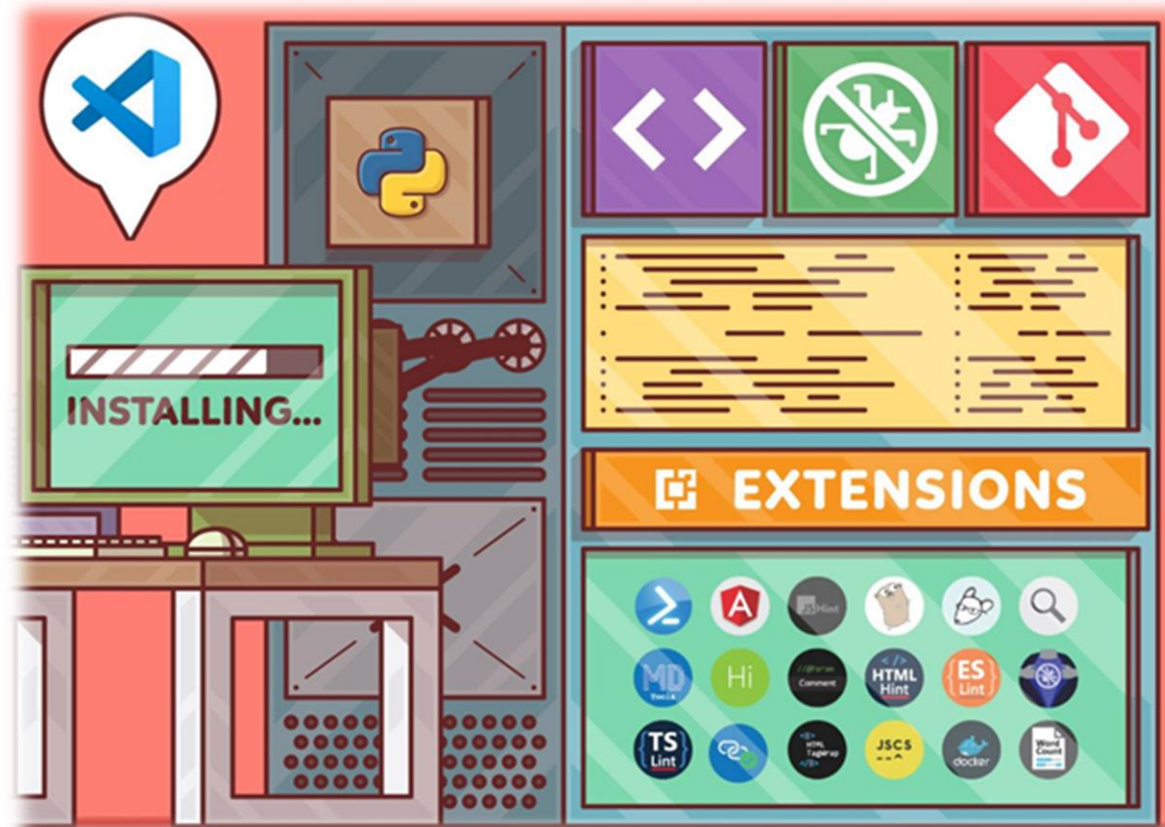


개발환경 구성



개발환경

PC



Visual Studio Code



Sublime Text



↓ Windows용 다운로드

↓ Mac용 다운로드

단축키 : Ctrl+C+C

단축키 : ⌘+C+C



Jupyter Notebook



Jupyter Lab



웹

colab

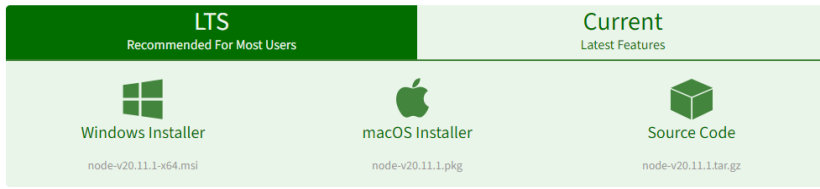
<https://colab.research.google.com/>

kaggle

<https://www.kaggle.com/>

Flowise 설치

NodeJS 설치 : <https://nodejs.org/en/download>



Flowise 설치

`npm install -g flowise`

Flowise 시작

`npx flowise start`

Flowise 사용

<http://localhost:3000> 접속

Developers (선택사항)

1. Yarn 설치

`npm i -g yarn`

2. Repository 복제

`git clone https://github.com/FlowiseAI/Flowise.git`

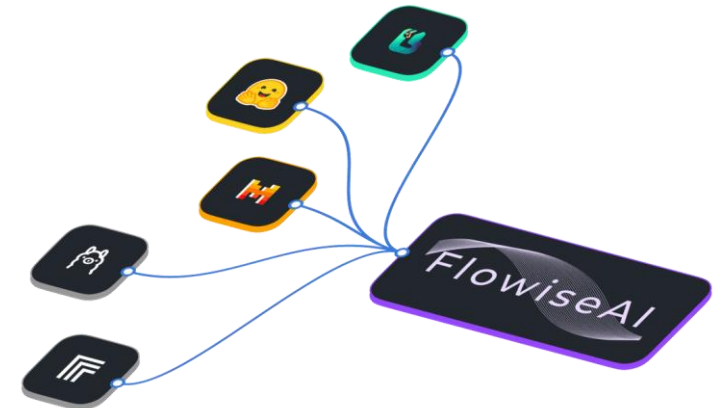
3. 모듈 설치

`cd Flowise`
`yarn install`
`yarn build`

4. App 실행

`yarn start`

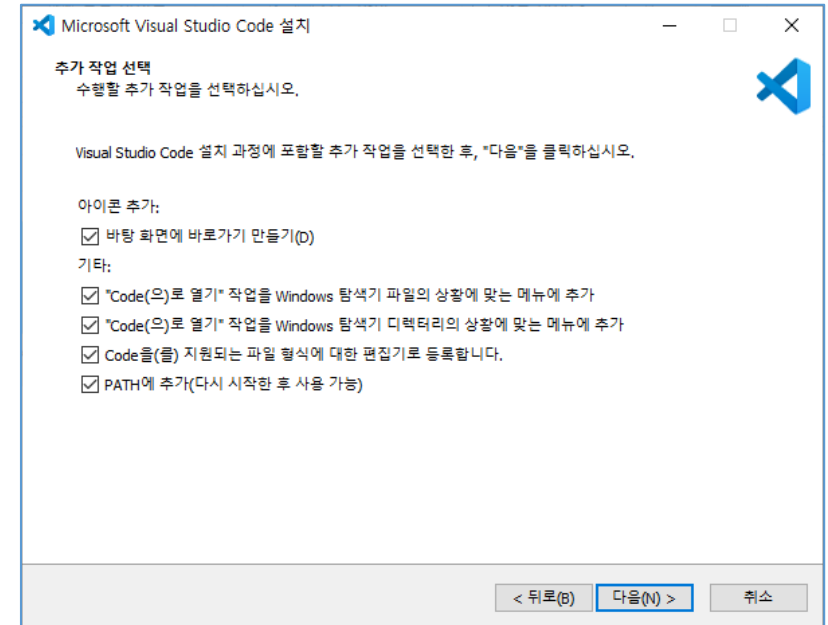
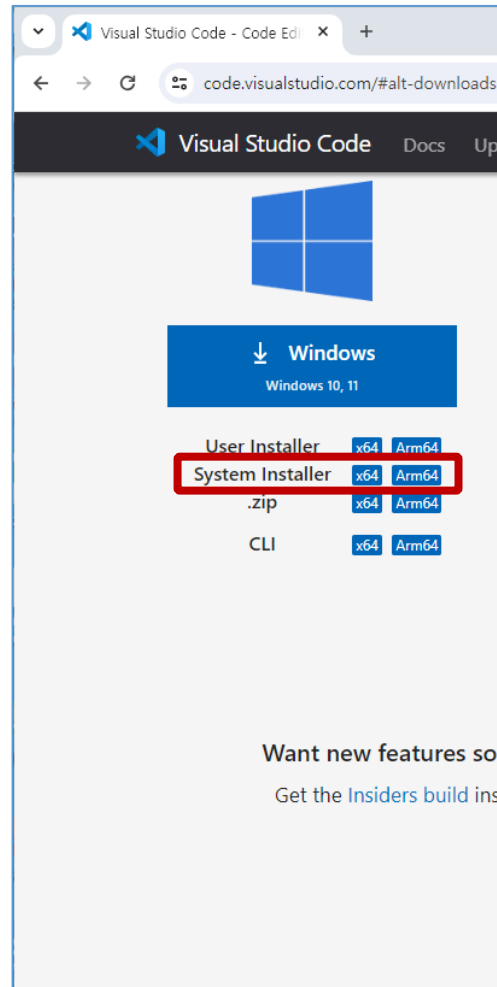
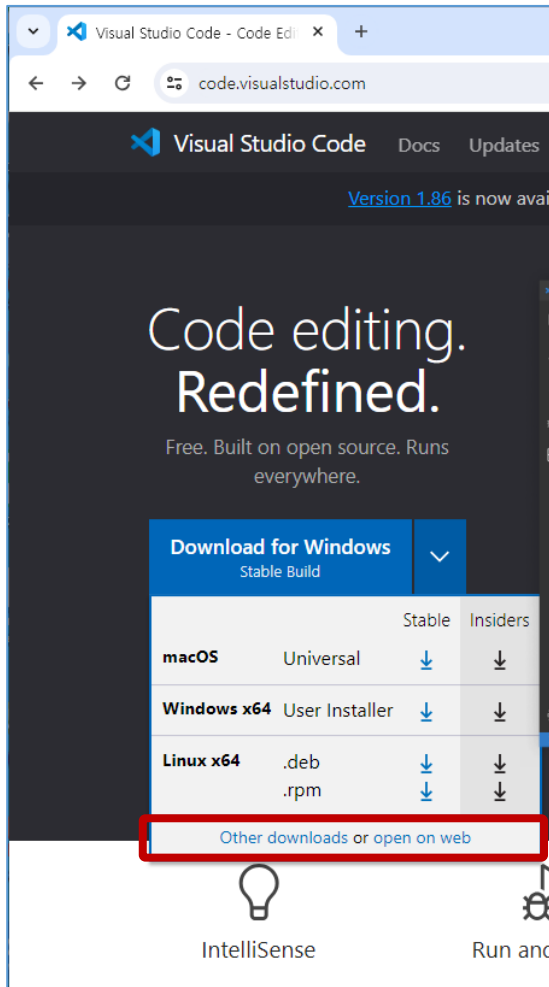
6. <http://localhost:3000> 접속



