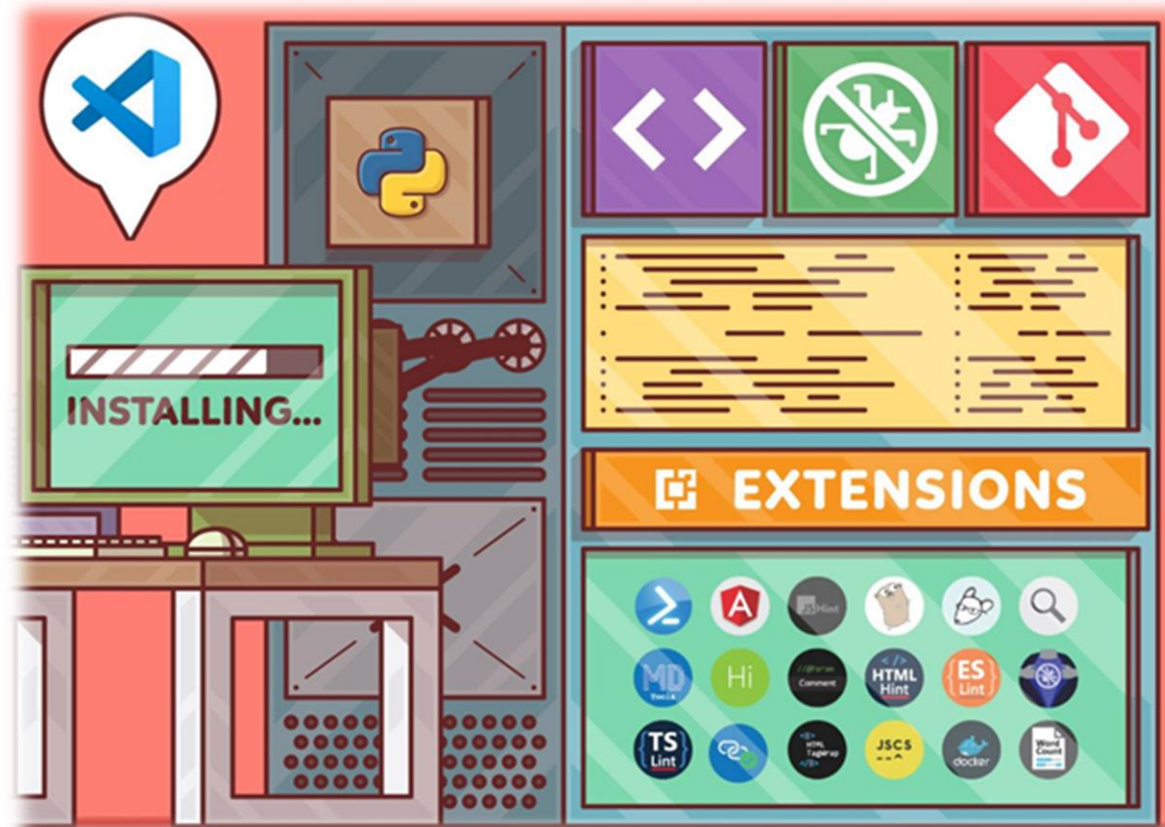


개발환경 구성



개발환경

PC



Visual Studio Code



Sublime Text



↓ Windows용 다운로드

↓ Mac용 다운로드

단축키 : Ctrl+C+C

단축키 : ⌘+C+C



Jupyter Notebook



Jupyter Lab



웹

colab

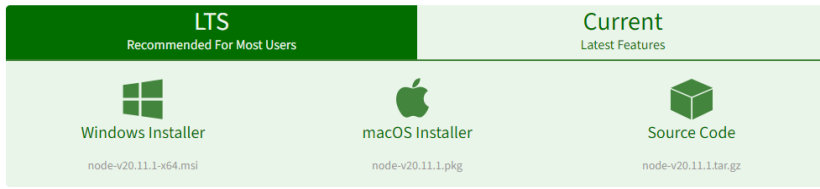
<https://colab.research.google.com/>

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`

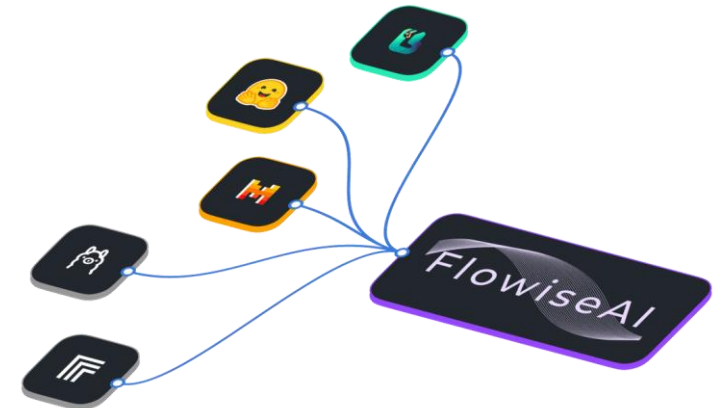
3. 모듈 설치

