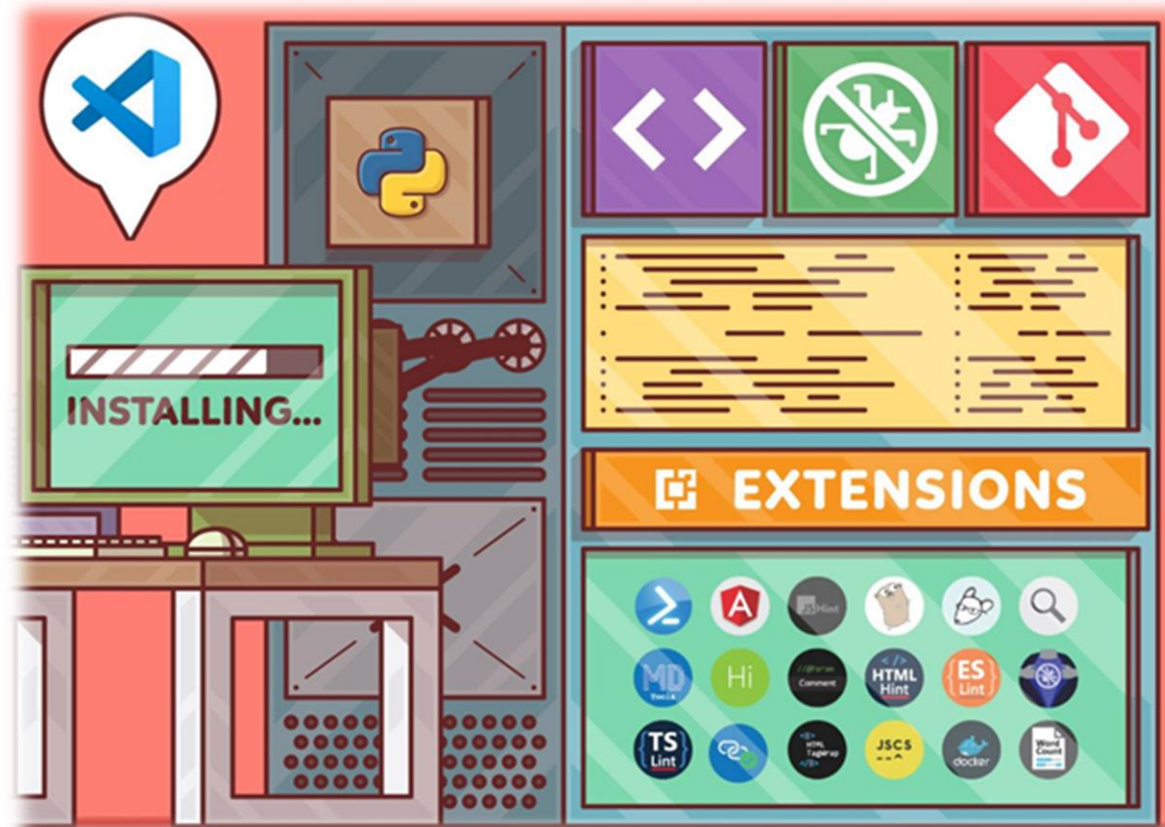


# 개발환경 구성



# 개발환경

PC



Visual Studio Code



Sublime Text



↓ Windows용 다운로드

↓ Mac용 다운로드

단축키 : Ctrl+C+C

단축키 : ⌘+C+C



Jupyter Notebook



Jupyter Lab



웹

colab

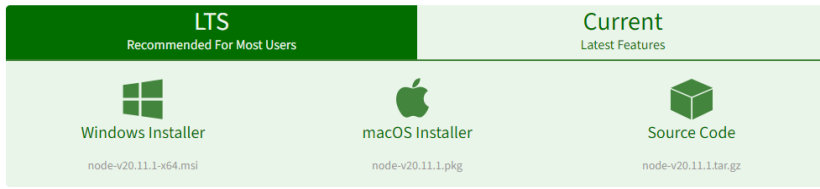
<https://colab.research.google.com/>

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`

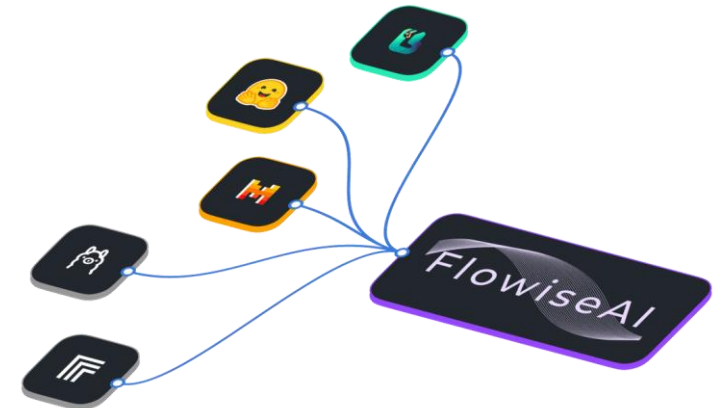
### 3. 모듈 설치

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

### 4. App 실행

`yarn start`

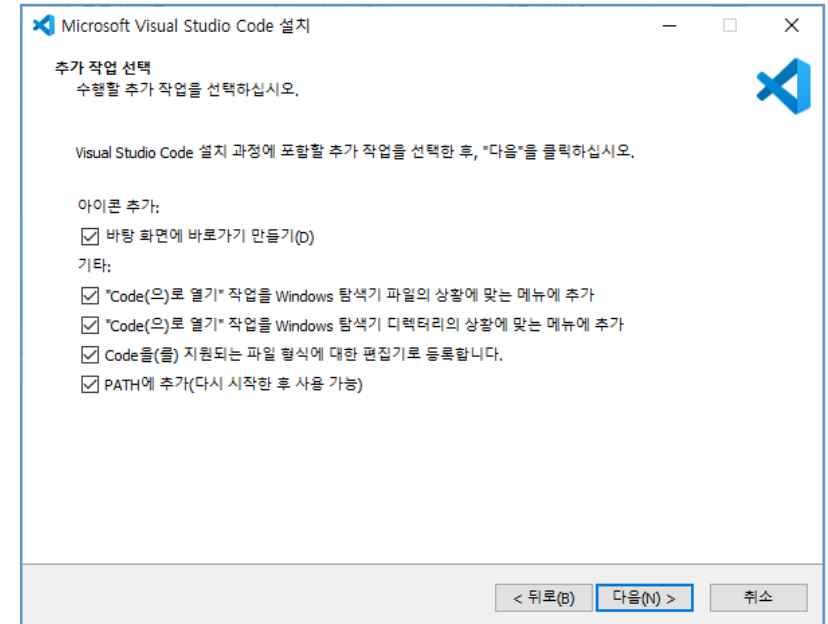
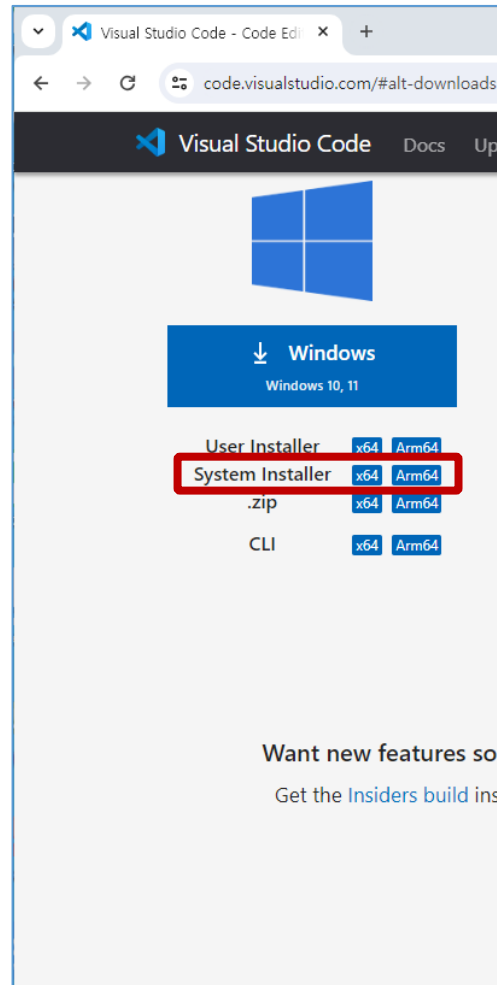
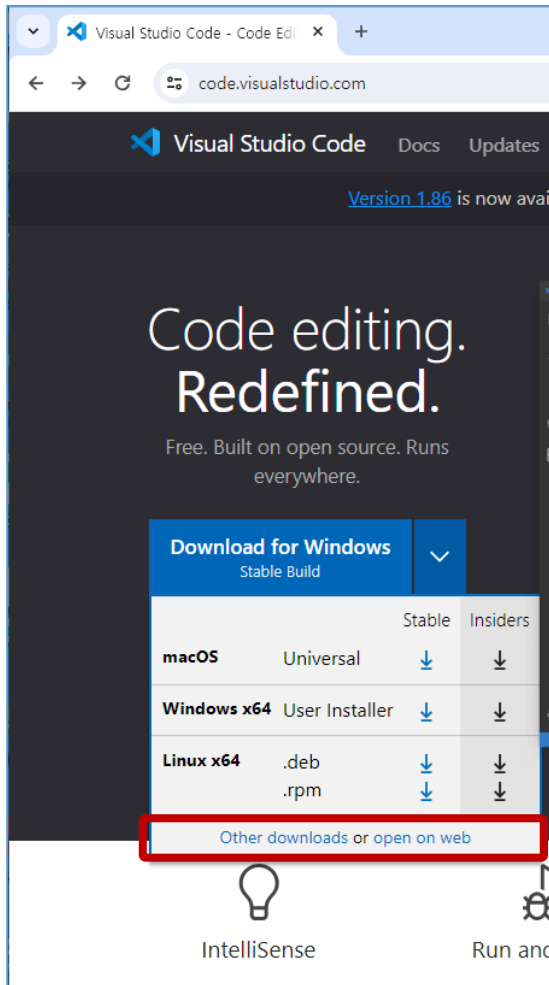
### 6. <http://localhost:3000> 접속