VS Code 설치 – Windows

■ 설치 프로그램

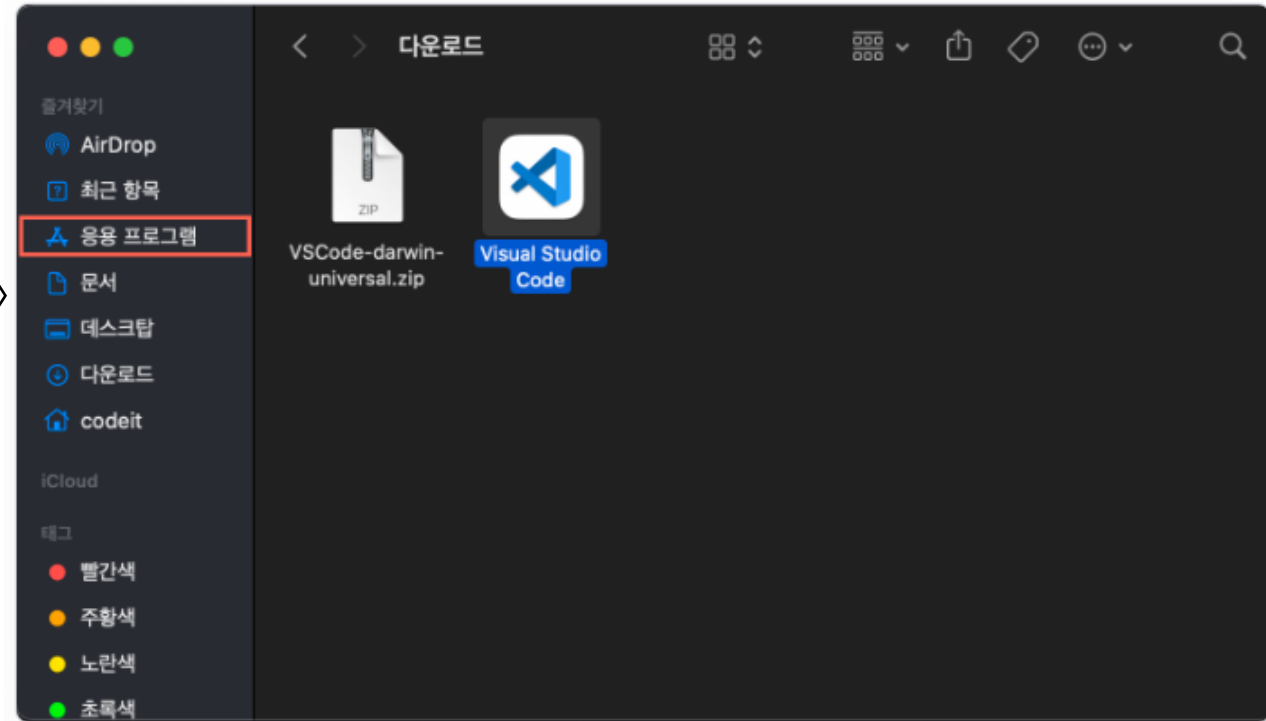
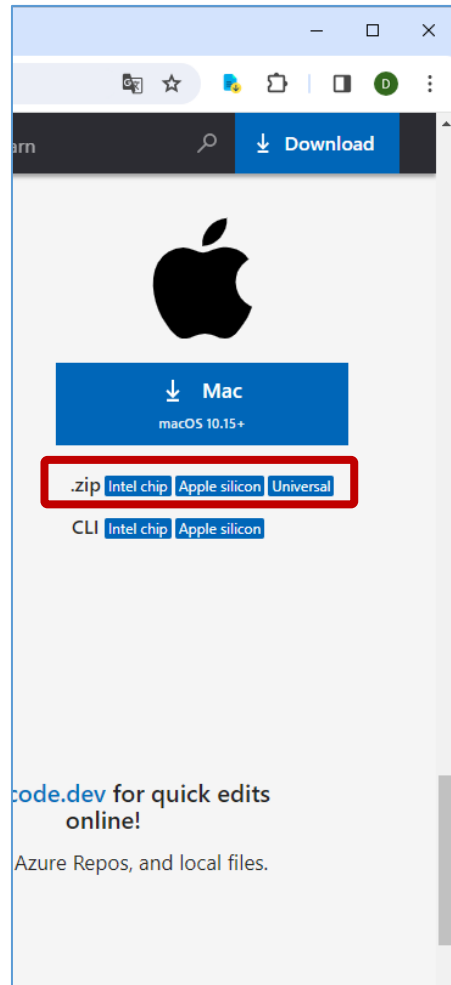
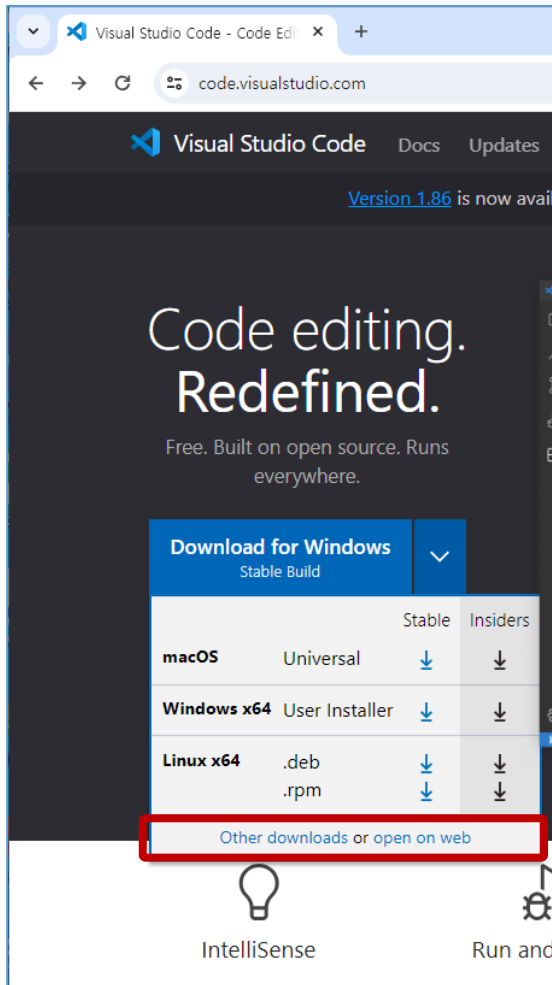
<https://code.visualstudio.com/>