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

4. App 실행

`yarn start`

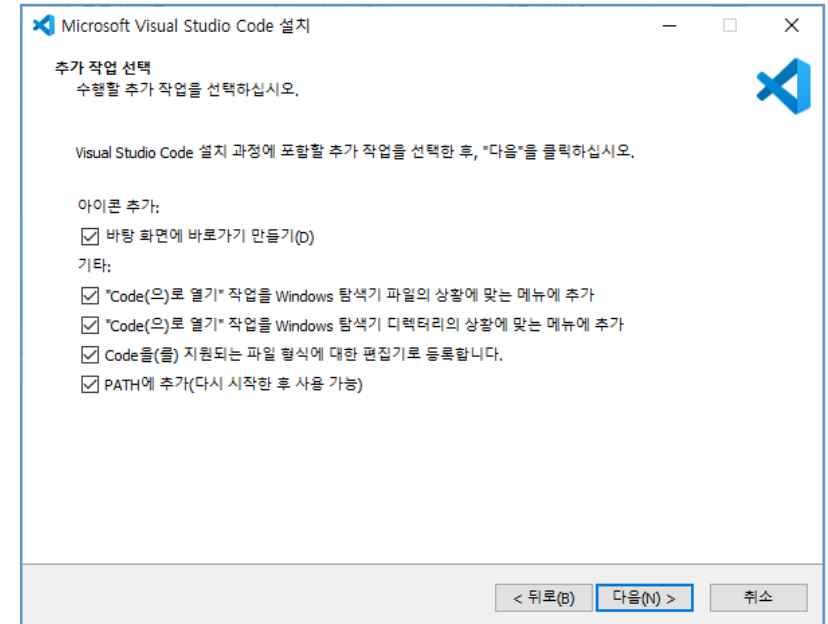
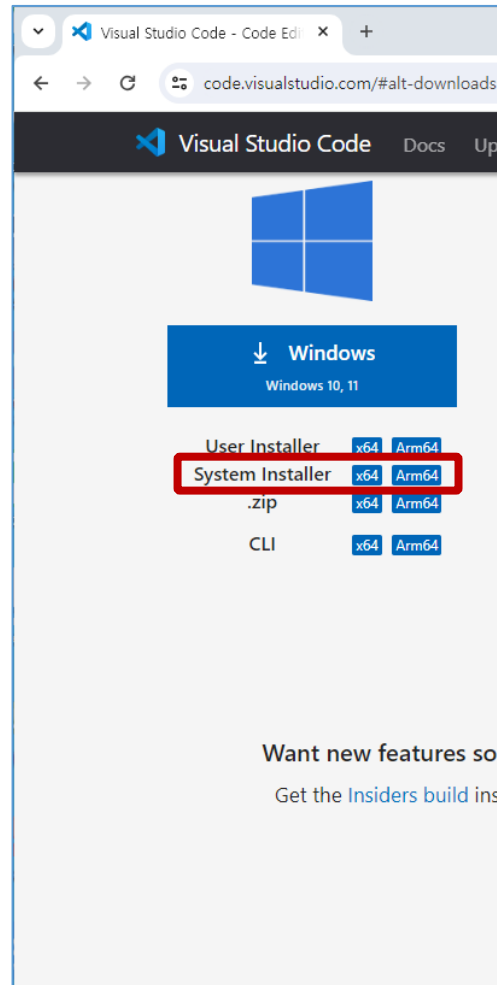
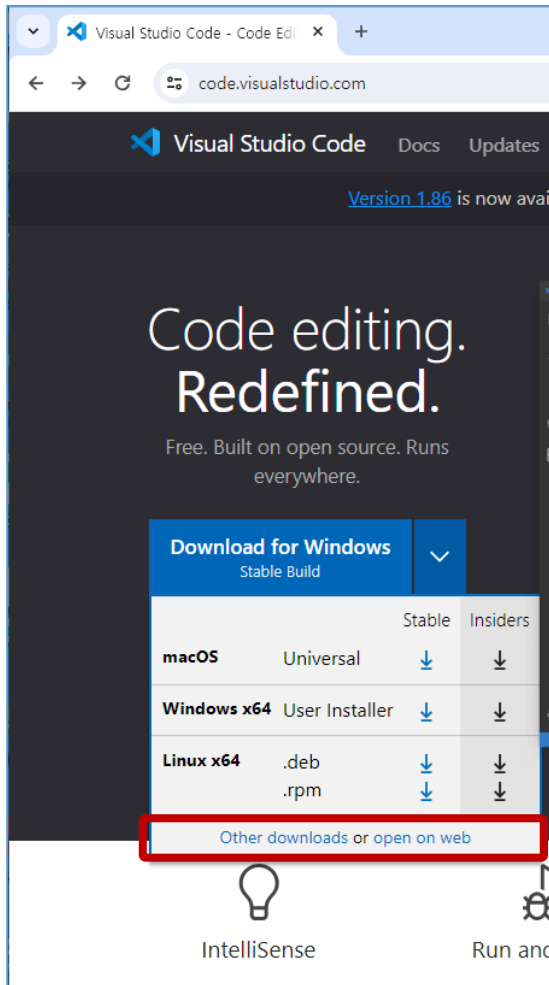
6. <http://localhost:3000> 접속



VS Code 설치 – Windows

■ 설치 프로그램

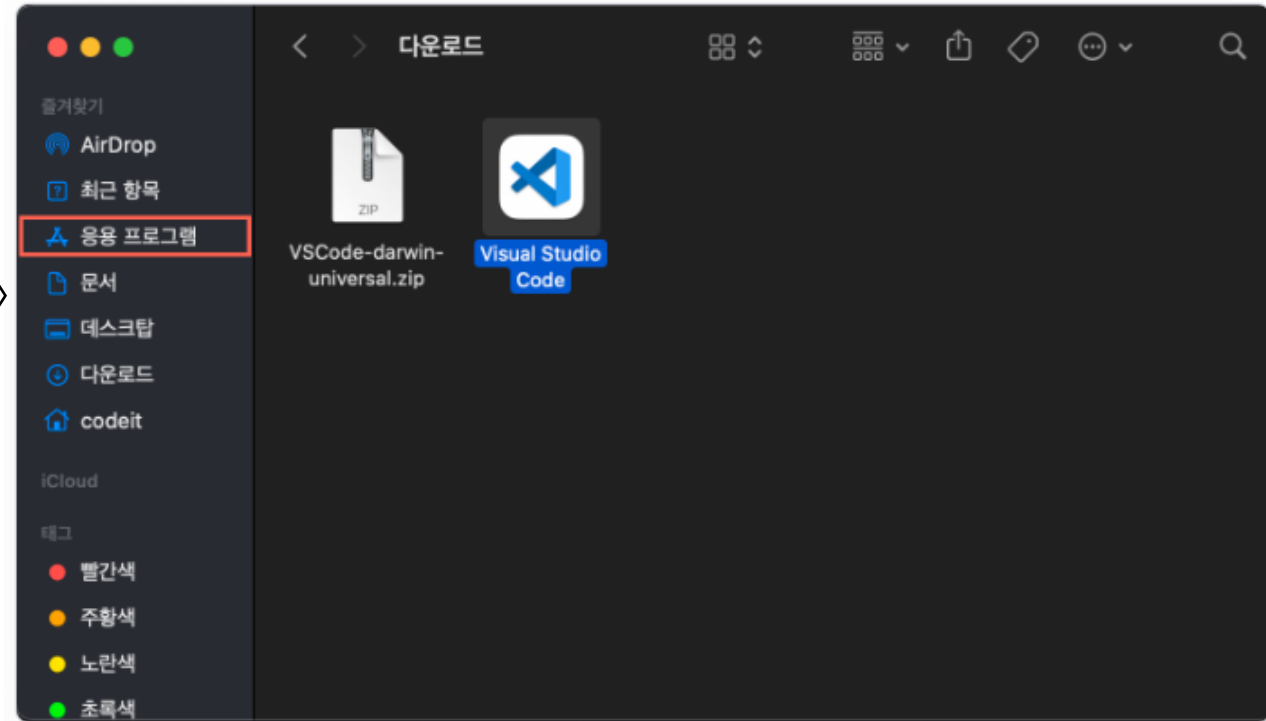
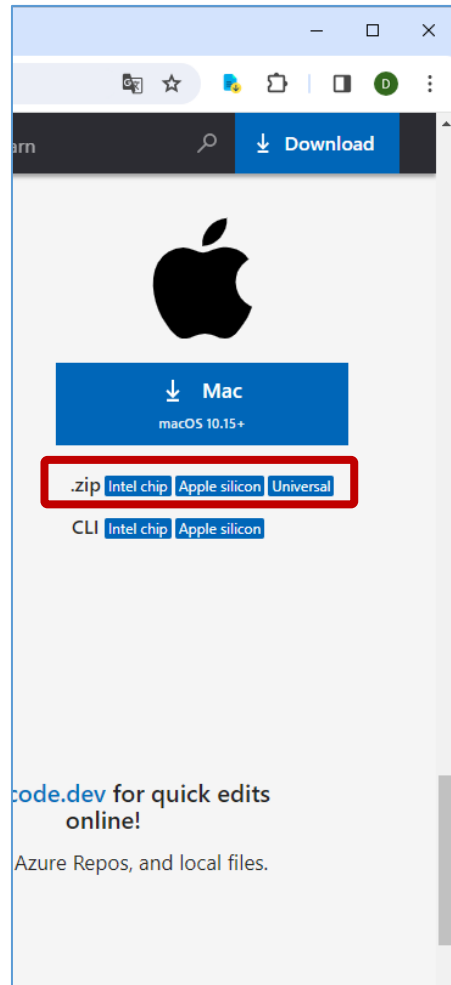
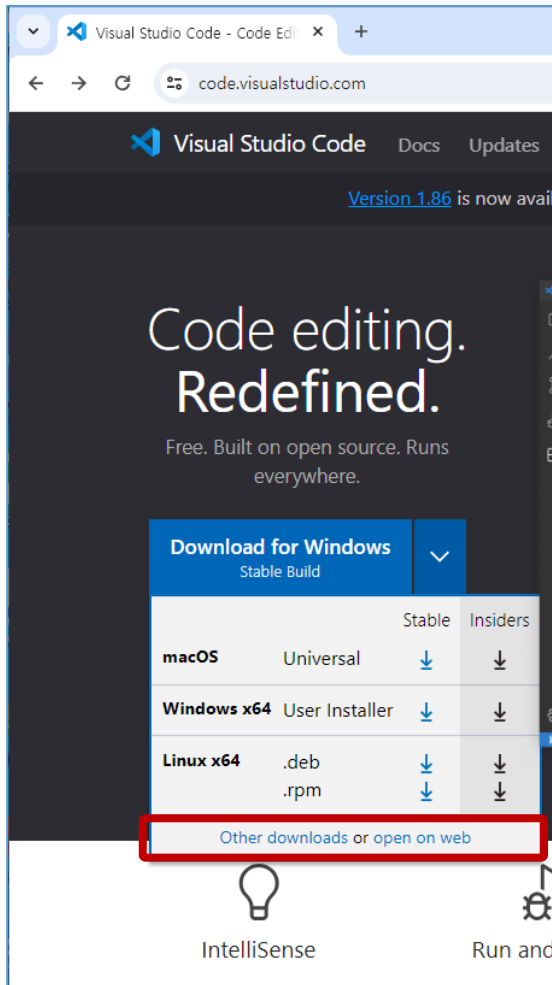
<https://code.visualstudio.com/>