# VS Code 설치 – Windows

## ■ 설치 프로그램

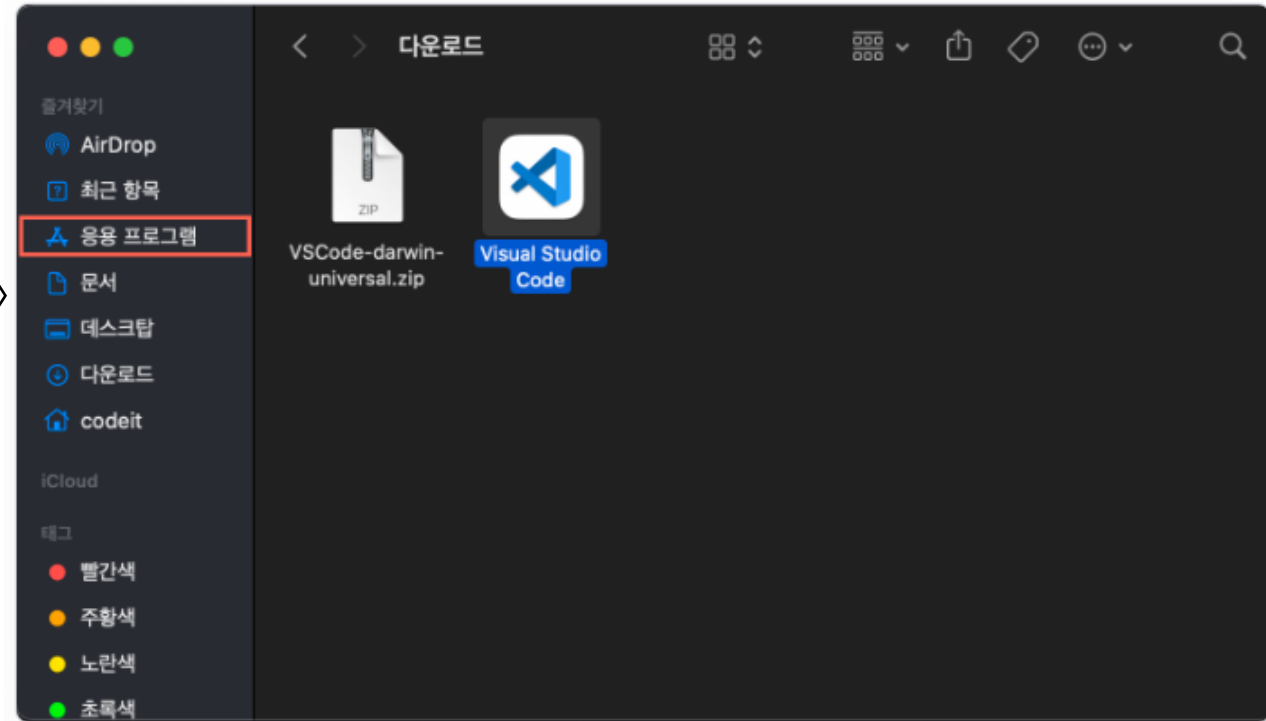
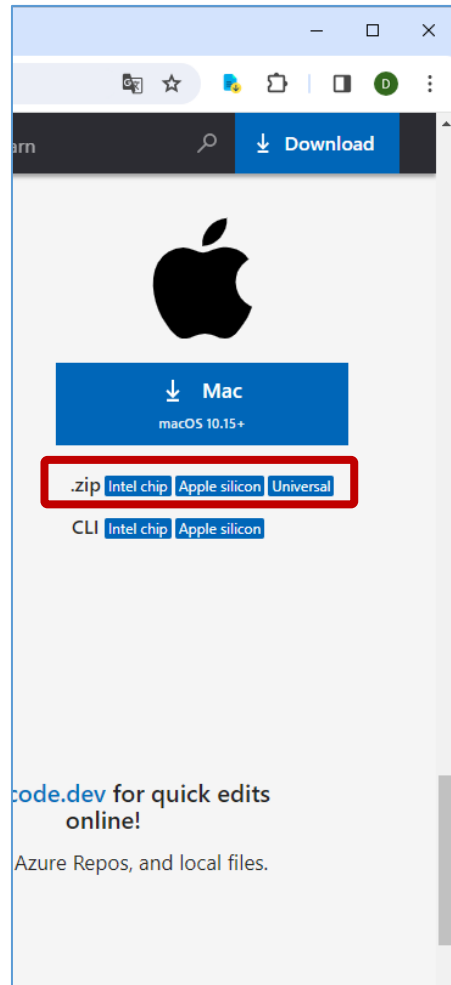
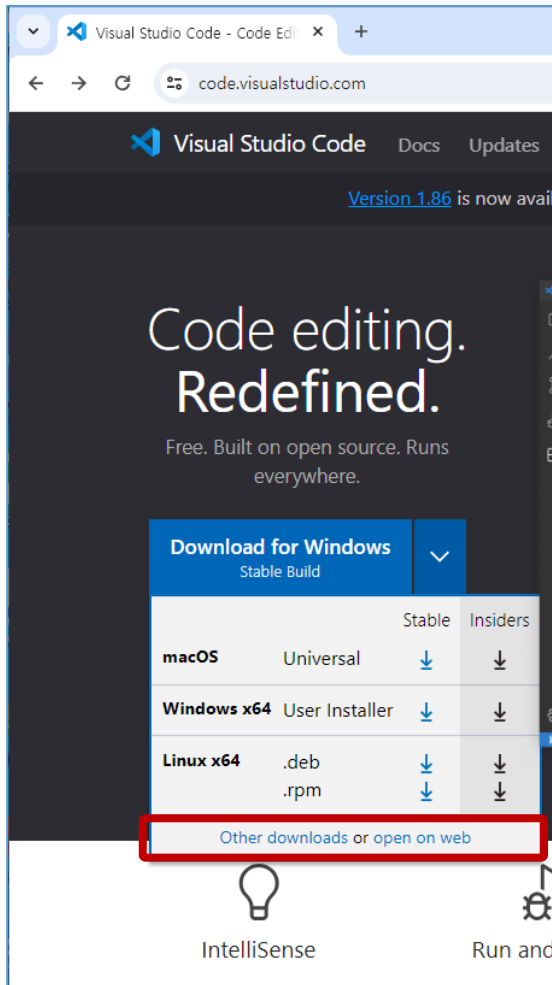
<https://code.visualstudio.com/>