VS Code 설치 – macOS

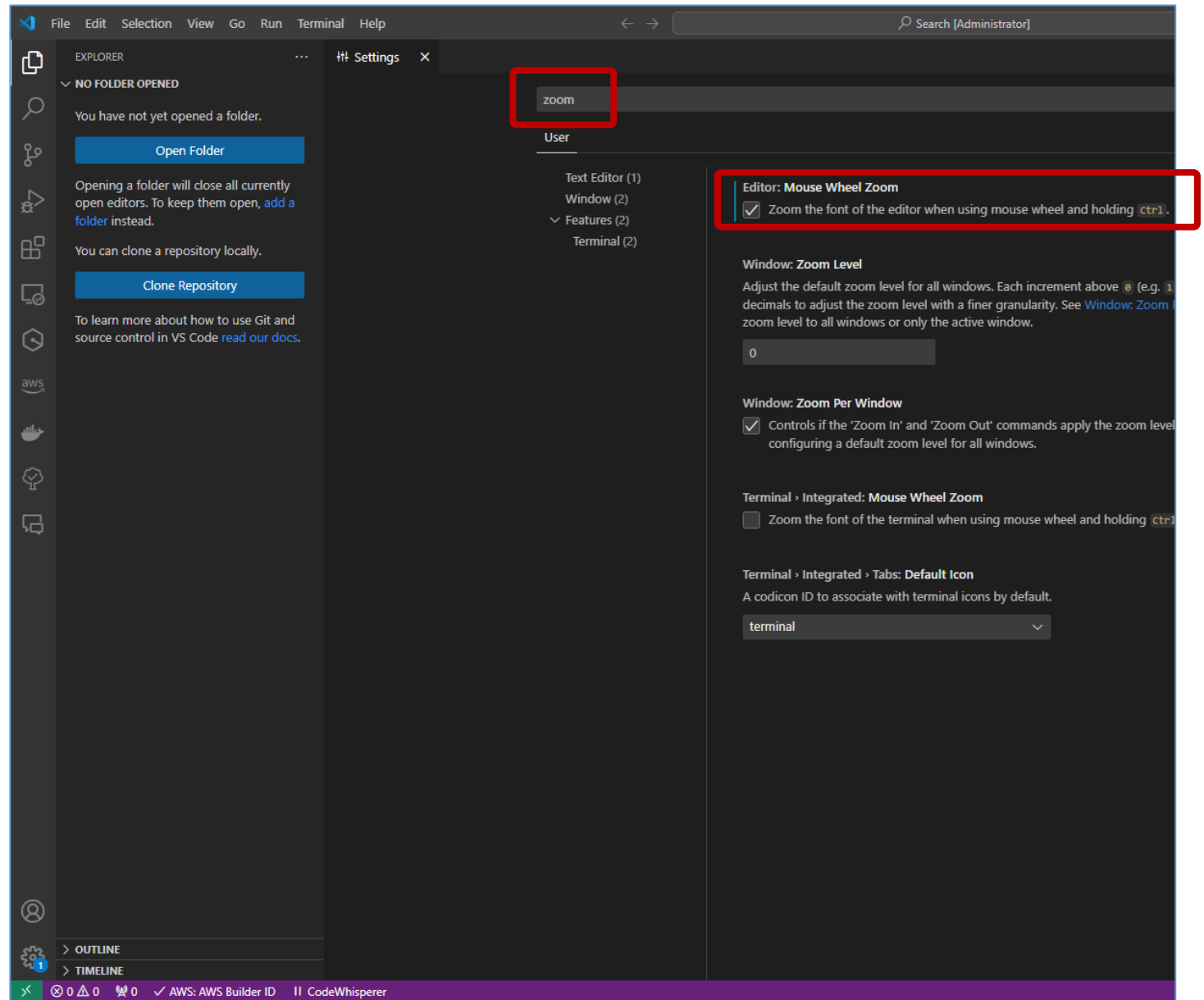
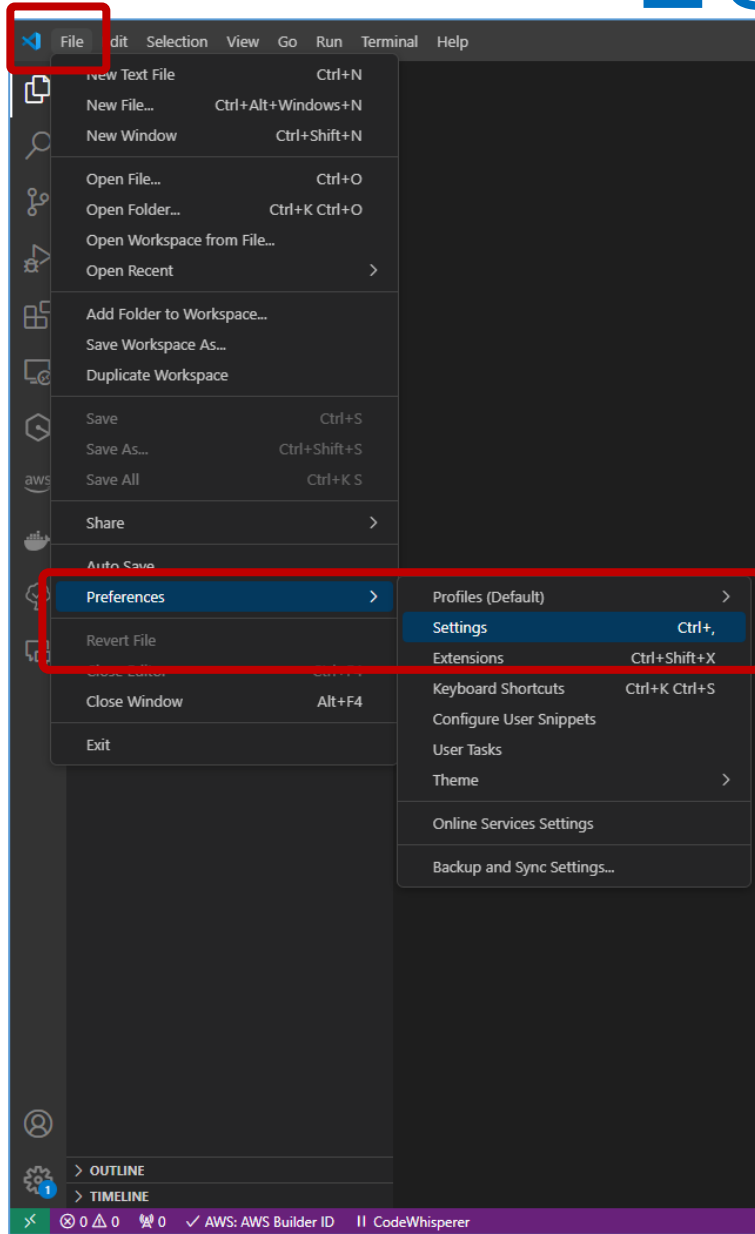
■ 설치 프로그램

