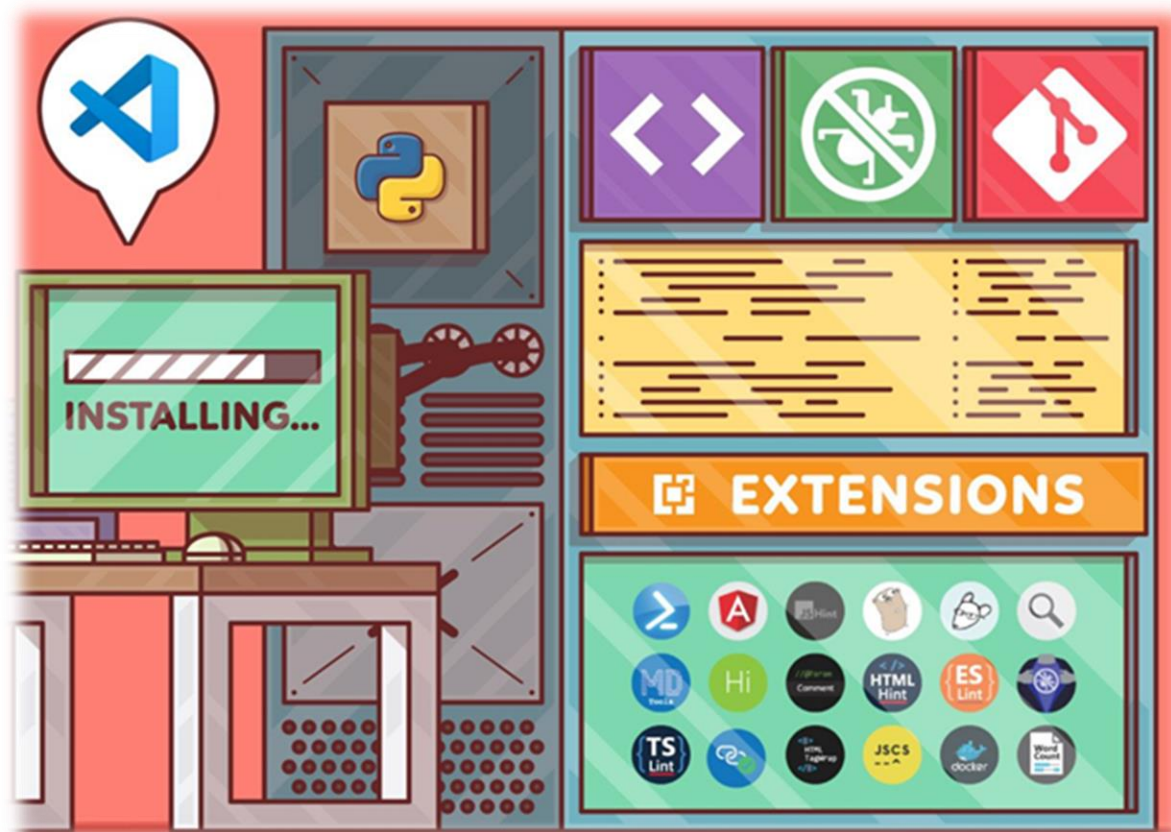


2. 개발환경



개발환경

PC



Visual Studio Code



Sublime Text



↓ Windows용 다운로드

↓ Mac용 다운로드

단축키 : Ctrl+C+C

단축키 : ⌘+C+C



Jupyter Notebook



Jupyter Lab



웹



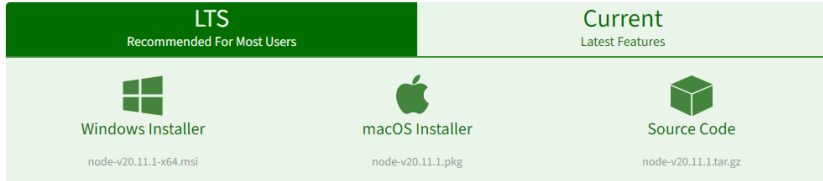
<https://colab.research.google.com/>



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

Flowise 설치

NodeJS 설치

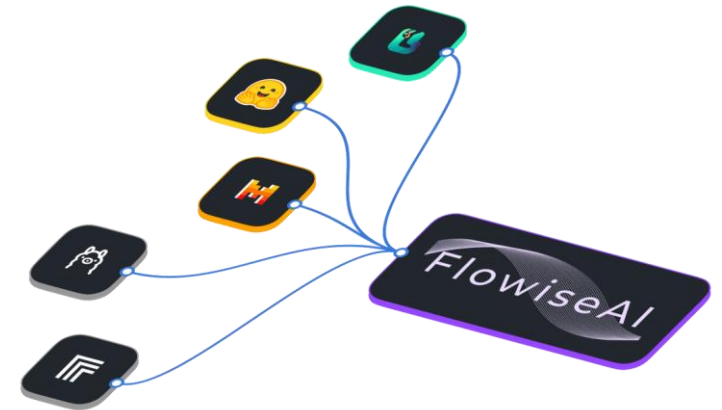


⚡ Quick Start

1. Flowise 설치