# VS Code 설치 – macOS

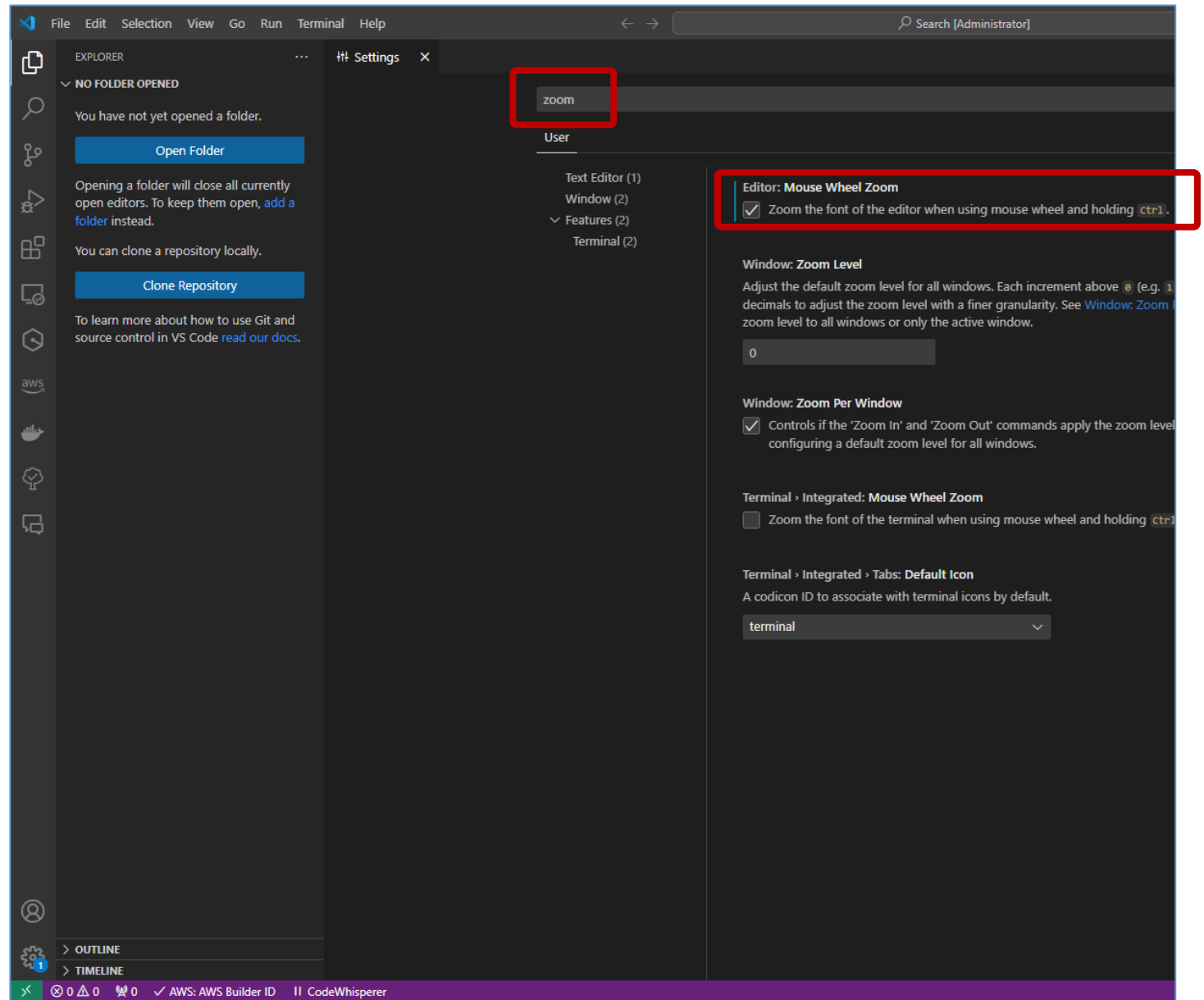
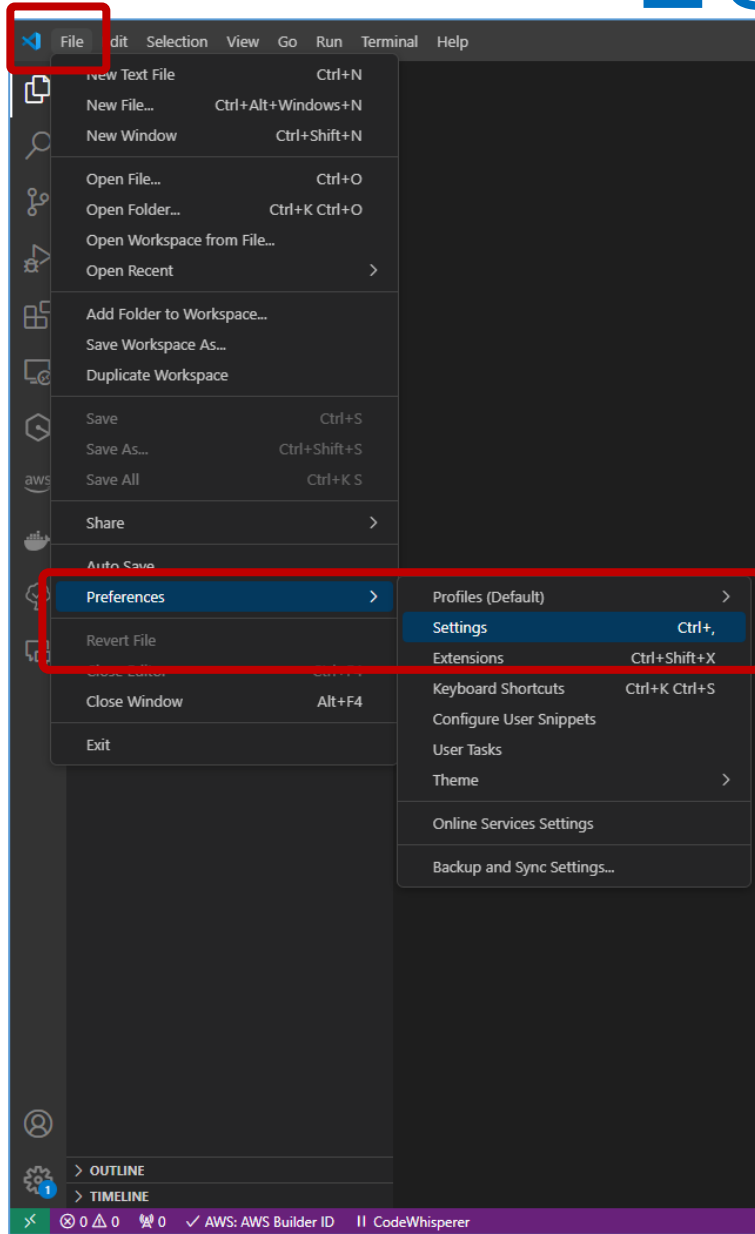
## ■ 설치 프로그램