<https://code.visualstudio.com/>

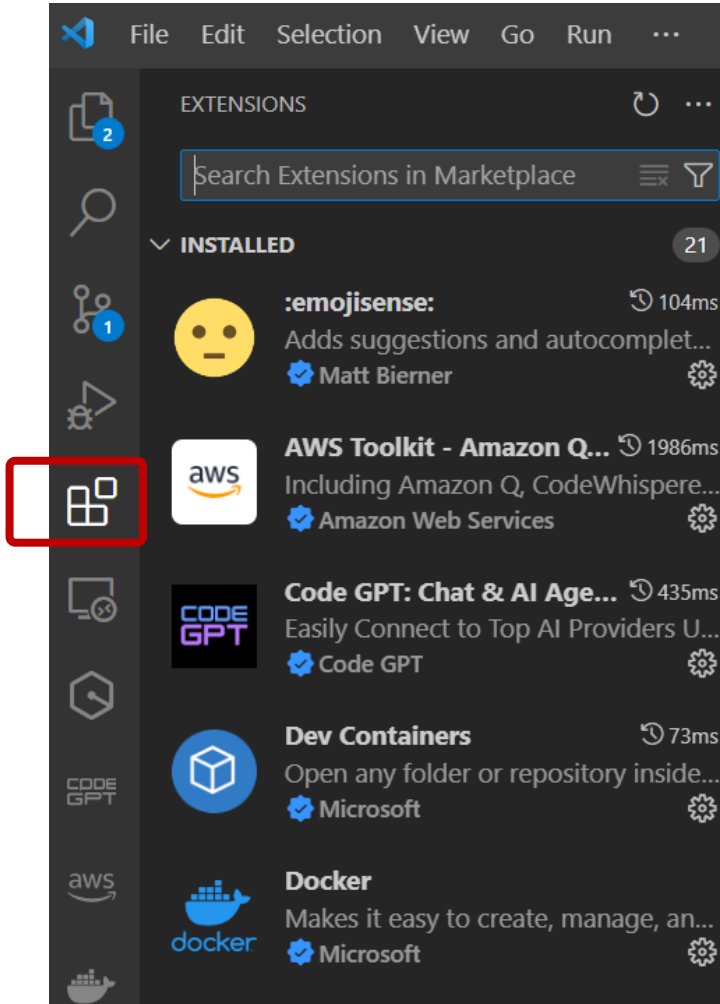


Visual Studio Code를 응용 프로그램(Applications) 폴더로 옮겨 주세요.

VS Code Zoom 설정



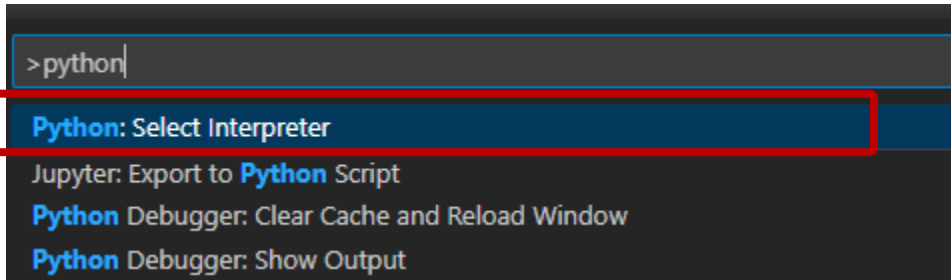
VS Code Extension 설치



- **Python** : 파이썬에 대한 풍부한 지원 제공, IntelliSense(Pylance), 린팅, 디버깅, 코드 탐색 등의 기능을 제공
- **Jupyter** : Jupyter 노트북 지원
- **Black Formatter** : Python 파일에 대한 포매팅 지원 제공
- **vscode-icons** : Visual Studio Code용 아이콘
- **TODO Highlight** : 코드 내에서 TODO, FIXME 및 기타 주석을 강조 표시
- **Todo Tree** : TODO, FIXME와 같은 주석 태그를 빠르게 검색하고
활동 표시줄의 트리 보기에 표시
- **Path Intellisense** : 파일 이름 자동 완성
- **Live Preview** : 웹페이지 미리 보기
- **REST Client** : REST 클라이언트

VS Code 단축키 및 코딩 지원 기능

Command Pallate : Ctrl + Shift+ P, ⌘ + ⇧ + P



터미널 : Ctrl + `

파일 찾기 : Ctrl + P

행 삭제 : Ctrl + X

행 복사 : Ctrl + C

행 붙여넣기 : Ctrl + V

위에 행 복사 추가 : Shift + Alt + Down

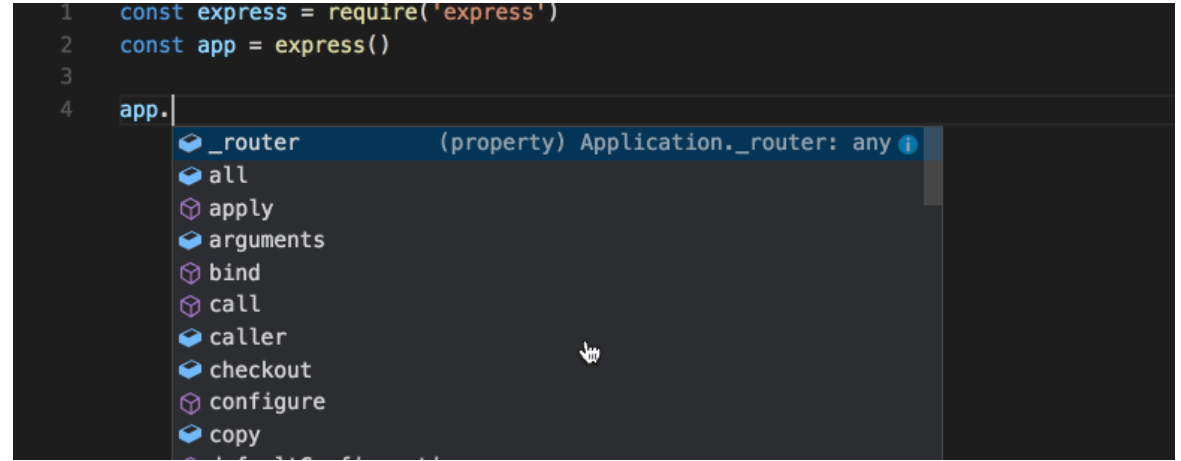
아래에 행 복사 추가 : Shift + Alt + Up

행을 아래로 이동 : Alt + Down

행을 위로 이동 : Alt + Up

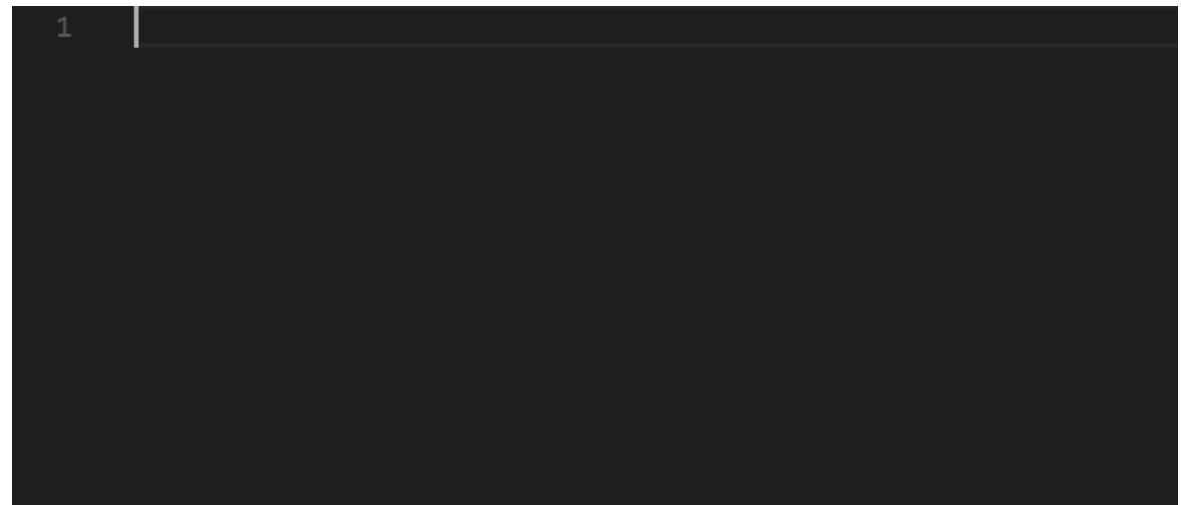
화면 크기를 조정 : Ctrl + '+' 또는 Ctrl + '-'