`npm install -g flowise`
2. Flowise 시작
`npx flowise start`
3. <http://localhost:3000> 접속

Developers (선택사항)

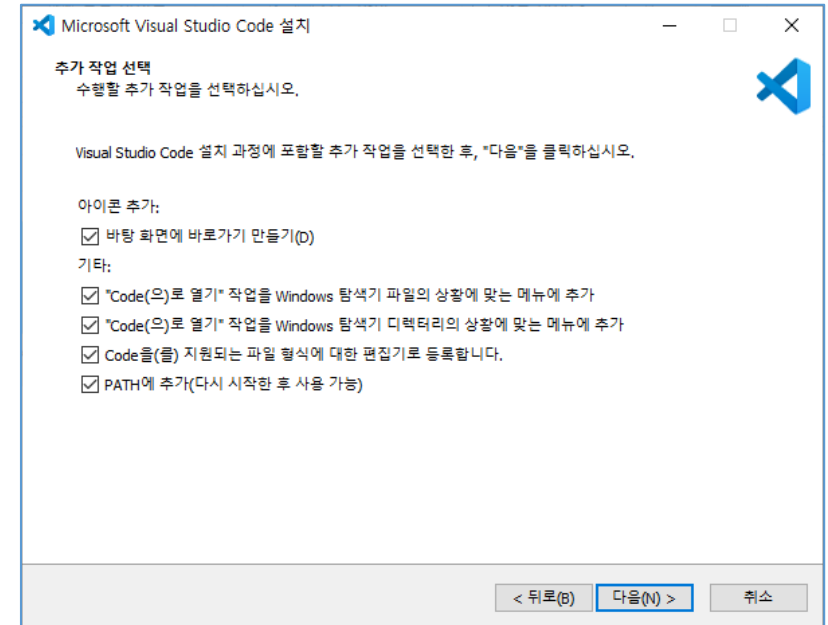
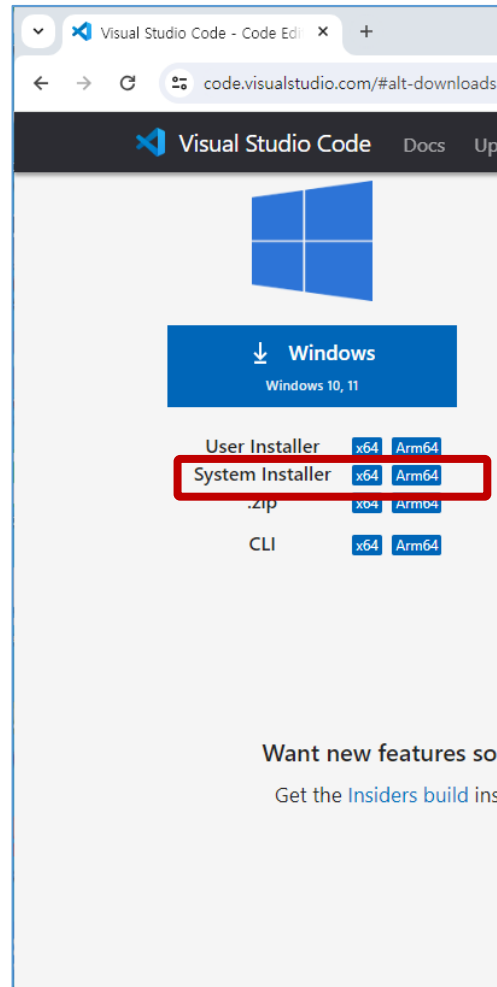
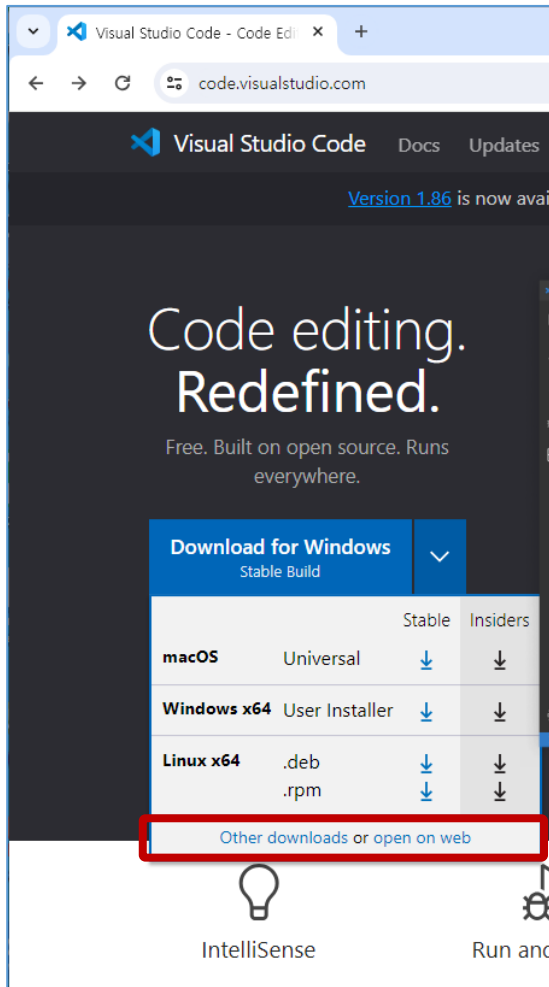
1. Yarn 설치
`npm i -g yarn`
2. Repository 복제
`git clone https://github.com/FlowiseAI/Flowise.git`
3. 모듈 설치
`cd Flowise`
`yarn install`
4. 빌드
`yarn build`
5. App 실행
`yarn start`
6. <http://localhost:3000> 접속



