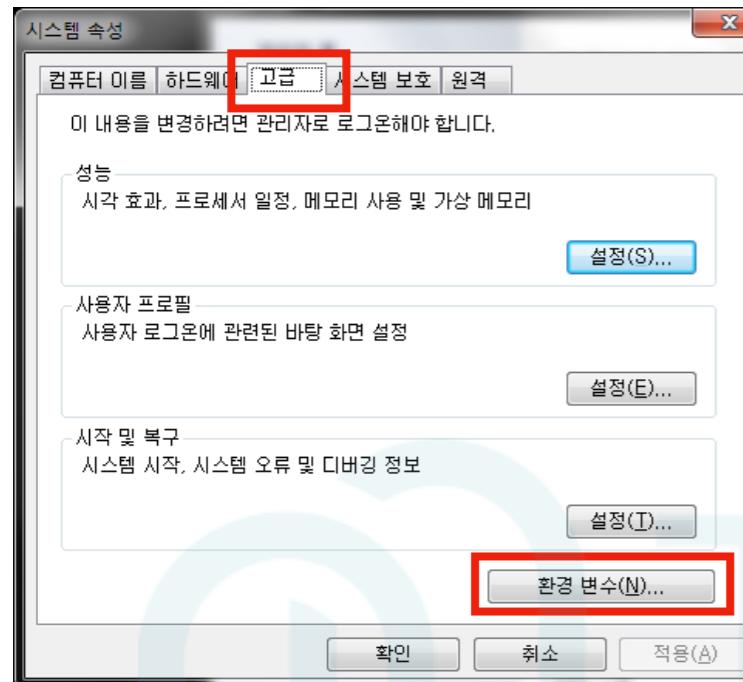
환경변수 설정



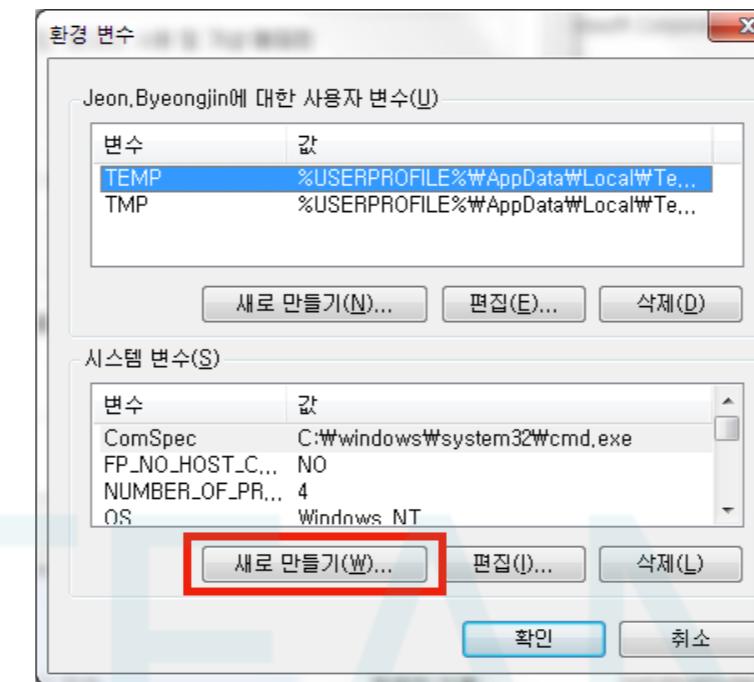
▶ (1-1) 바탕화면의 “내컴퓨터” 아이콘에서 마우스 오른쪽을 클릭한 후 [속성]을 클릭합니다