IntelliSense



<https://code.visualstudio.com/docs/editor/intellisense>

Snippets

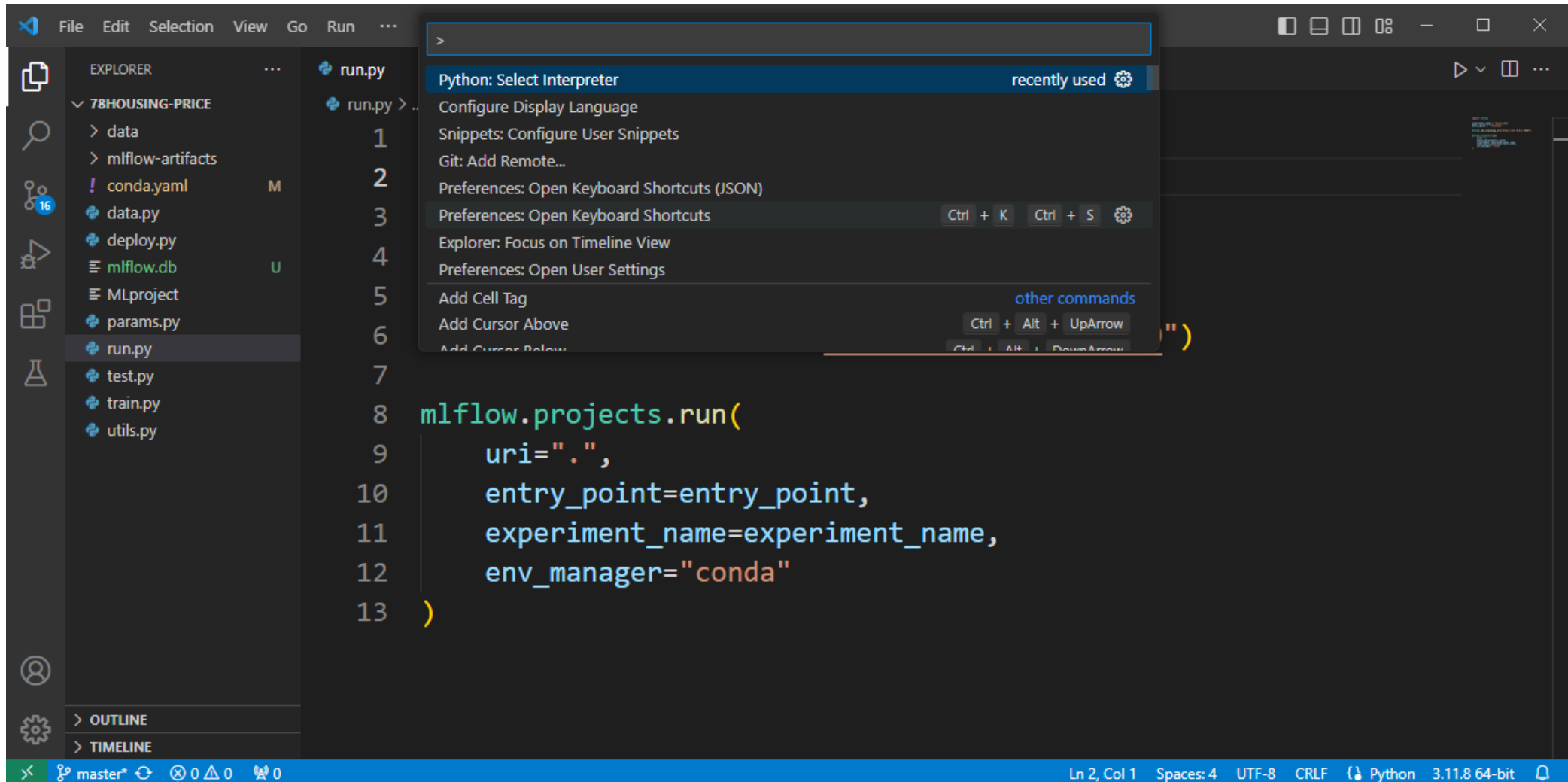


<https://code.visualstudio.com/docs/editor/userdefinedsnippets>

VS Code : Python 선택

- Windows : **Ctrl + Shift + P**
Python : Select Interpreter

- macOS : **⌘ + ⇧ + P**
Python : Select Interpreter
Shell Command: Install 'code' command in PATH



Python(파이썬)

Python Libraries for Generative AI



TensorFlow



PyTorch



Transformers



Weight and Biases



JAX



LangChain



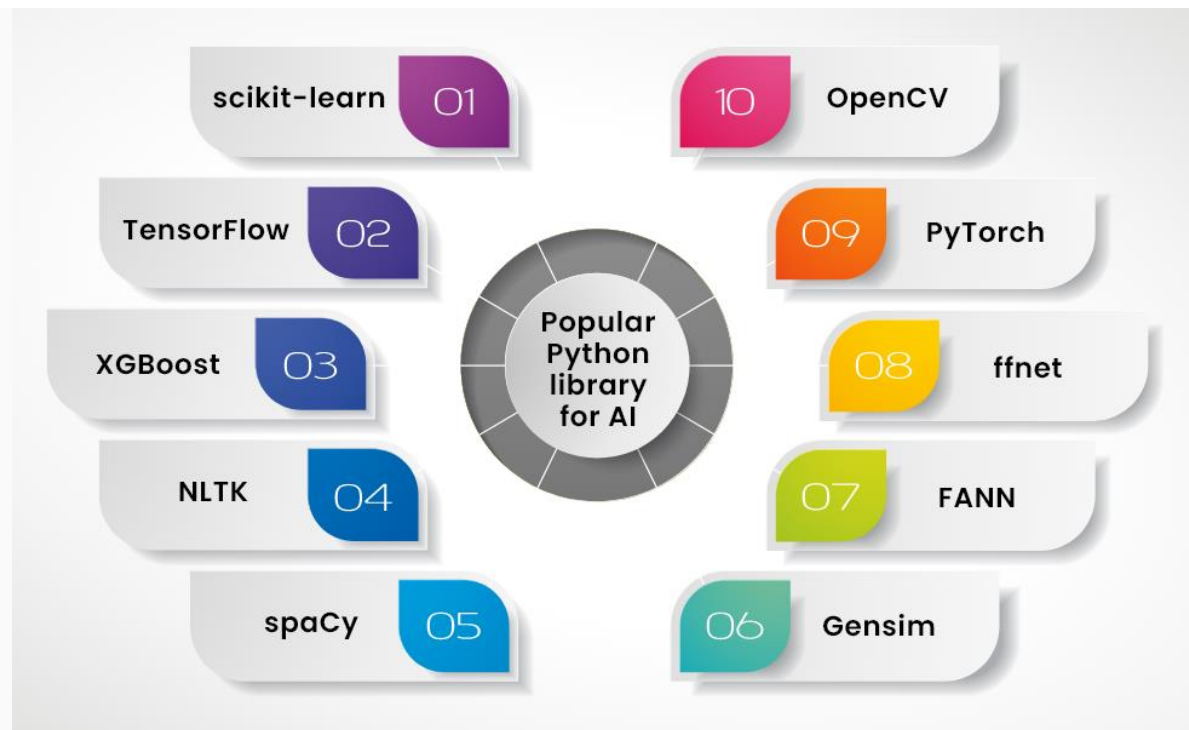
Llama Index



Diffusers



Acme



Python 설치

■ 파이썬 다운로드

<https://www.python.org/downloads/windows/>

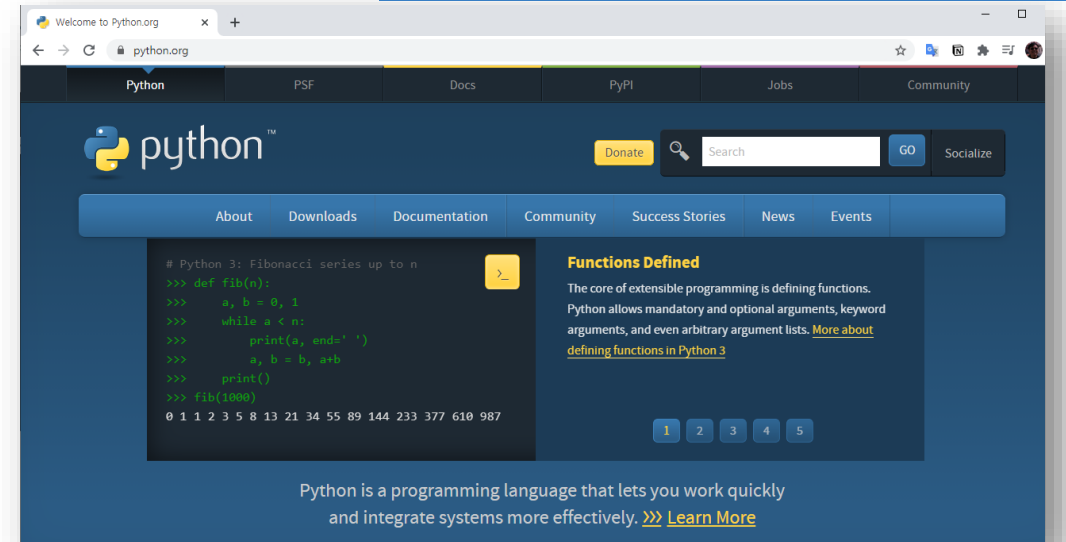
Stable Releases

- [Python 3.11.8 - Feb. 6, 2024](#)
- Note that Python 3.11.8 *cannot* be used on Windows 7 or earlier.
- Download [Windows embeddable package \(32-bit\)](#)
- Download [Windows embeddable package \(64-bit\)](#)
- Download [Windows embeddable package \(ARM64\)](#)
- Download [Windows installer \(32-bit\)](#)
- Download [Windows installer \(64-bit\)](#)
- Download [Windows installer \(ARM64\)](#)