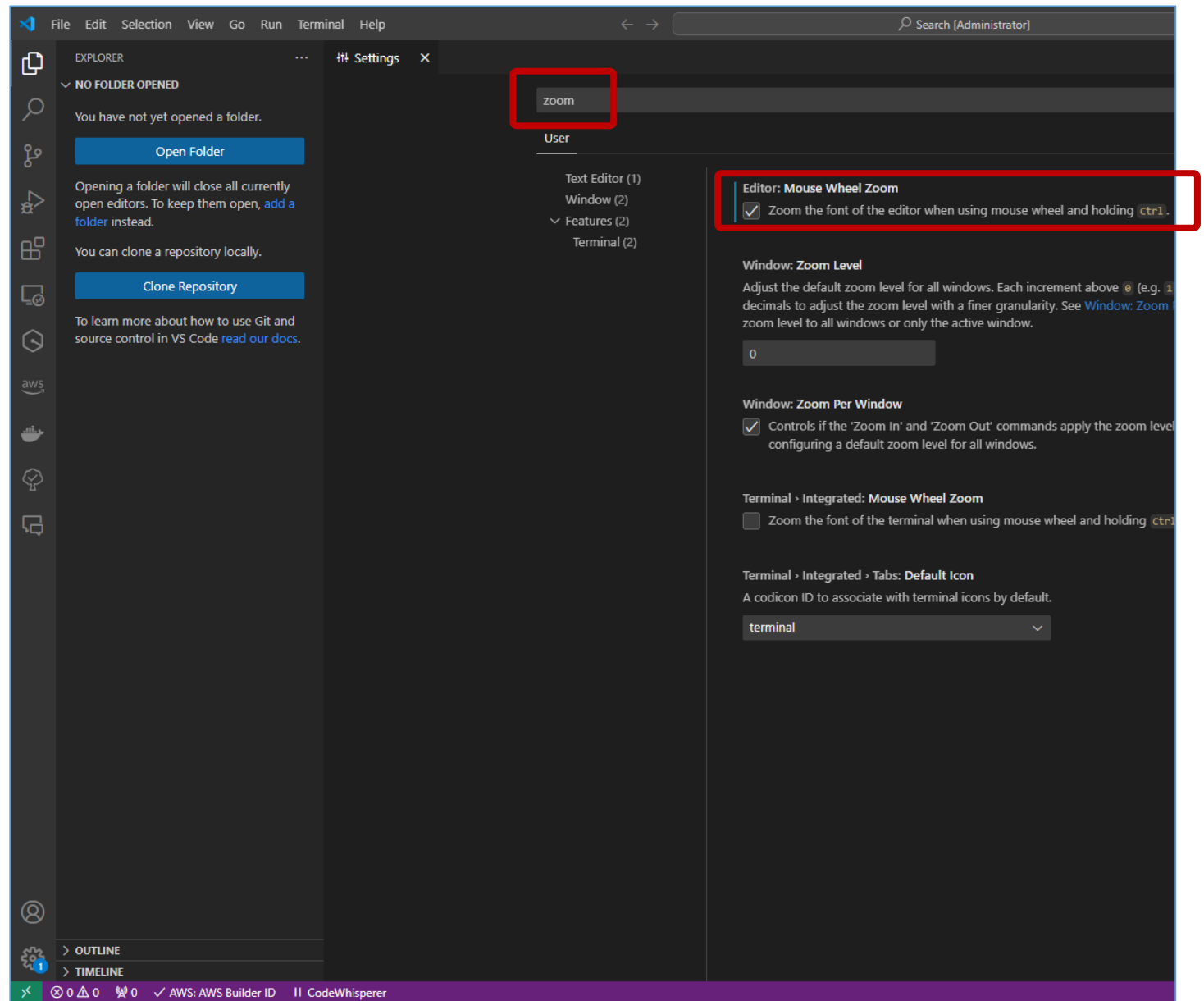