VS Code 설치 – macOS

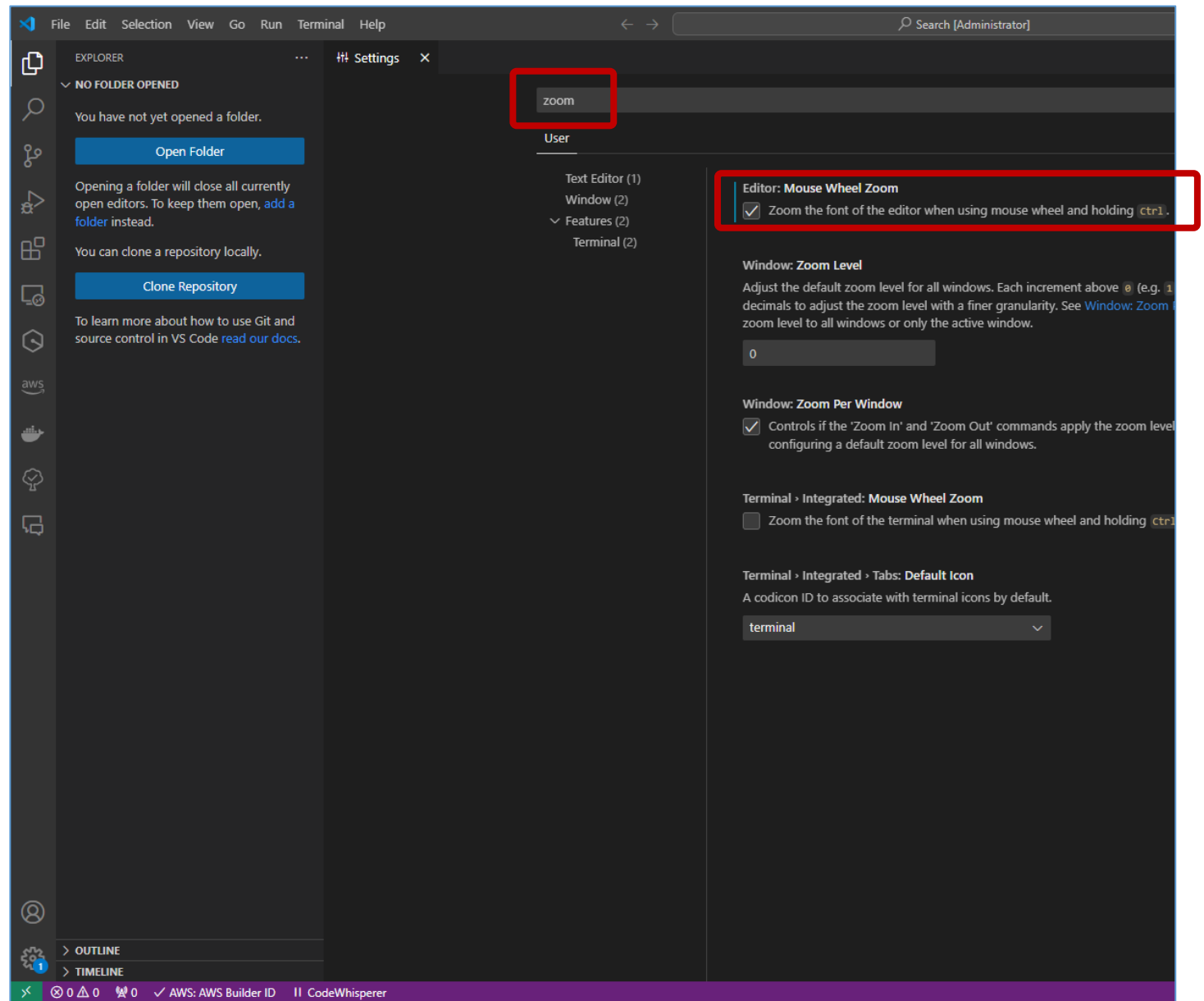
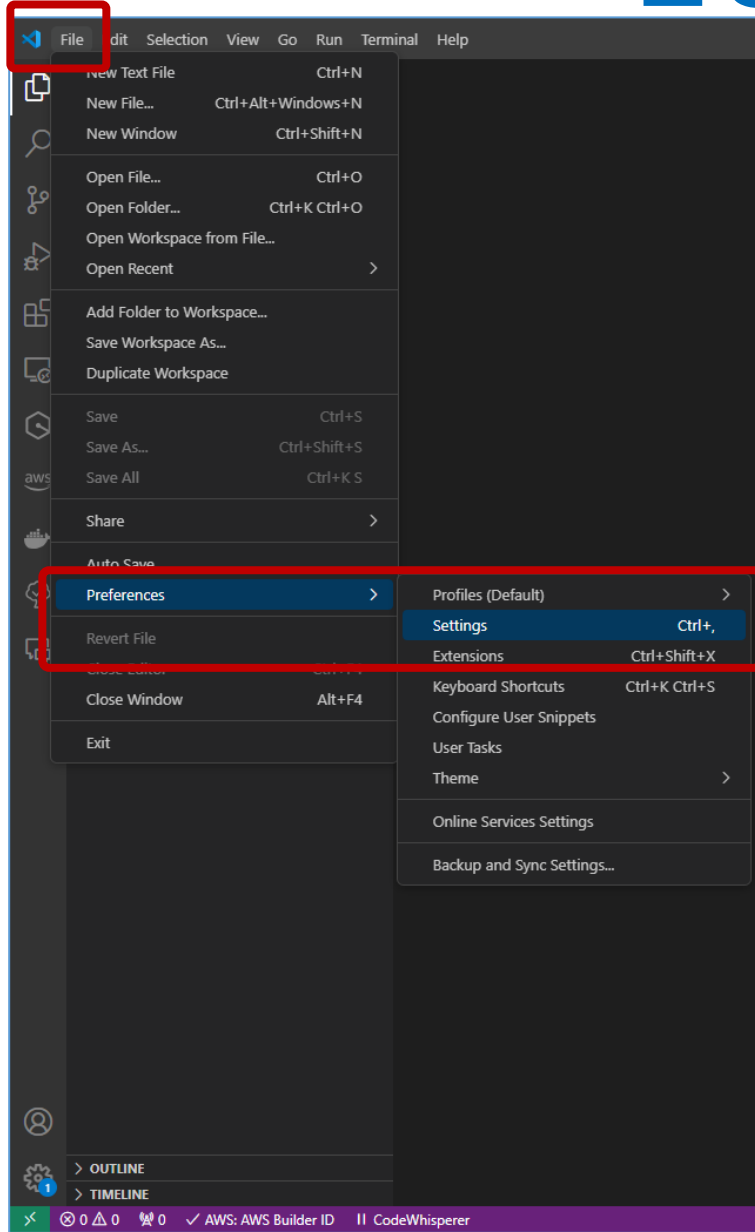
■ 설치 프로그램