<https://www.python.org/downloads/macros/>

Stable Releases

- [Python 3.11.8 - Feb. 6, 2024](#)
- Download [macOS 64-bit universal2 installer](#)



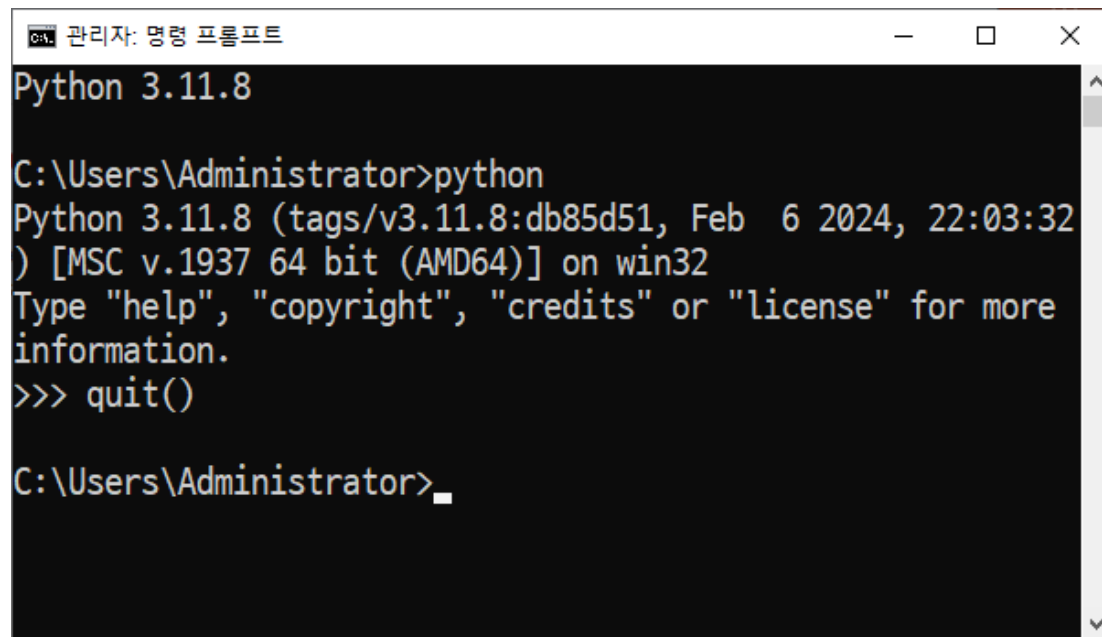
Python 설치

■ 파이썬 설치



■ 파이썬 실행

- 버전 확인 : `python --version`
- 실행 : `python`
- 종료 : `quit()`



Python 가상환경 설치

프로젝트별로 독립된 파이썬 실행 환경을 사용할 수 있는 가상 환경(Virtual Environment) 구성을 권장합니다.

- 가상환경 생성 : `python -m venv py311`
- 가상환경 실행
 - Windows : `py311\Scripts\activate.bat`
 - Linux / macOS : `source py311/bin/activate`
- 파이썬 패키지 설치 : `pip install jupyterlab notebook openai`
 - Jupyter Lab 설치 확인 : `jupyter lab`
 - Jupyter Notebook 설치 확인 : `jupyter notebook`
- 패키지 목록파일 만들기
`pip freeze > requirements.txt`
- 패키지 목록파일로 패키지 설치 하는 방법
`pip install -r requirements.txt`
- 파이썬 패키지 삭제 : `pip uninstall jupyterlab`

Colab(코랩)

개발툴 설치없이 웹상에서 파이썬 프로그램을 할수 있는 환경으로 딥러닝에 필요한 GPU를 사용할 수 있습니다.

<https://colab.research.google.com> **구글 계정 필요**



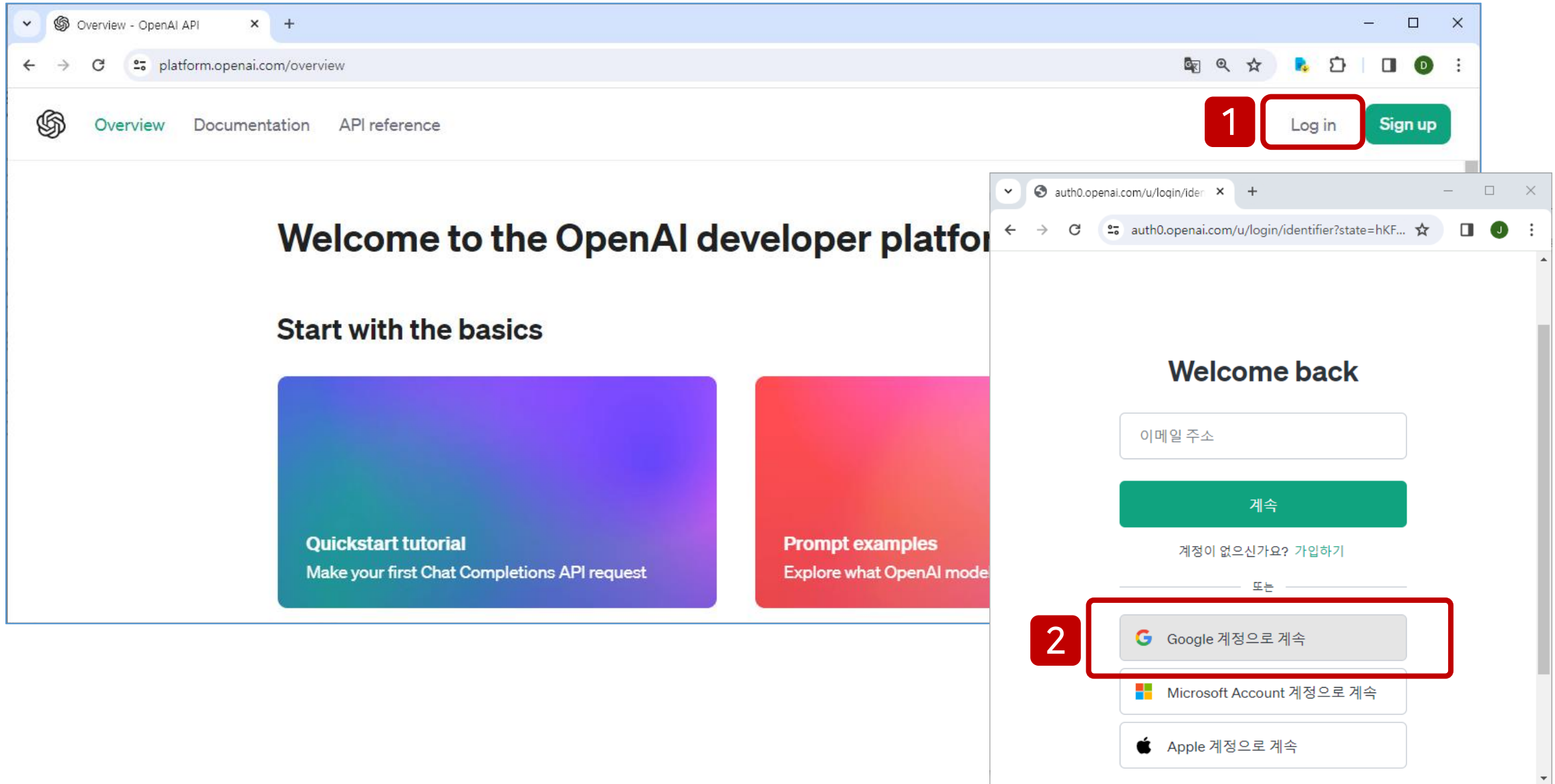
The image shows the Google Colaboratory web interface. At the top, there's a blue bar with the URL <https://colab.research.google.com> and an orange bar indicating '구글 계정 필요' (Google account required). Below the header, the main interface shows a 'Colaboratory에 오신 것을 환영합니다' (Welcome to Colaboratory) message. A menu is open, showing options like '모두 실행' (Run all), '이전 셀 실행' (Run previous cells), etc. A dialog box titled '런타임 유형 변경' (Change runtime type) is displayed, showing 'Python 3' as the runtime type and 'T4 GPU' as the hardware accelerator. Other options include CPU, A100 GPU, V100 GPU, and TPU. A blue arrow points from the '런타임 유형 변경' option in the menu to the dialog box.