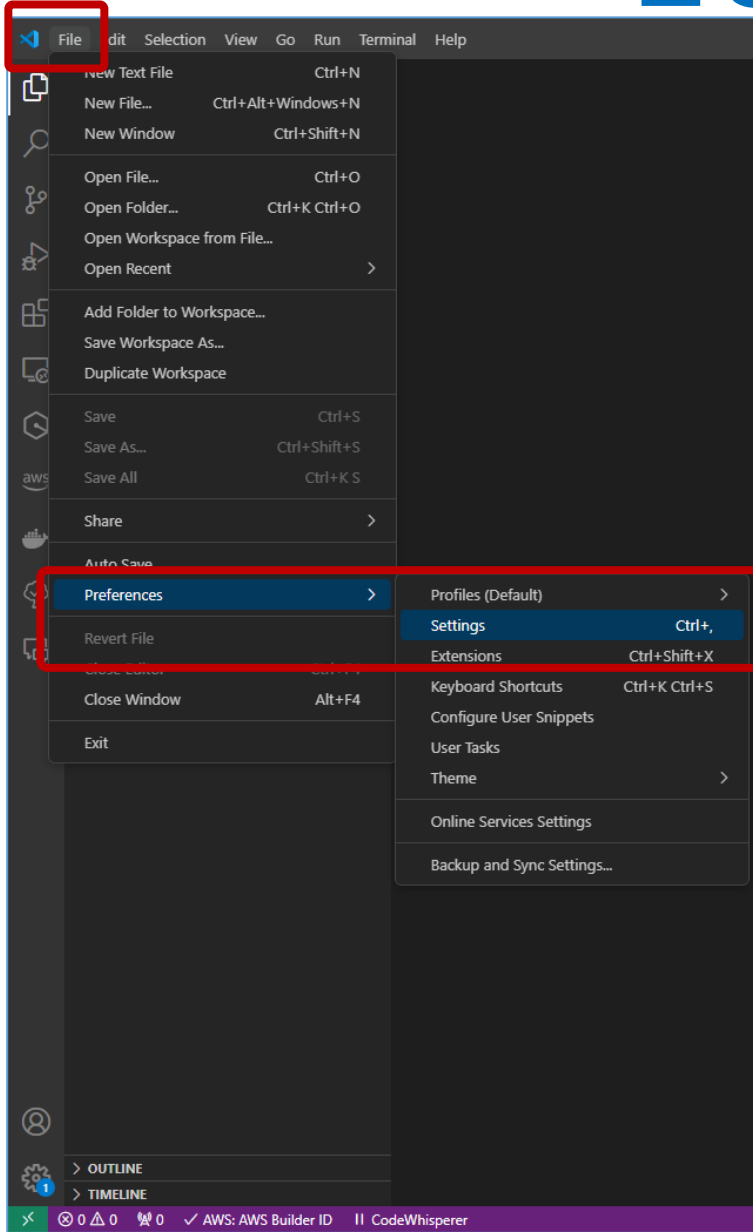
VS Code 설치