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

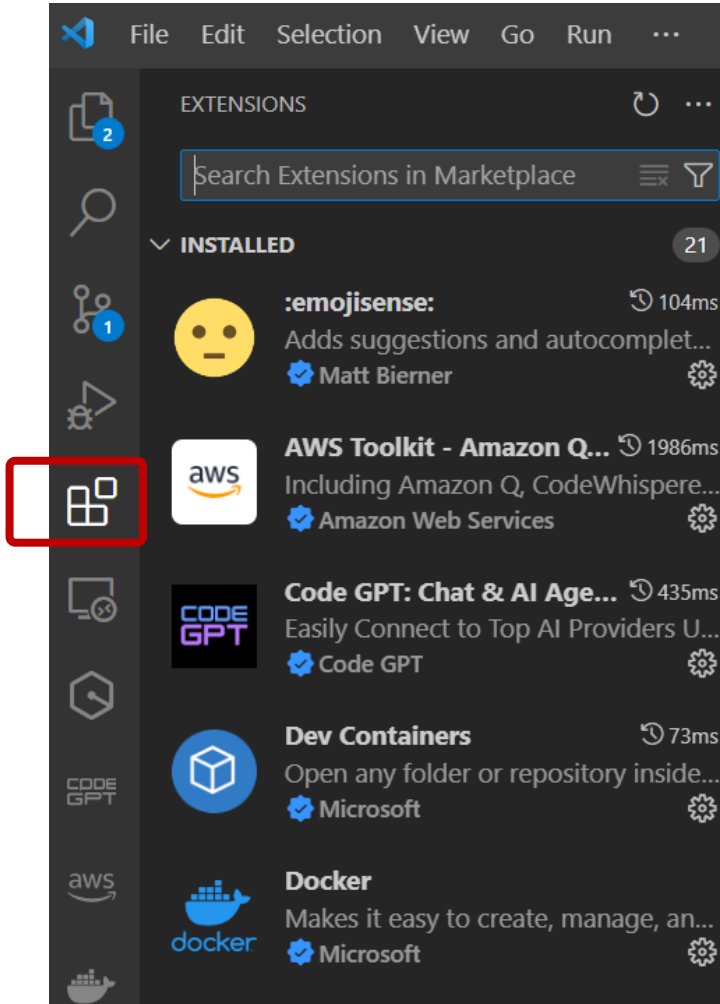


Visual Studio Code를 응용 프로그램(Applications) 폴더로 옮겨 주세요.

# VS Code Zoom 설정



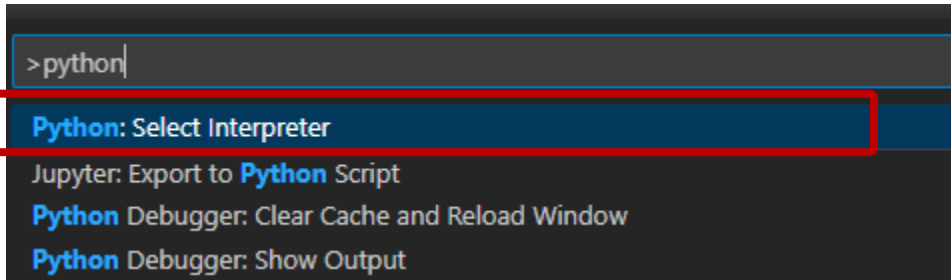
# VS Code Extension 설치



- **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

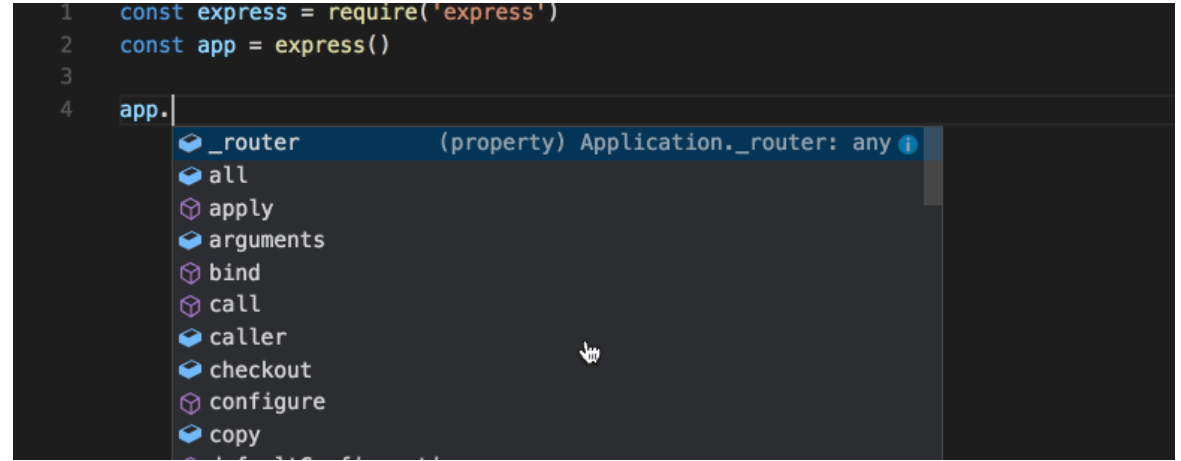
아래에 행 복사 추가 : Shift + Alt + Up

행을 아래로 이동 : Alt + Down

행을 위로 이동 : Alt + Up

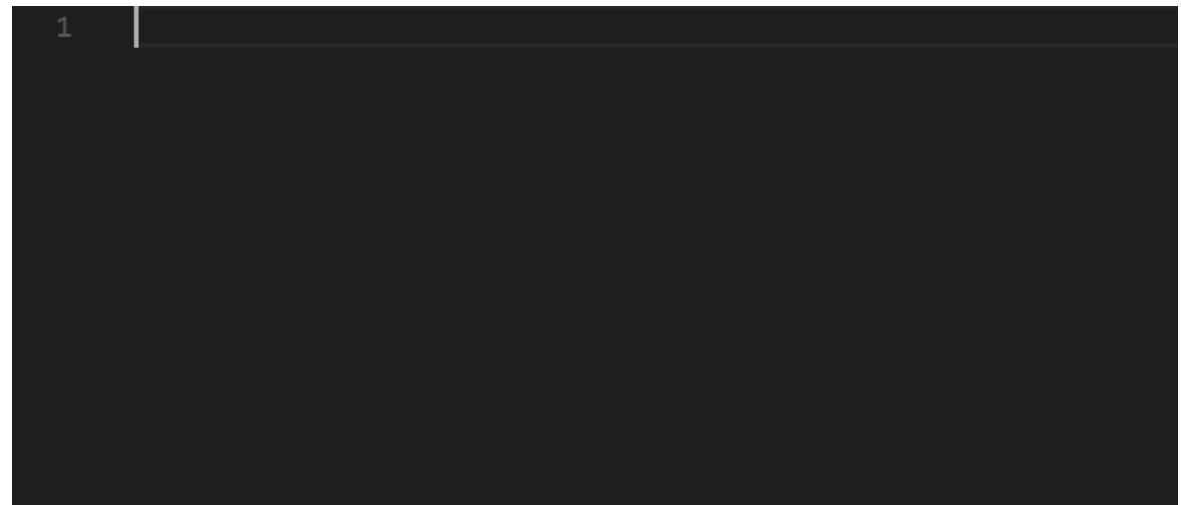
화면 크기를 조정 : Ctrl + '+' 또는 Ctrl + '-'