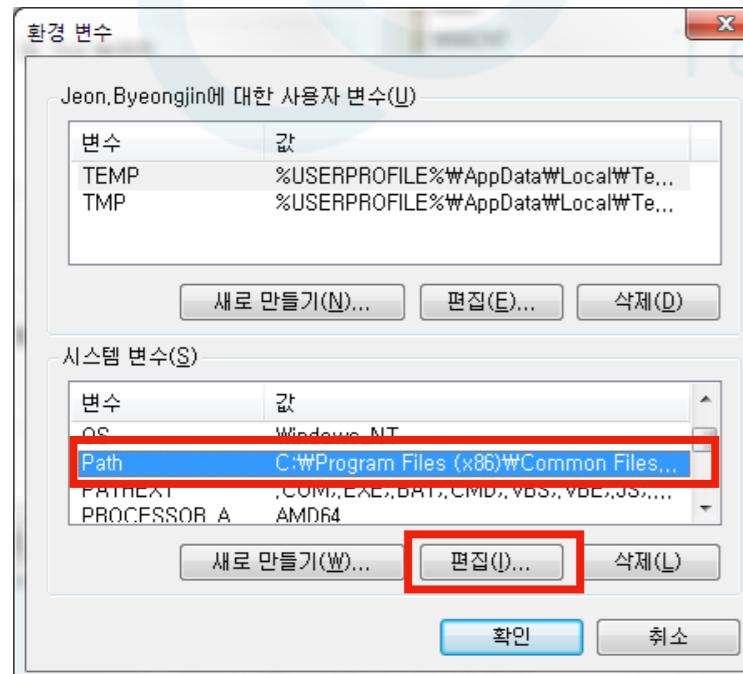
환경변수 설정



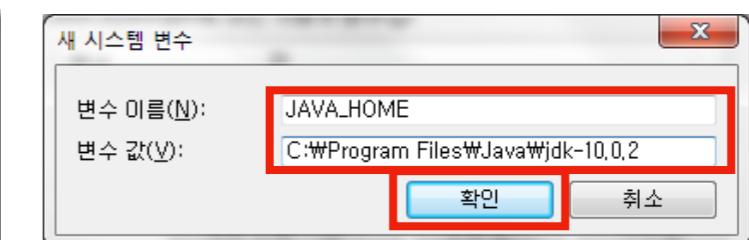
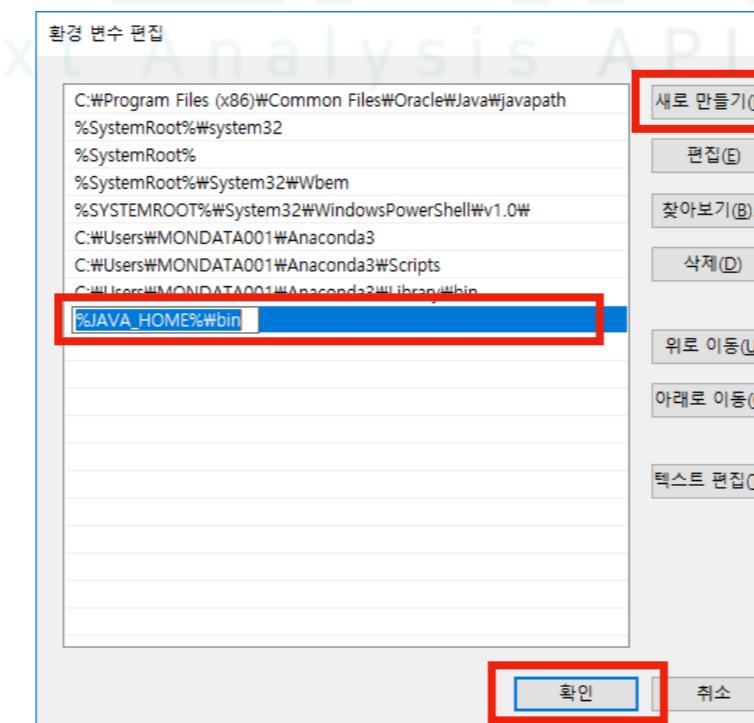
▶ (1-3) [고급] 탭을 선택하고 아래 [환경변수]를 클릭합니다