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

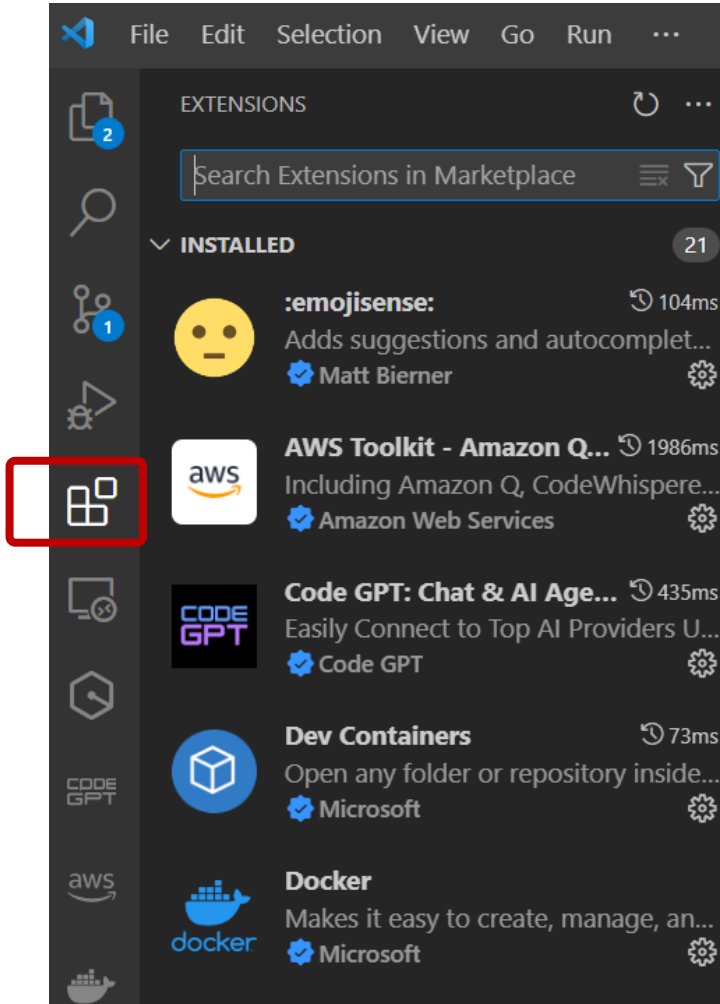


Visual Studio Code를 응용 프로그램(Applications) 폴더로 옮겨 주세요.