## IntelliSense



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

## Snippets



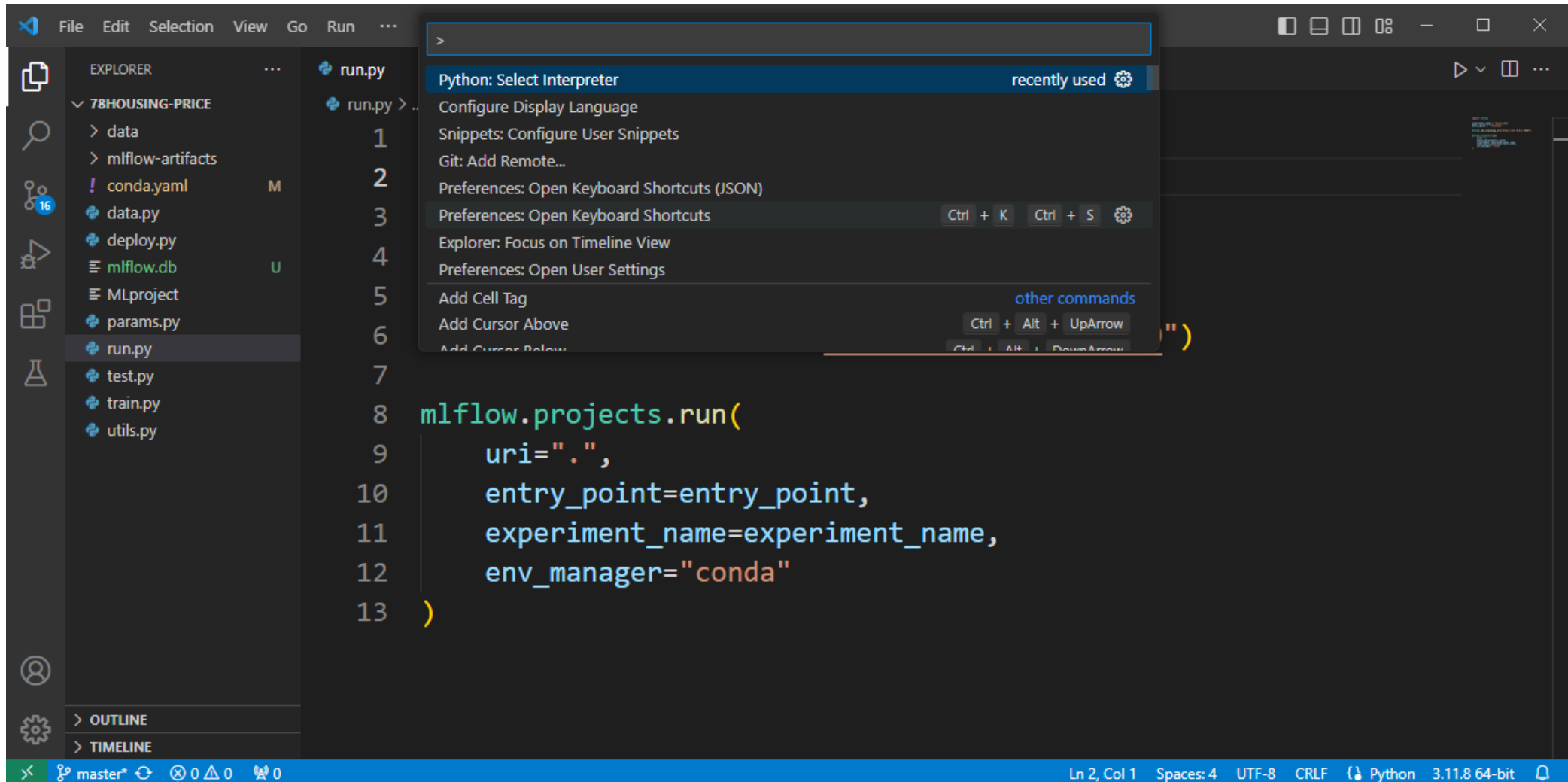
<https://code.visualstudio.com/docs/editor/userdefinedsnippets>



# 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



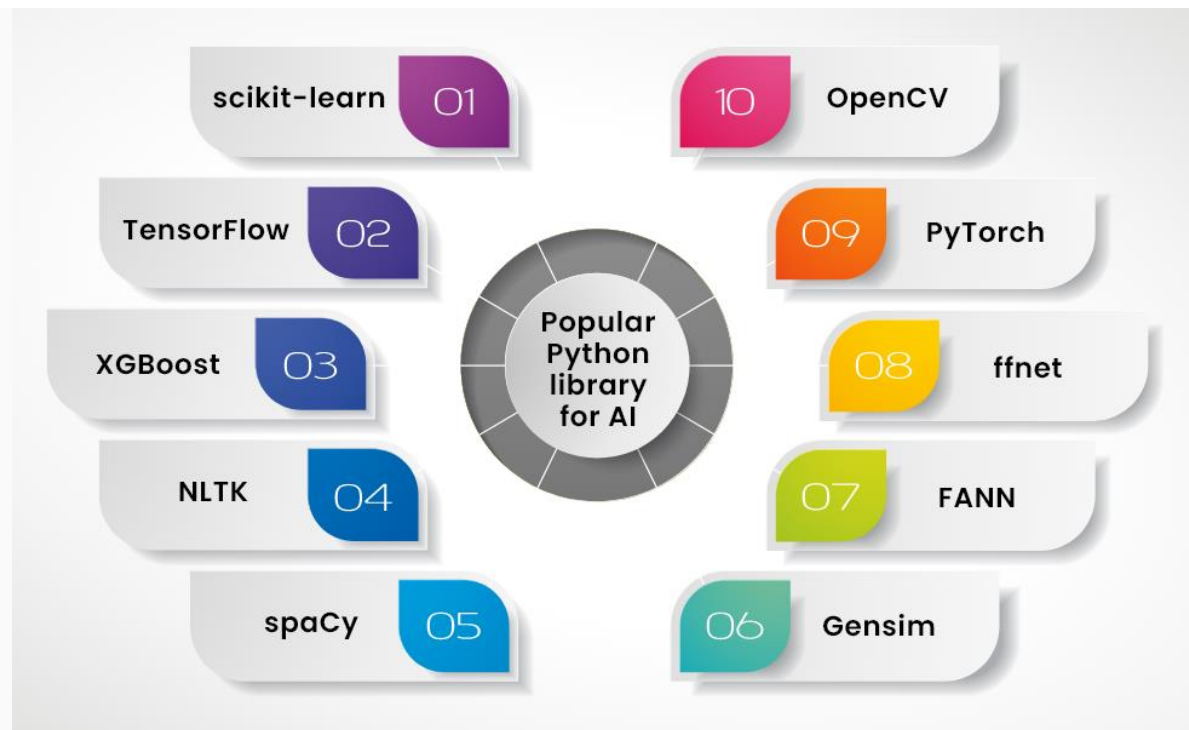
Llama Index



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.