▶ (1-4) 아래 두번째 [새로 만들기(W)...]를 클릭합니다



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

▶ (1-7) [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

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

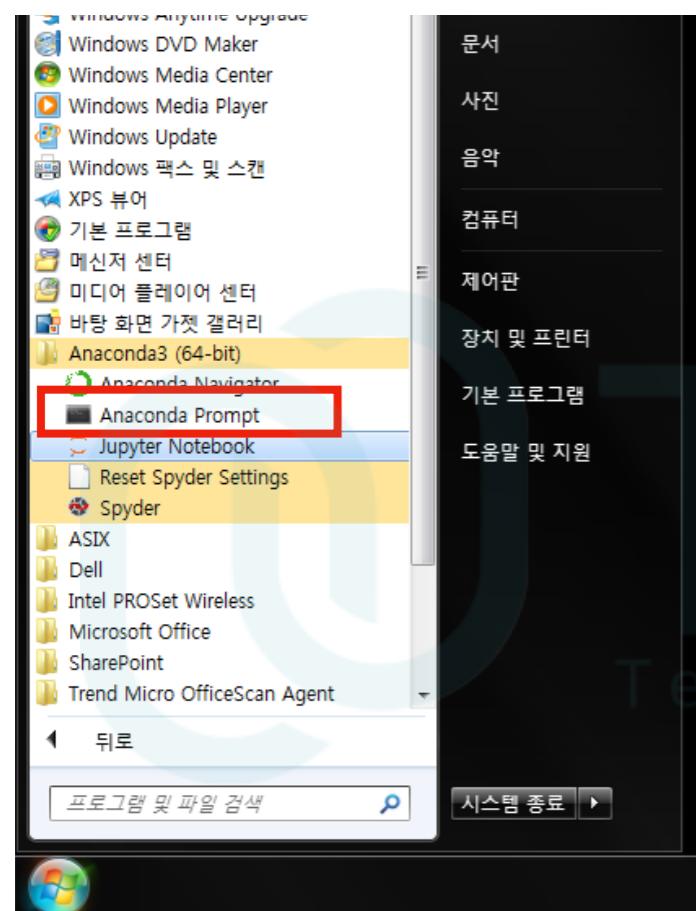
C:\> [REDACTED]>java --version
java 10.0.2 2018-07-17
Java(TM) SE Runtime Environment 18.3 (build 10.0.2+13)
Java HotSpot(TM) 64-Bit Server VM 18.3 (build 10.0.2+13, mixed mode)

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]

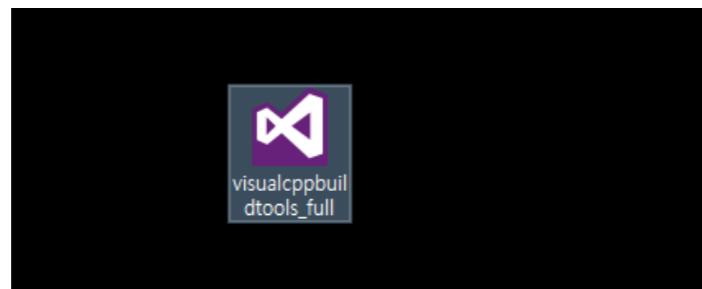
> [Anaconda3 (32/64-bit)]