VS Code Zoom 설정



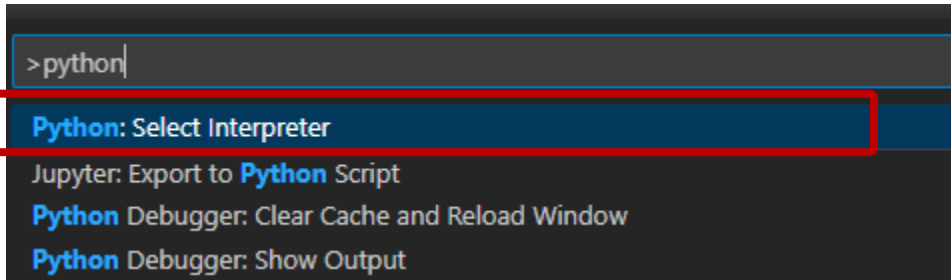
VS Code Extension 설치



- **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

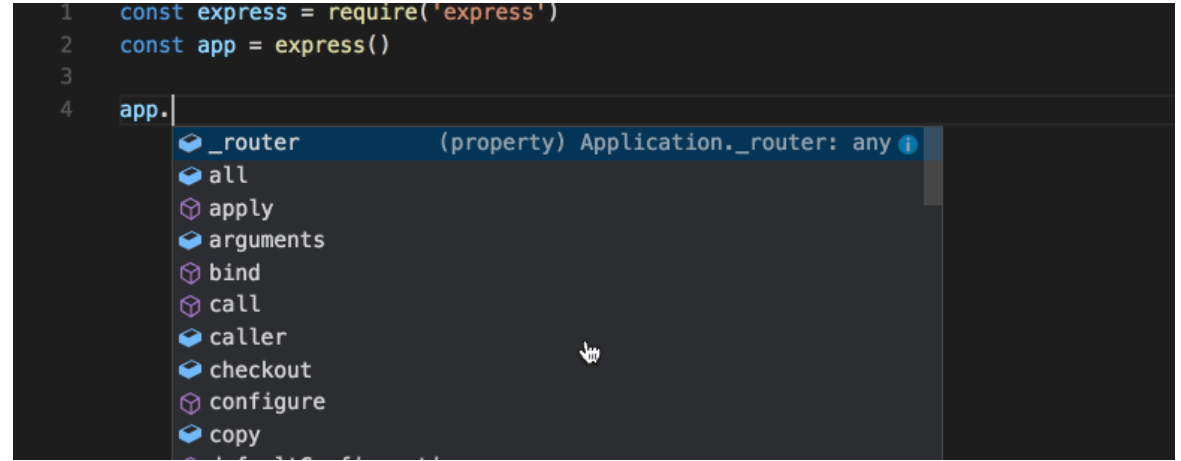
아래에 행 복사 추가 : Shift + Alt + Up

행을 아래로 이동 : Alt + Down

행을 위로 이동 : Alt + Up

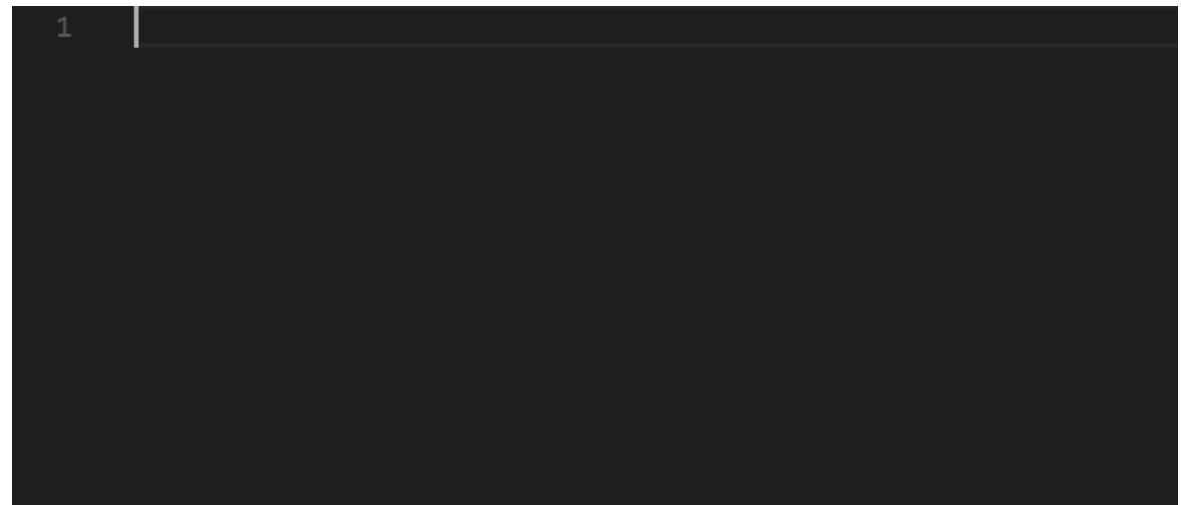
화면 크기를 조정 : Ctrl + '+' 또는 Ctrl + '-'