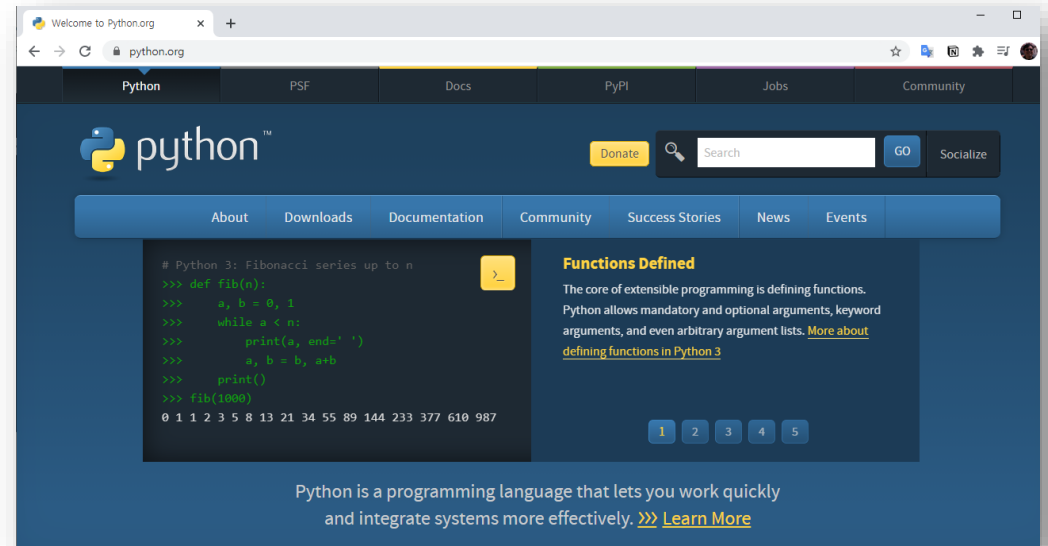
- Download [Windows embeddable package \(32-bit\)](#)
- Download [Windows embeddable package \(64-bit\)](#)
- Download [Windows embeddable package \(ARM64\)](#)
- Download [Windows installer \(32-bit\)](#)
- Download [Windows installer \(64-bit\)](#)
- Download [Windows installer \(ARM64\)](#)

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

### Stable Releases

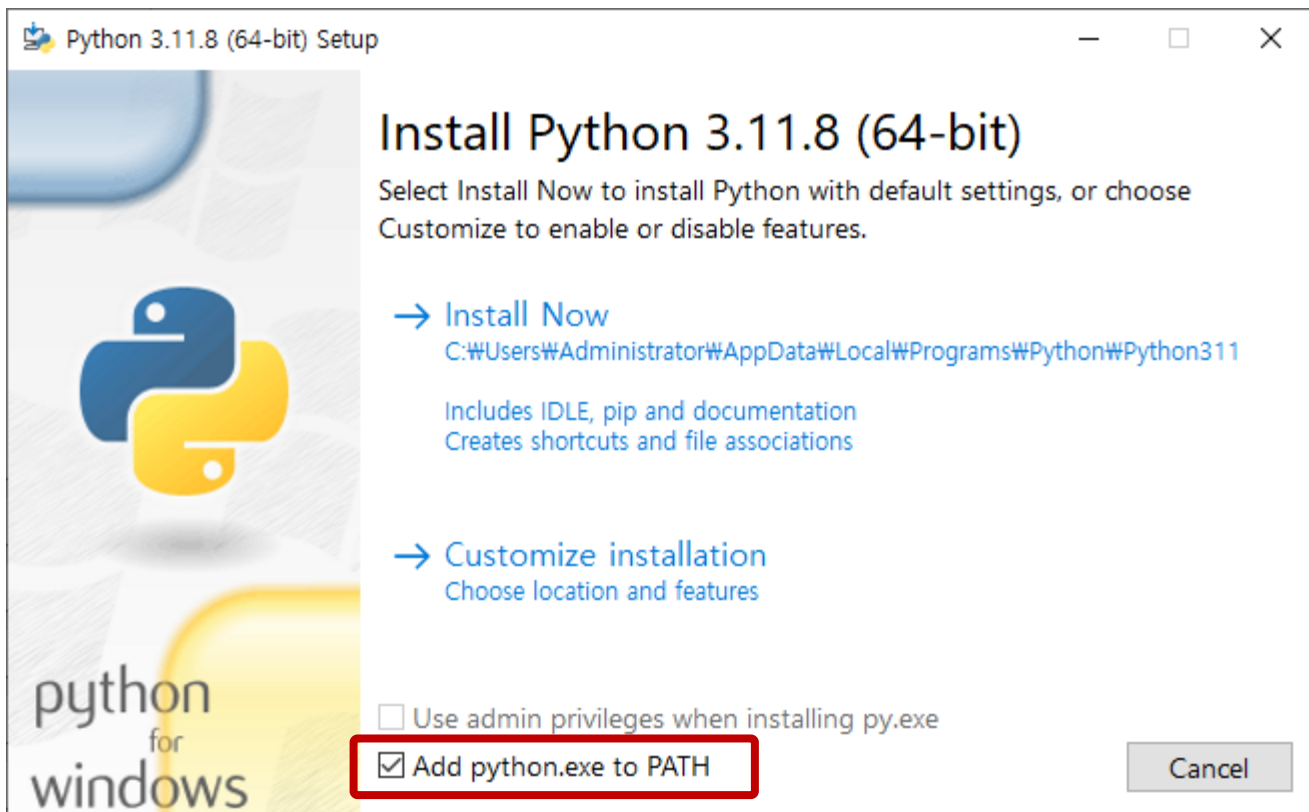
- [Python 3.11.8 - Feb. 6, 2024](#)

- Download [macOS 64-bit universal2 installer](#)



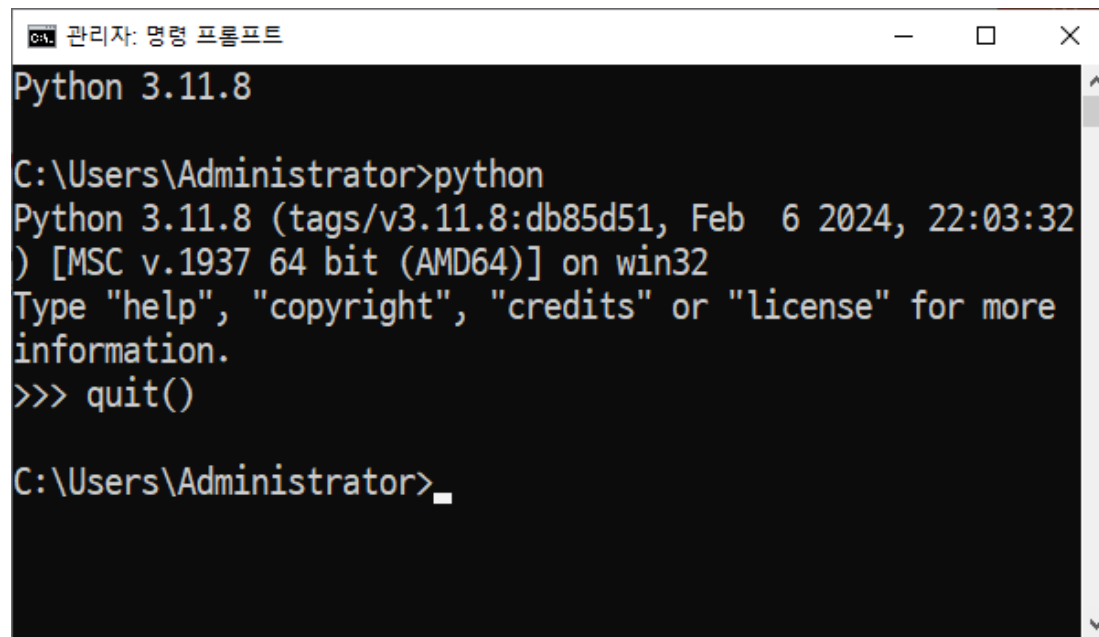
# Python 설치

## ■ 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**



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 selected runtime type. Under '하드웨어 가속기' (Hardware accelerator), 'T4 GPU' is selected with a radio button. Other options include 'CPU', 'A100 GPU', 'V100 GPU', and 'TPU'. At the bottom of the dialog, there's a question '프리미엄 GPU를 이용하시겠어요?' (Would you like to use premium GPU?) with a link '추가 컴퓨팅 단위 구매' (Purchase additional computing units). The dialog has '취소' (Cancel) and '저장' (Save) buttons.