> [Anaconda Prompt]를 클릭합니다

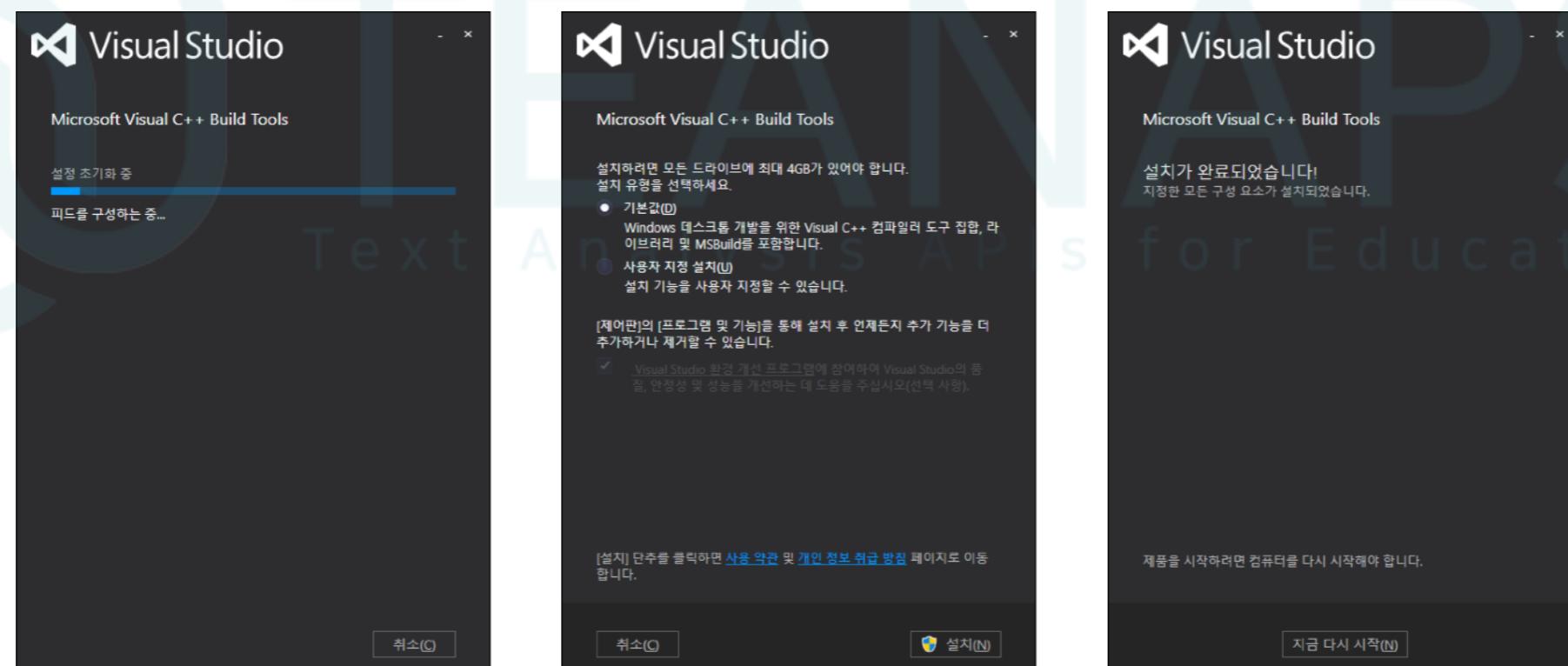
The image shows an Anaconda Prompt window titled 'Anaconda Prompt'. The command line shows '(base) C:\Users\...>python -m pip install --upgrade pip', with the entire command highlighted by a red box. The background of the slide features a large watermark with the text 'TEANAPS Text Analysis APIs for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

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

Microsoft Visual C++ Build Tools



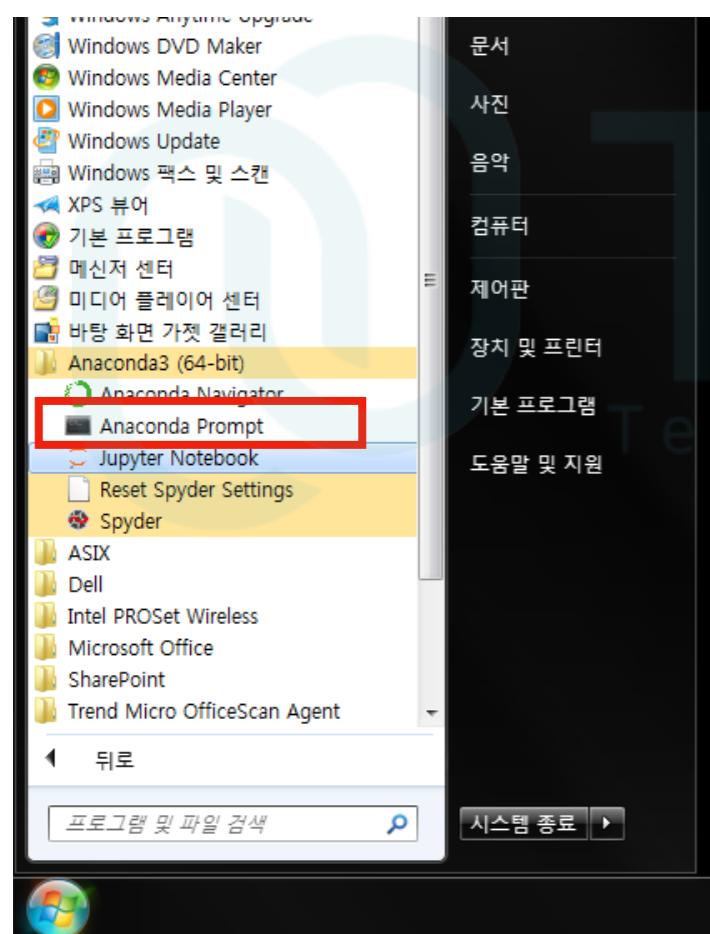
- ▶ (1-3) 링크에서 파일을 다운로드합니다 (<http://go.microsoft.com/fwlink/?LinkId=691126&fixForIE=.exe>.)
- ▶ (2-1) 다운로드한 설치파일을 실행합니다 (visualcppbuildtools_full.exe)