IntelliSense



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

Snippets

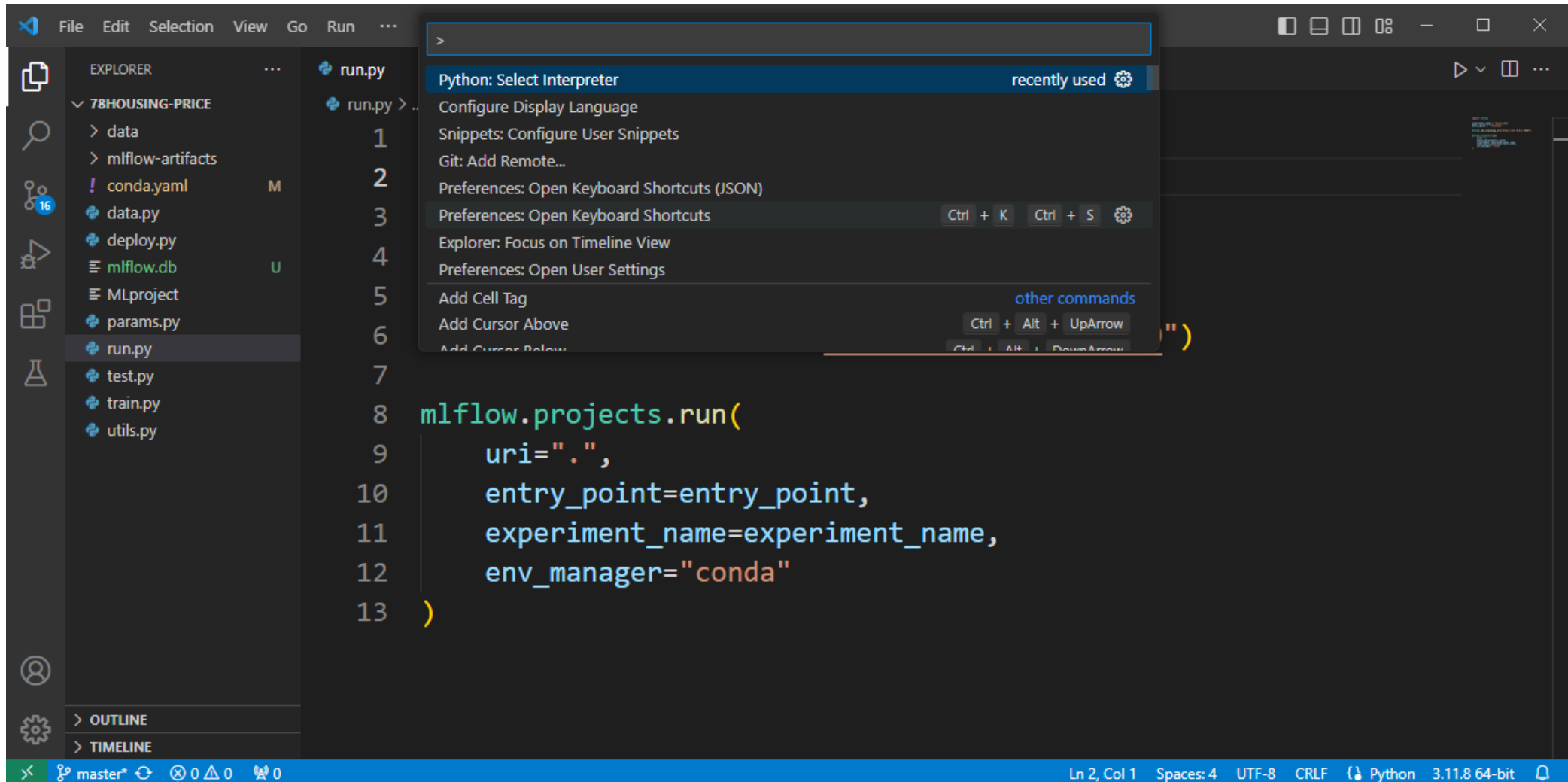


<https://code.visualstudio.com/docs/editor/userdefinedsnippets>

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



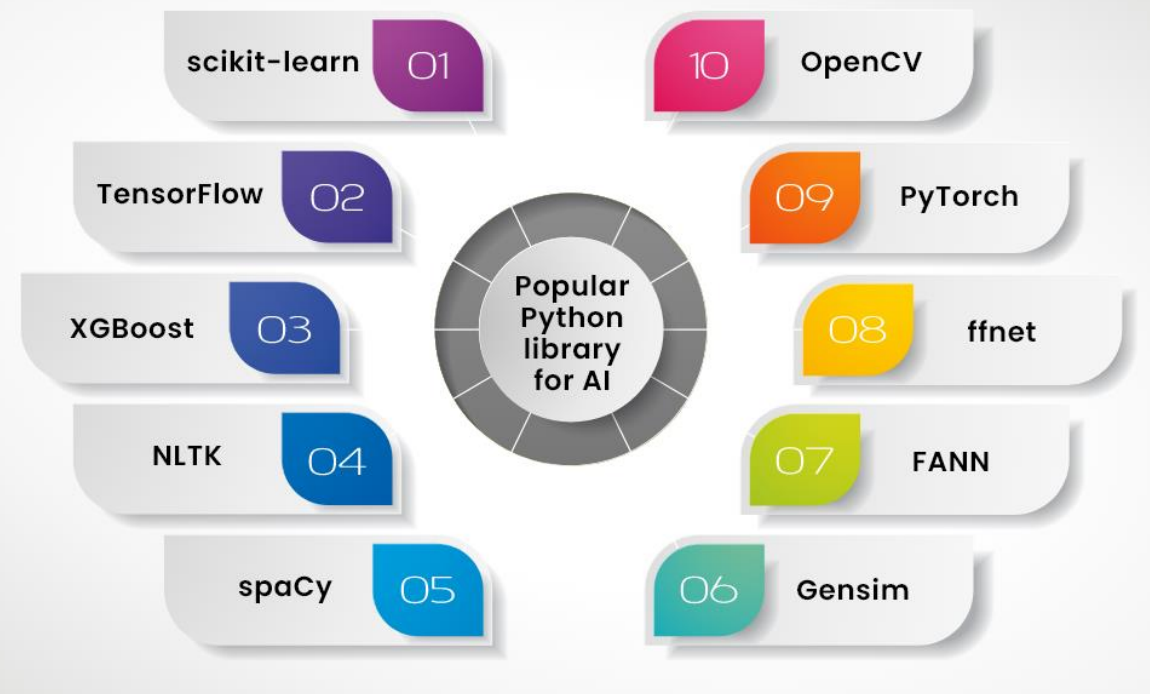
Llama Index



Diffusers



Acme



Python 설치

■ 파이썬 다운로드

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

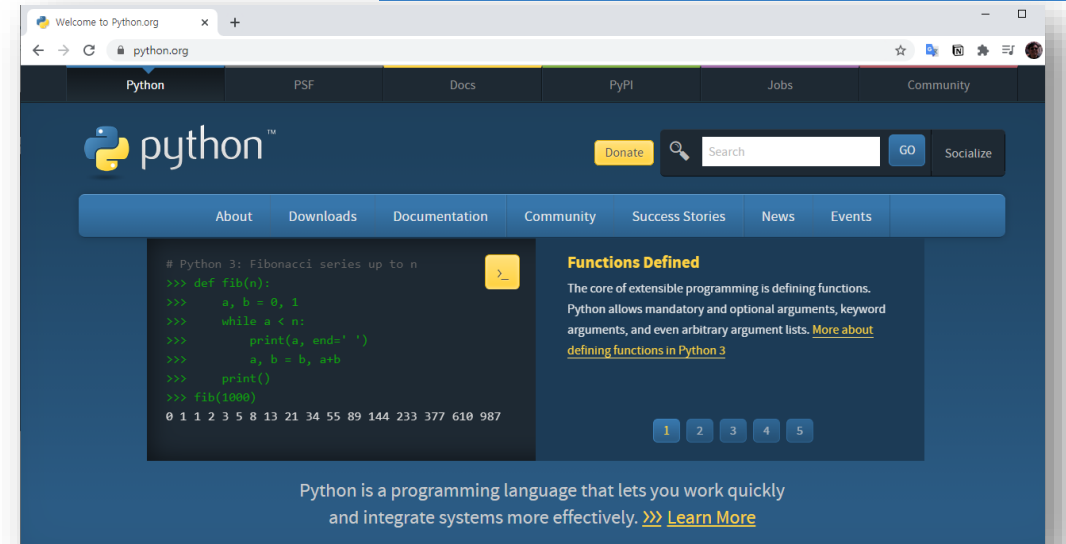
Stable Releases

- [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](#)



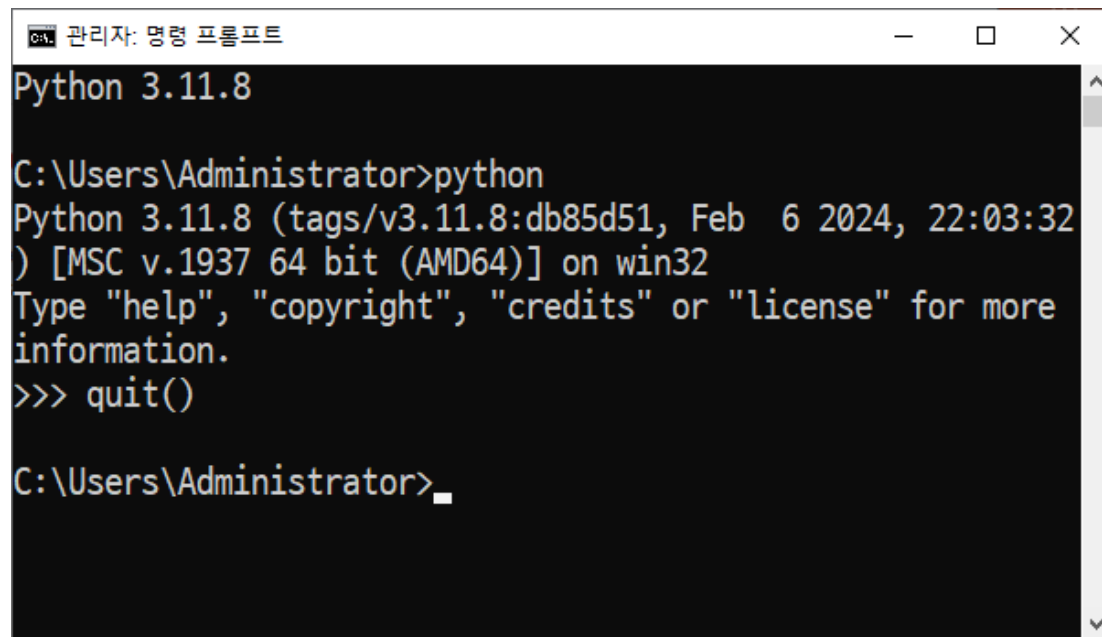
Python 설치

■ 파이썬 설치



■ 파이썬 실행

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



Python 가상환경 설치 - Windows

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

- 가상환경 생성 : `python -m venv py311`
- 가상환경 실행 : `py311\Scripts\activate.bat`
- 파이썬 패키지 설치 : `pip install jupyterlab notebook openai`
 - Jupyter Lab 실행 : `jupyter lab`
 - Jupyter Notebook 실행 : `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 패키지명`

Python 가상환경 설치 - macOS/Linux

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

- 가상환경 생성 : `python3 -m venv py311`
- 가상환경 실행 : `source py311/bin/activate`
- 파이썬 패키지 설치 : `pip3 install jupyterlab notebook openai`
 - Jupyter Lab 실행 : `jupyter lab`
 - Jupyter Notebook 실행 : `jupyter notebook`
- 패키지 목록파일 만들기
`pip3 freeze > requirements.txt`
- 패키지 목록파일로 패키지 설치 하는 방법
`pip3 install -r requirements.txt`
- 파이썬 패키지 삭제 : `pip3 uninstall jupyterlab`