설치 프로그램

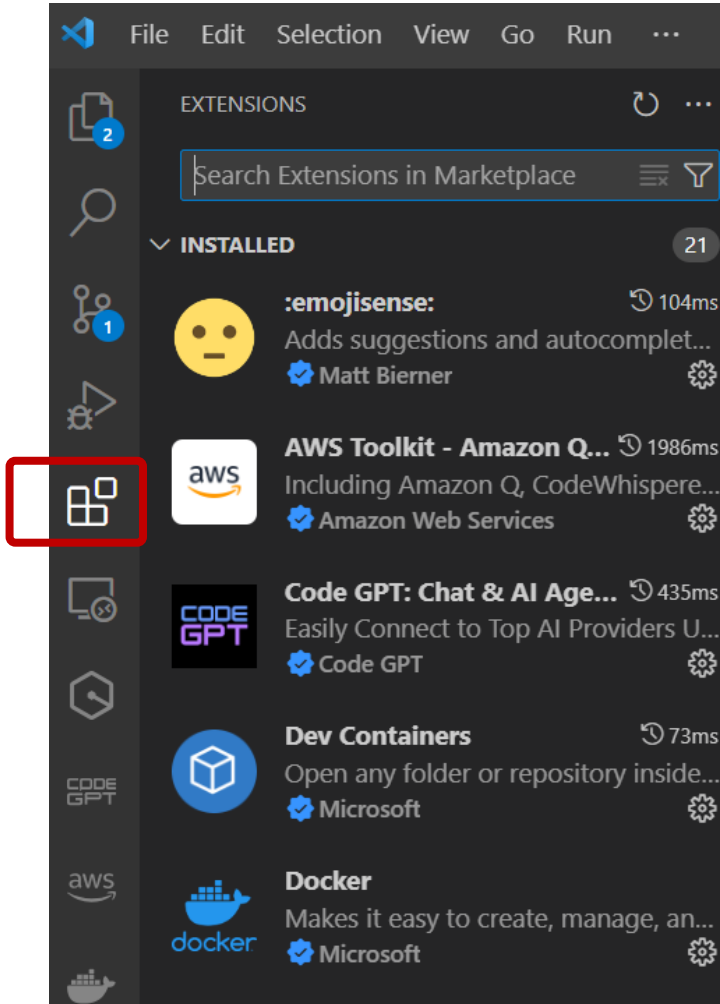
<https://code.visualstudio.com/>



VS Code Zoom 설정



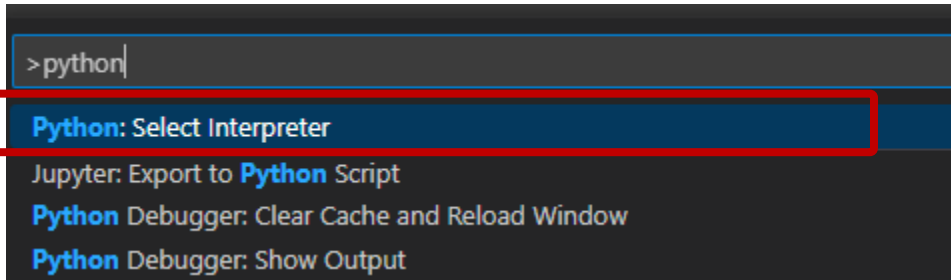
VS Code Extension 설치



- **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

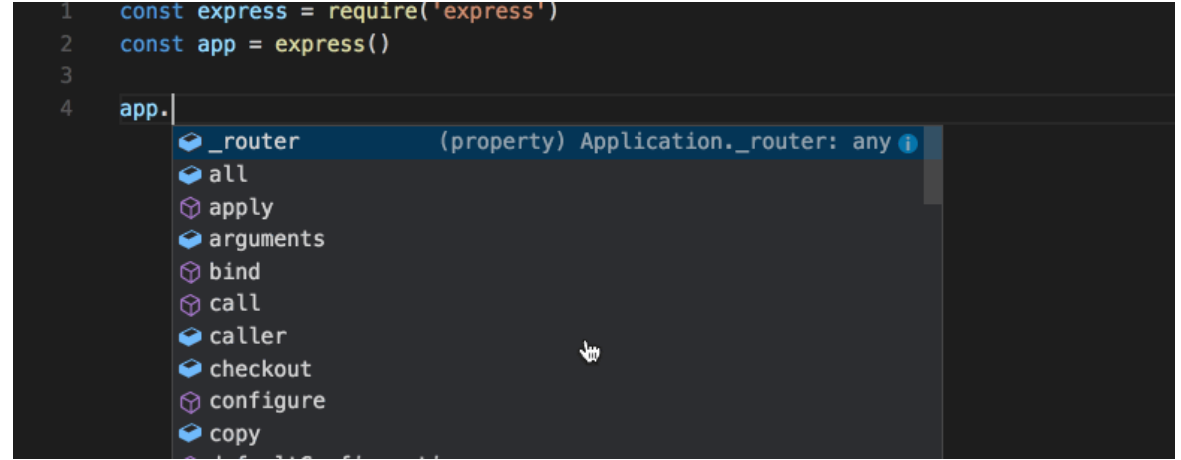
아래에 행 복사 추가 : Shift + Alt + Up

행을 아래로 이동 : Alt + Down

행을 위로 이동 : Alt + Up