- ▶ (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

```
Anaconda Prompt
(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/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)

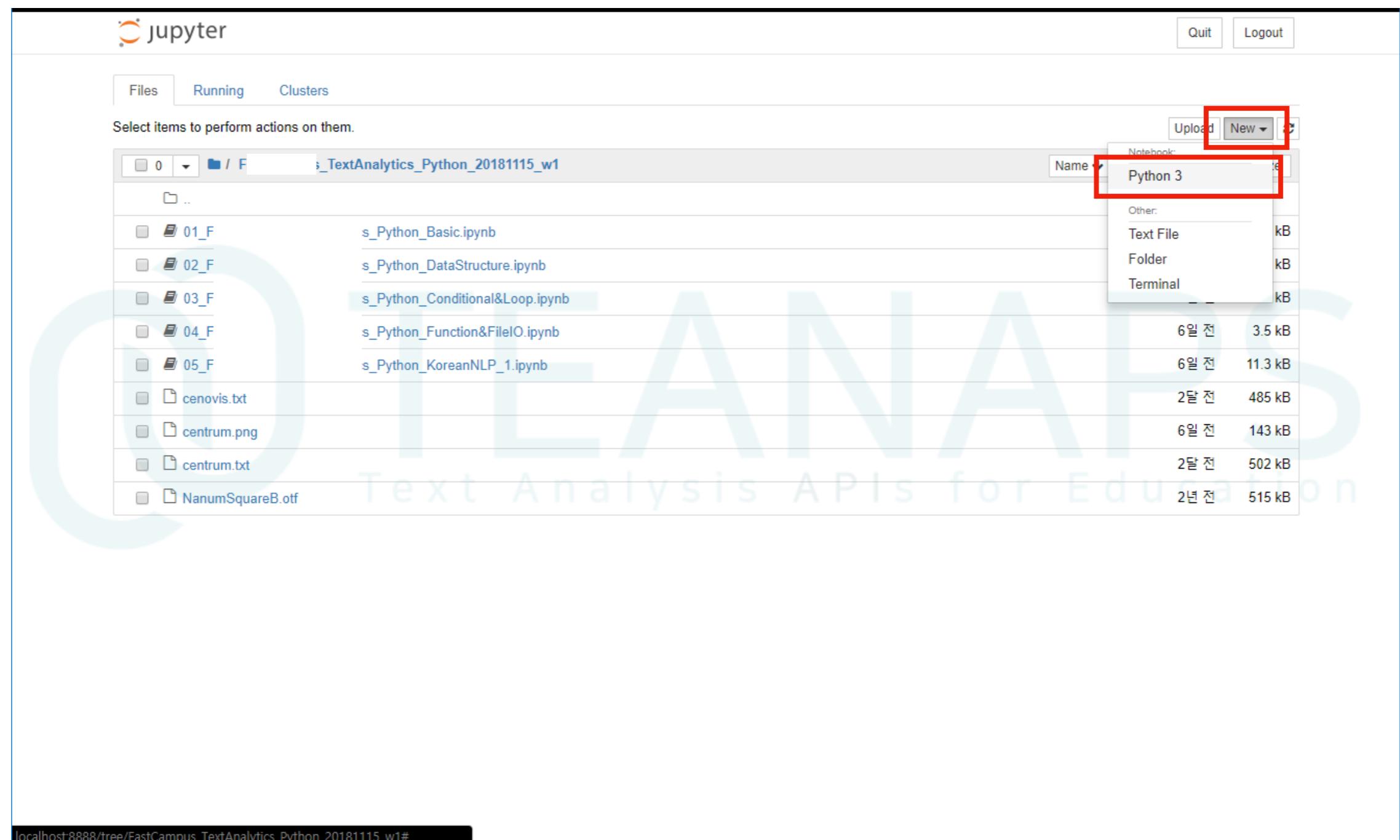
Installing collected packages: wordcloud
  Successfully installed wordcloud-1.5.0
(base) C:\Users\...
```