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**

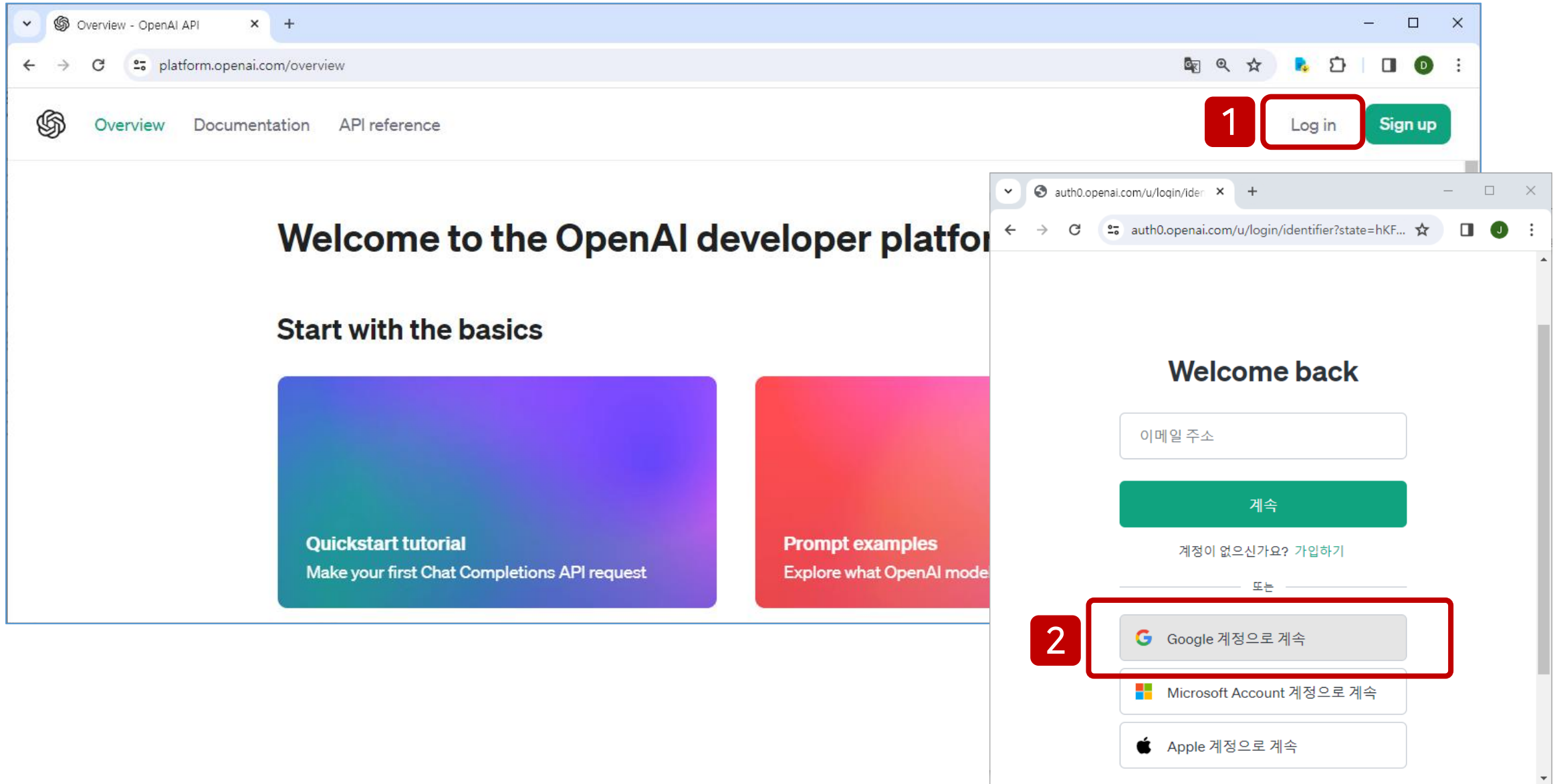


고성능GPU(Graphics Processing Unit)



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 a red circle with the number '1'. The second step shows the login page with a 'Continue with Google' button highlighted by a red box and a red circle with the number '2'.

Step 1: Overview Page

URL: platform.openai.com/overview

Navigation: Overview, Documentation, API reference

Buttons: Log in, Sign up

Welcome to the OpenAI developer platform

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...

Welcome back

이메일 주소

계속

계정이 없으신가요? 가입하기

또는

2 Google 계정으로 계속

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

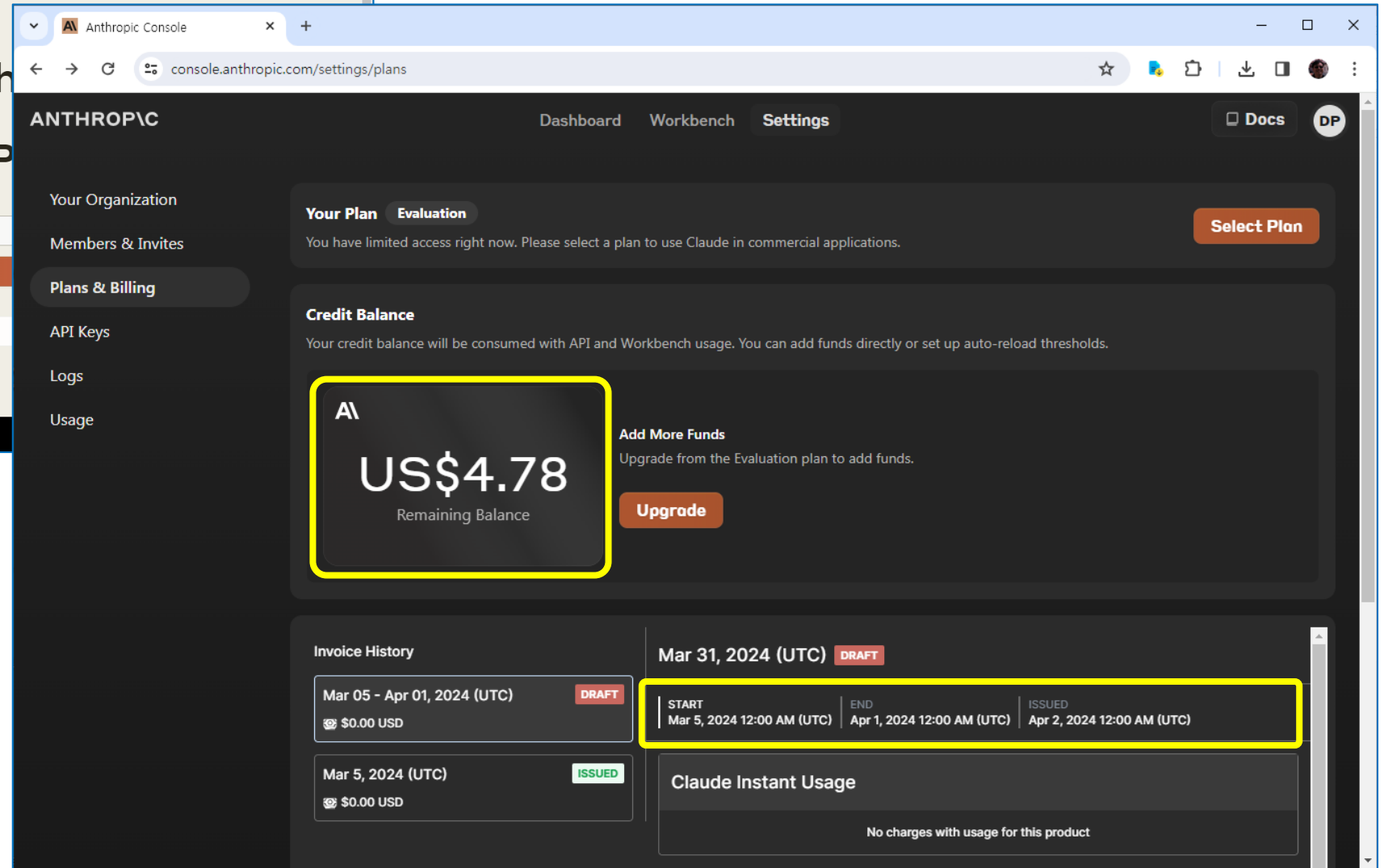
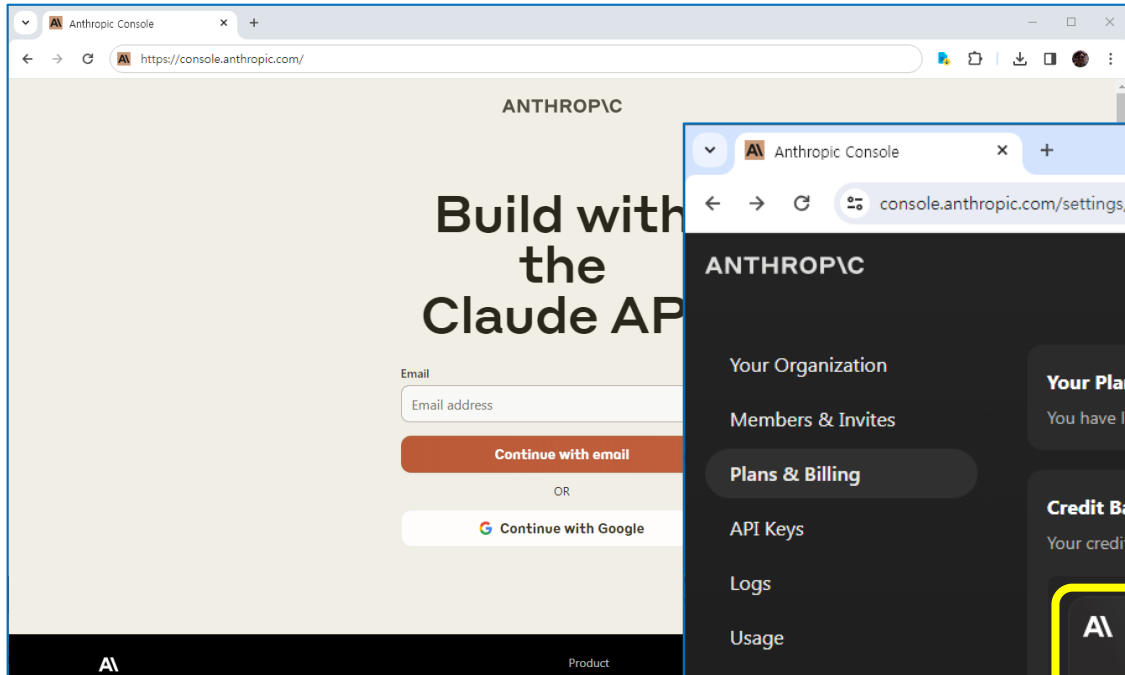
<https://platform.openai.com/account/billing/overview>