고성능GPU(Graphics Processing Unit)



OpenAI API 사용

<https://platform.openai.com/>



The image shows a two-step process for logging into the OpenAI developer platform. The first step shows the 'Overview' page with a 'Log in' button highlighted by a red box and the number '1'. The second step shows the login page with a 'Continue with Google' button highlighted by a red box and the number '2'.

Step 1: Overview Page

URL: platform.openai.com/overview

Navigation: Overview, Documentation, API reference

Buttons: Log in, Sign up

Section: Welcome to the OpenAI developer platform

Section: Start with the basics

- Quickstart tutorial**
Make your first Chat Completions API request
- Prompt examples**
Explore what OpenAI mode

Step 2: Login Page

URL: auth0.openai.com/u/login/identifier?state=hKF...

Section: Welcome back

Form: 이메일 주소

Buttons: 계속

Text: 계정이 없으신가요? 가입하기

Text: 또는

Buttons:

- Google 계정으로 계속 (Highlighted)
- Microsoft Account 계정으로 계속
- Apple 계정으로 계속

OpenAI API 무료사용

<https://platform.openai.com/account/billing/overview>

Billing overview - OpenAI API

platform.openai.com/account/billing/overview

Billing settings

Overview Payment methods Billing history Preferences

Free trial

Credit remaining ⓘ
\$5.00

Add payment details View usage

ⓘ **Note:** This does not reflect the status of your ChatGPT account.

Payment methods
Add or change payment method

Billing history
View past and current invoices

Preferences
Manage billing information

Usage limits
Set monthly spend limits

Pricing
View pricing and FAQs

Rate limits

MODEL	TOKEN LIMITS	REQUEST AND OTHER LIMITS
gpt-3.5-turbo : LLM	40,000 TPM	3 RPM 200 RPD
text-embedding-3-small	150,000 TPM	3 RPM 200 RPD
dall-e-3 : Text to Image		3 RPM 200 RPD
tts-1 : Text to Speech		3 RPM 200 RPD
whisper-1 : Automatic Speech Recognition		3 RPM 200 RPD

- TPM (tokens per minute)
- TPD (tokens per day)
- RPM (requests per minute)
- RPD (requests per day)
- IPM (images per minute)

- 1 token \approx 4 chars in English
- 1 token \approx $\frac{3}{4}$ words
- 100 tokens \approx 75 words

참고 :

<https://help.openai.com/en/articles/4936856-what-are-tokens-and-how-to-count-them>

OpenAI API 유료사용

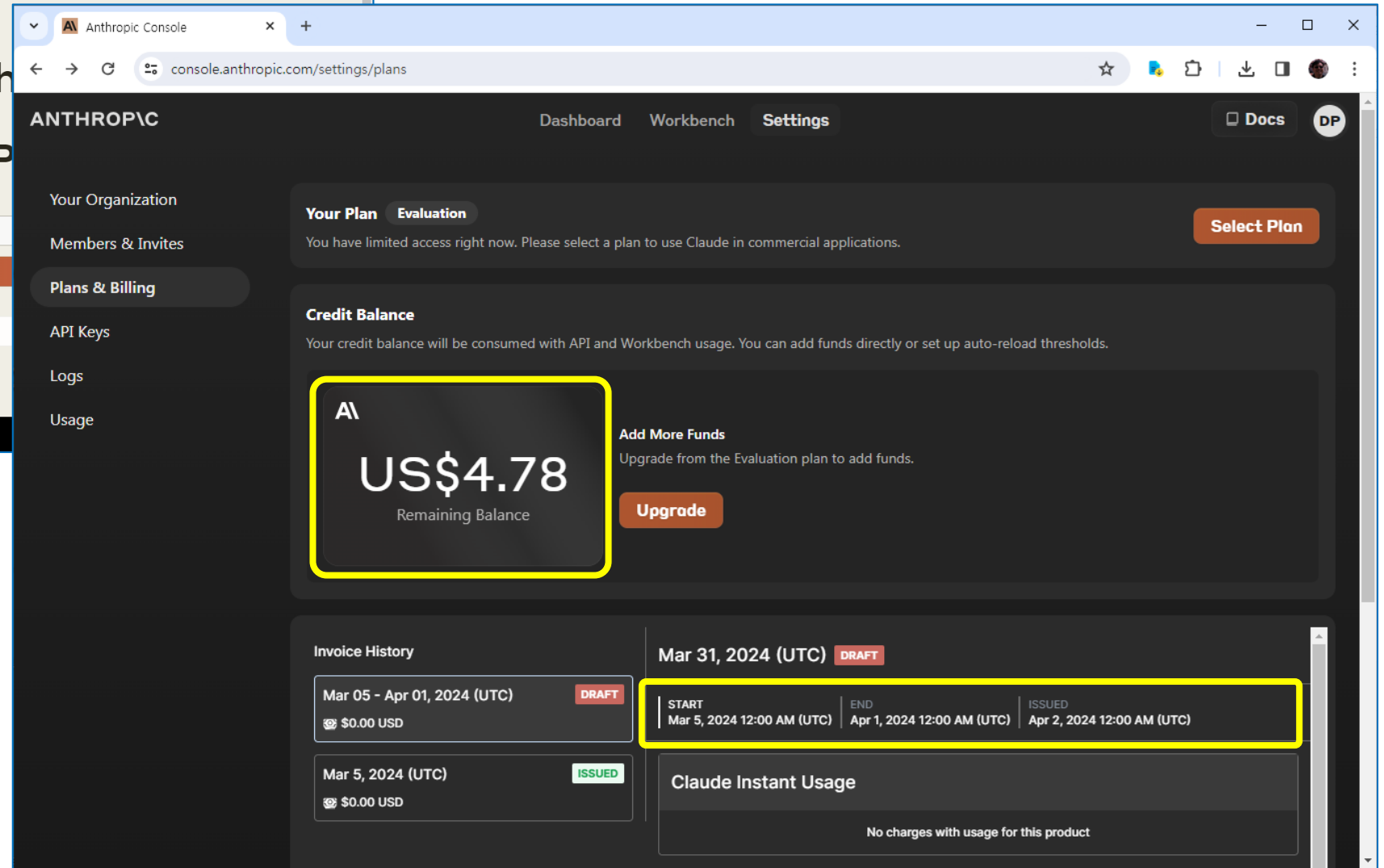
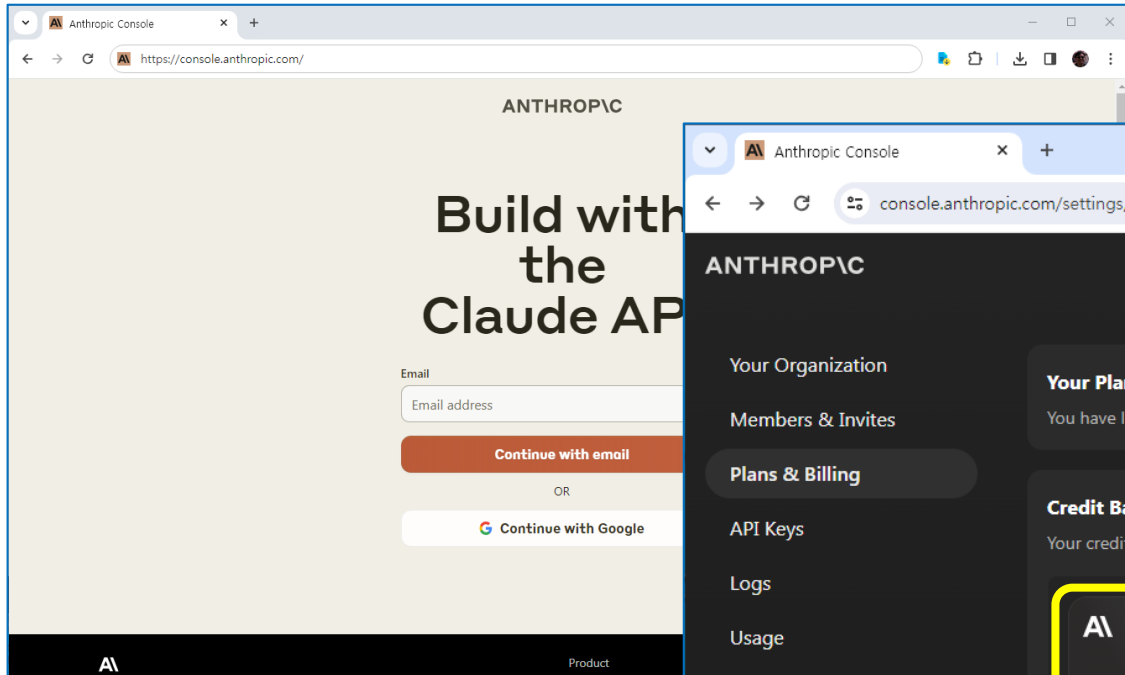
<https://platform.openai.com/account/billing/overview>