- ▶ (2-1) “pip install 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

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

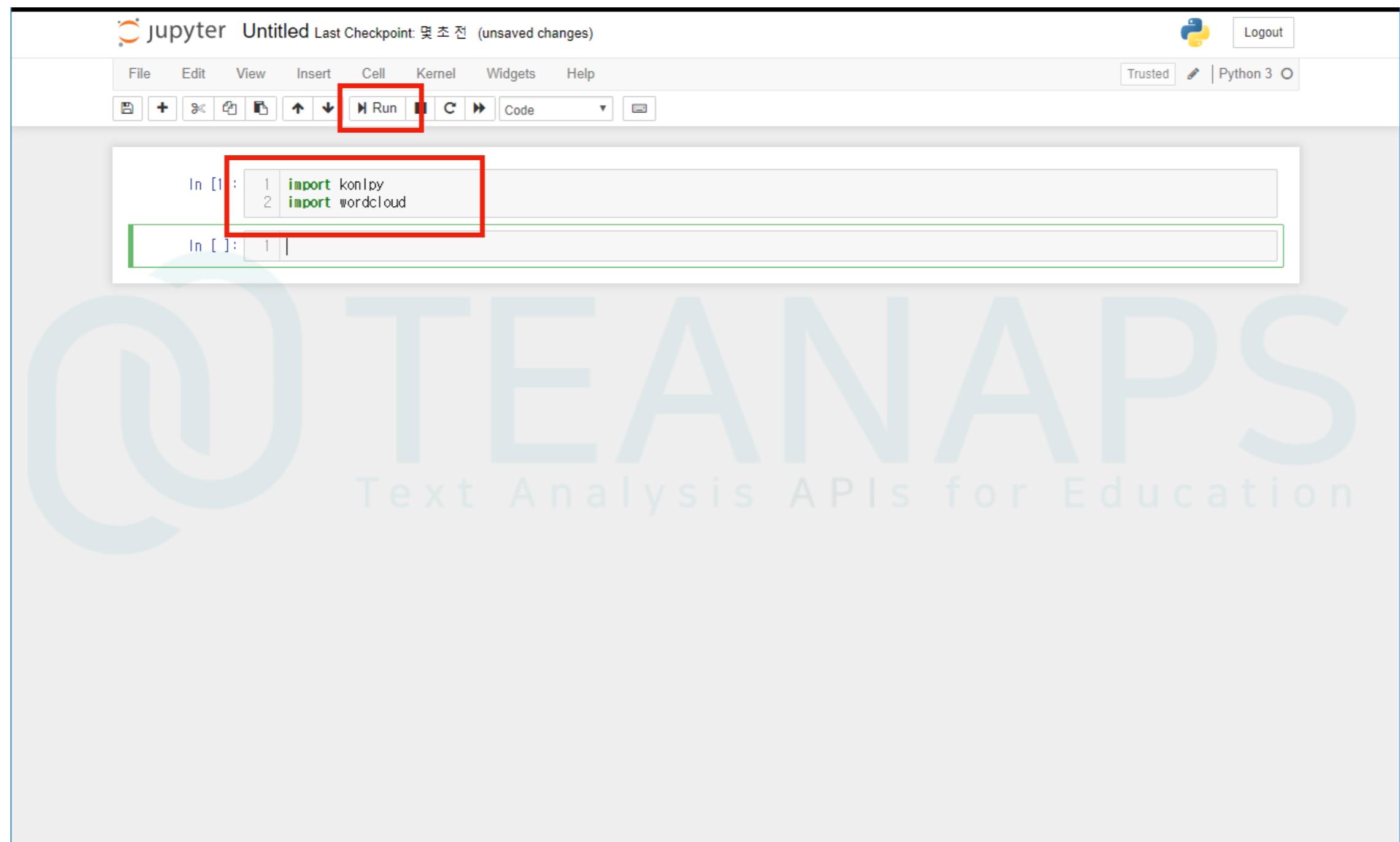
- ▶ (3-1) “jupyter notebook”을 입력하고 [엔터]를 입력합니다

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

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