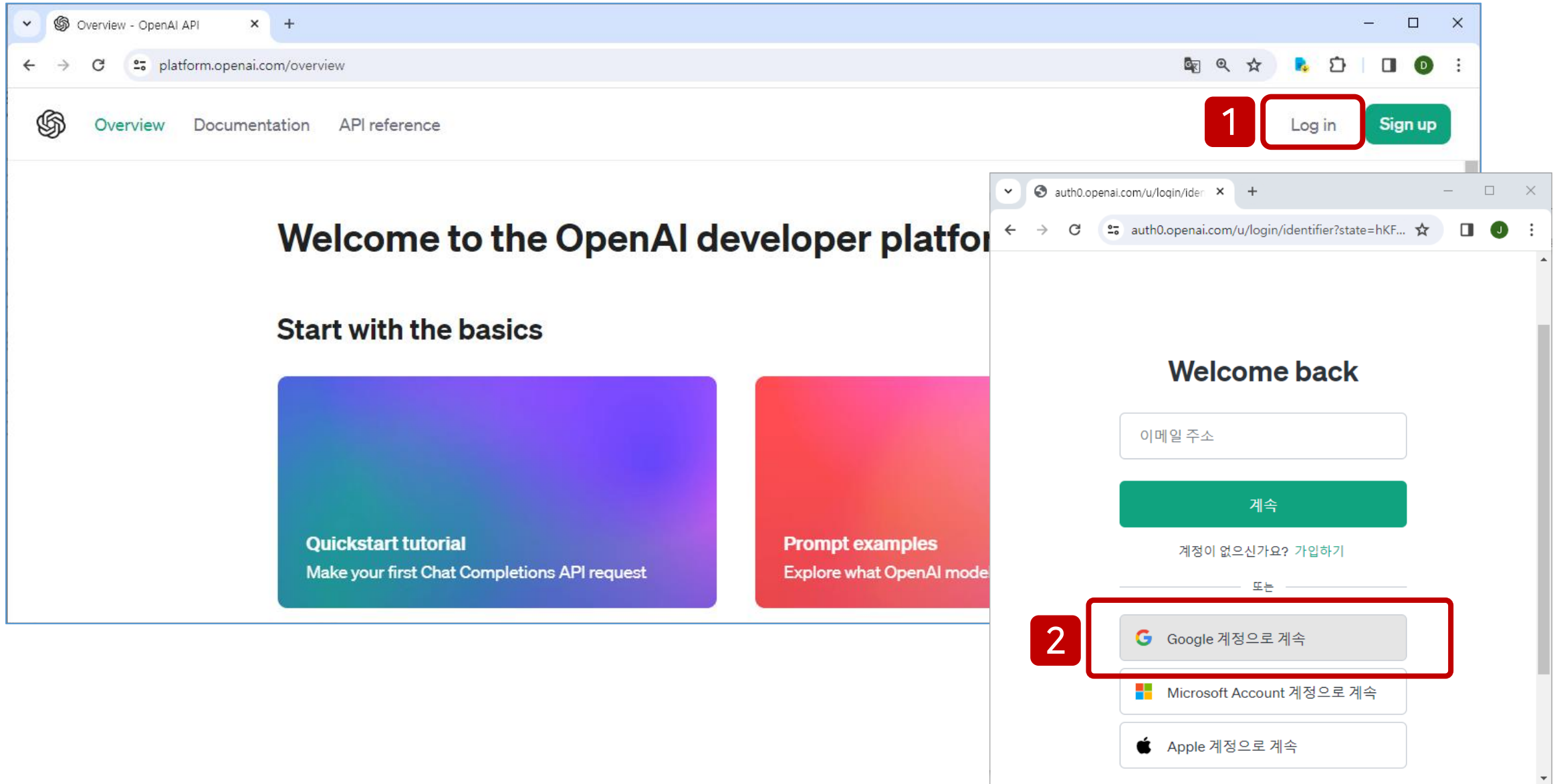
고성능GPU(Graphics Processing Unit)





# 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](https://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...](https://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
- 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