The screenshot shows the OpenAI API Billing overview page. The left sidebar contains navigation links: Playground, Assistants, Fine-tuning, API keys, Files, Usage, Settings, Organization, Team, Limits, **Billing** (highlighted with a red box), Profile, Documentation, Help, All products, and Personal. The main content area is titled "Billing settings" and has tabs for Overview, Payment methods, Billing history, and Preferences. The Overview tab shows a "Free trial" status with "Credit remaining" of "\$0.00" (highlighted with a red box). Below this are buttons for "Add payment details" and "View usage". A note states: "Note: This does not reflect the status of your ChatGPT account." To the right, a section titled "What best describes you?" offers options for "Individual" (I'm an individual) and "Company" (I'm working on behalf of a company). At the bottom of the main content area, there are four tiles: "Payment methods" (Add or change payment method, highlighted with a red box), "Billing history" (View past and current invoices), "Usage limits" (Set monthly spend limits, highlighted with a red box), and "Pricing" (View pricing and FAQs). A modal titled "Add payment details" is open on the right, showing fields for Card information (Card number, MM / YY, CVC), Name on card, and Billing address (Country, Address line 1, Address line 2, City, Postal code, State, county, province, or region). The modal includes "Cancel" and "Continue" buttons.

Anthropic API 무료사용

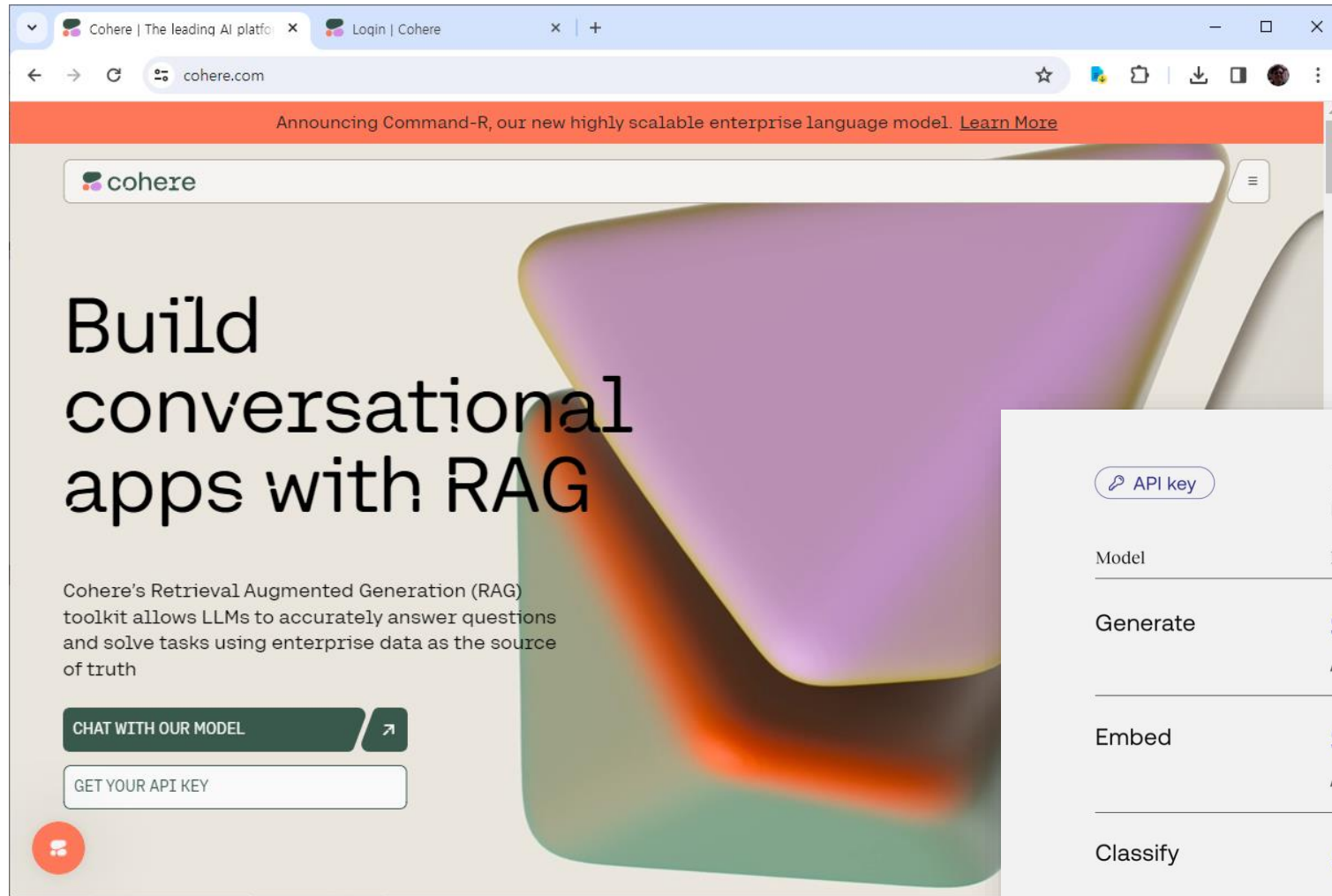
<https://console.anthropic.com/>

SIGN UP



Cohere API 무료사용

<https://cohere.com/>



API key	Production keys		Trial keys
	Rate limit: 10,000 calls/min		Rate limit: 100 calls/min
Model	Default	Custom	Default + Custom
Generate	\$2.50 /1,000 Generations	\$5.00 /1,000 Generations	Free
Embed	\$1.00 /1,000 Embeddings	\$2.00 /1,000 Embeddings	Free
Classify	\$2.00 /1,000 Classifications	\$2.00 /1,000 Classifications	Free

Python 기초

■ 변수 할당(Variable Assignment)

```
x = 2
y = 3
z = x + y
```

```
x = 'hello'
```

Single Quotation
작은 따옴표

```
x = "hello"
```

Double
Quotation
쌍 따옴표

```
X
```

```
[Out] 'hello'
```

■ 출력

```
print(x)
```

```
[Out] 'hello'
```

■ 리스트(List)

```
[1, 2, 3]
```

```
['a', 'b', 'c']
```

```
my_list = [1, 2, 'apple', True]
```

Bracket
대괄호

```
my_list.append(100)
```

```
my_list[0]
```

```
my_list[:-1]
```

```
my_list[-1]
```

■ 딕셔너리(Dictionary)

```
d = {'key1': 'item1', 'key2': 'item2'}
```

Brace
중괄호

```
d['key1']
```

```
[Out] 'item1'
```



PythonEssence.ipynb



colab



Thank you 😊