The screenshot shows the 'Billing overview' page for an OpenAI API account. The left sidebar contains navigation links: Playground, Assistants, Fine-tuning, API keys, Files, Usage, Settings, Organization, Team, Limits, **Billing** (highlighted), Profile, Documentation, Help, All products, and Personal. The main content area is titled 'Billing settings' and includes tabs for Overview, Payment methods, Billing history, and Preferences. Under the 'Overview' tab, a 'Free trial' section shows 'Credit remaining' as '\$0.00'. 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' or 'Company'. At the bottom of the main area are four tiles: 'Payment methods' (Add or change payment method), 'Billing history' (View past and current invoices), 'Usage limits' (Set monthly spend limits), and 'Pricing' (View pricing and FAQs). A modal titled 'Add payment details' is open on the right, containing fields for card information, name on card, and billing address, with 'Cancel' and 'Continue' buttons at the bottom.

Anthropic API 무료사용

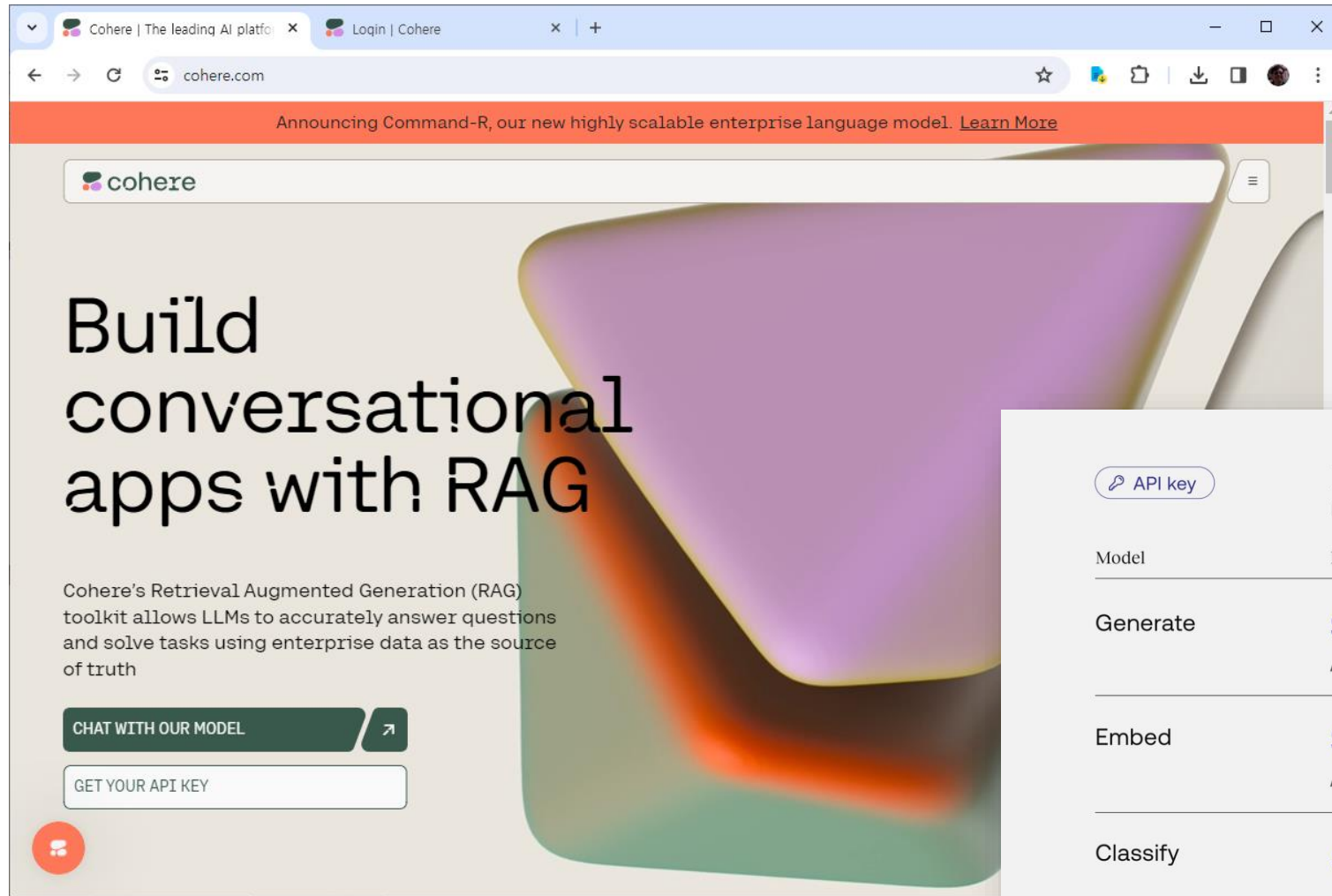
<https://console.anthropic.com/>

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 😊