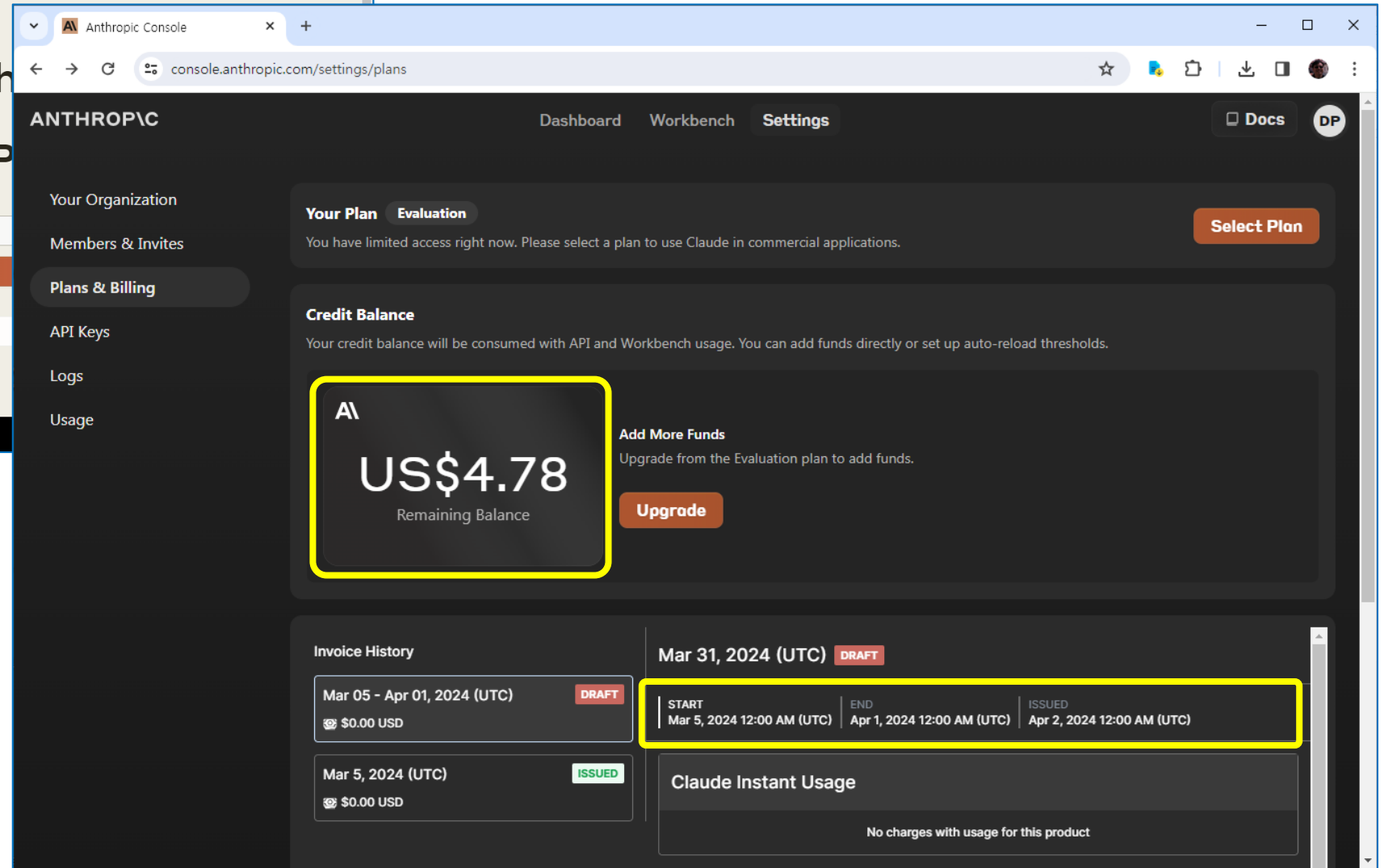
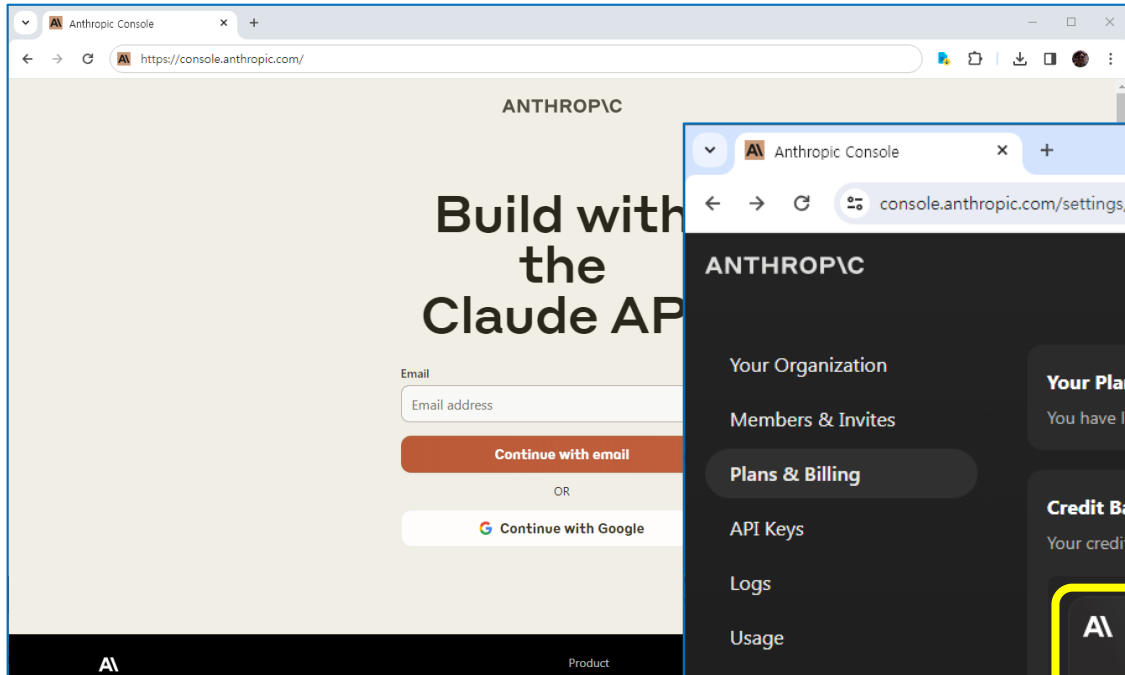
<https://platform.openai.com/account/billing/overview>

The screenshot displays 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 with a red box), 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' (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 'What best describes you?' section offers 'Individual' (selected) and 'Company' options. At the bottom of the main area, four settings cards are visible: 'Payment methods' (highlighted with a red box), 'Billing history', 'Usage limits' (highlighted with a red box), and 'Pricing'. An 'Add payment details' modal is open on the right, prompting the user to add credit card information. It includes 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 has 'Cancel' and 'Continue' buttons at the bottom.

# Anthropic API 무료사용

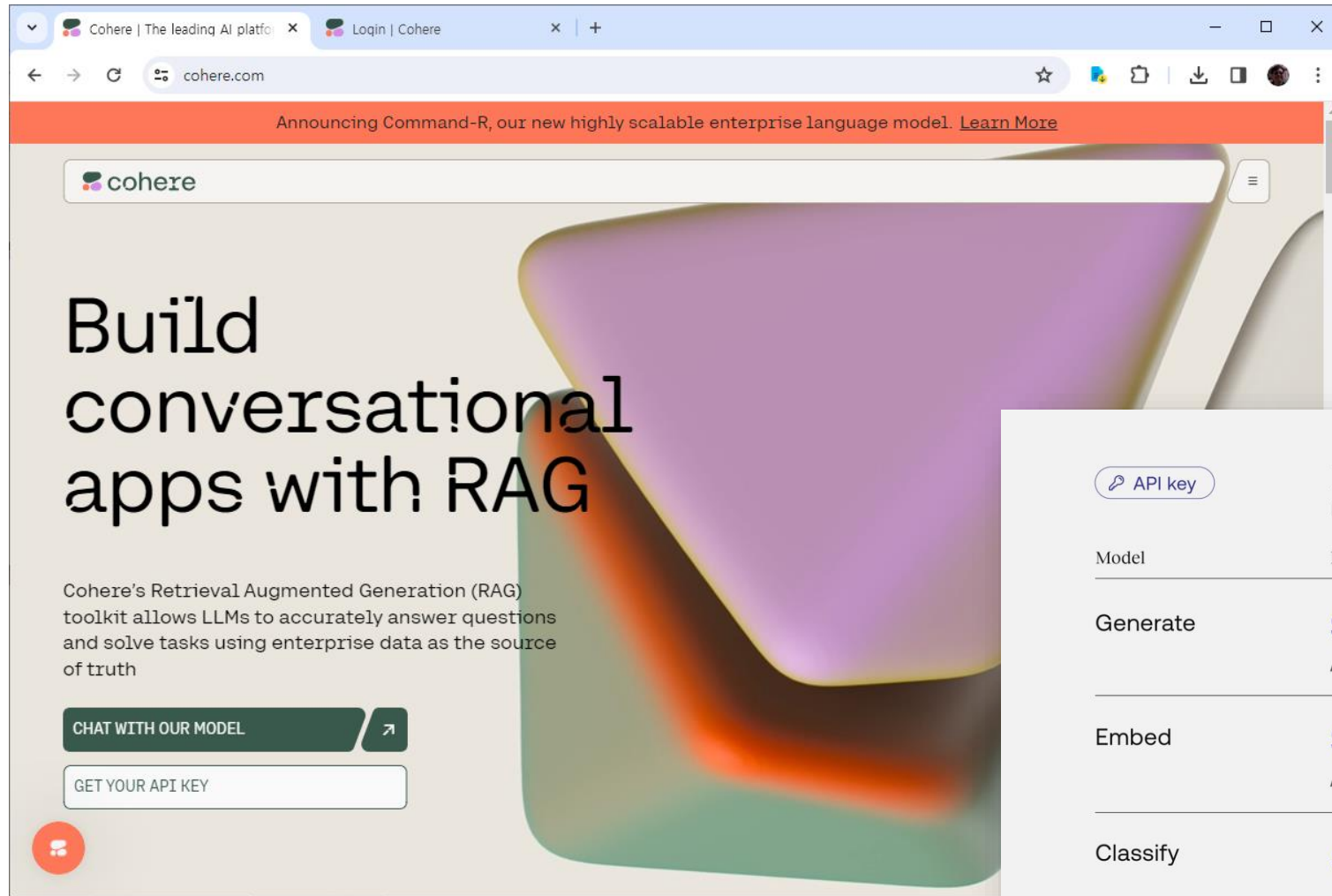
<https://console.anthropic.com/>

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 😊