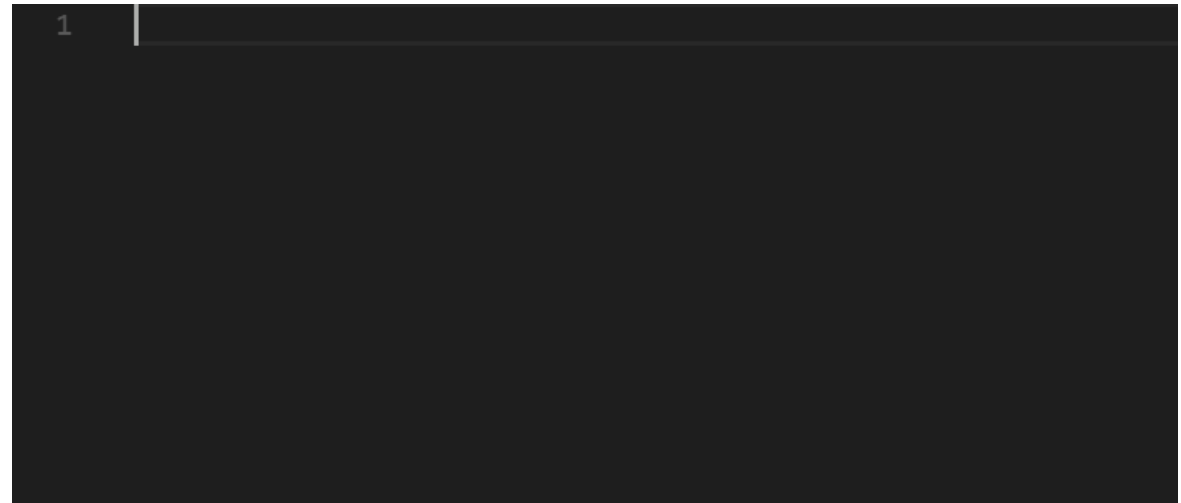
화면 크기를 조정 : Ctrl + '+' 또는 Ctrl + '-'

IntelliSense



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

Snippets



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

Python(파이썬)

Python Libraries for Generative AI



TensorFlow



PyTorch



Transformers



Weight and Biases



JAX



LangChain



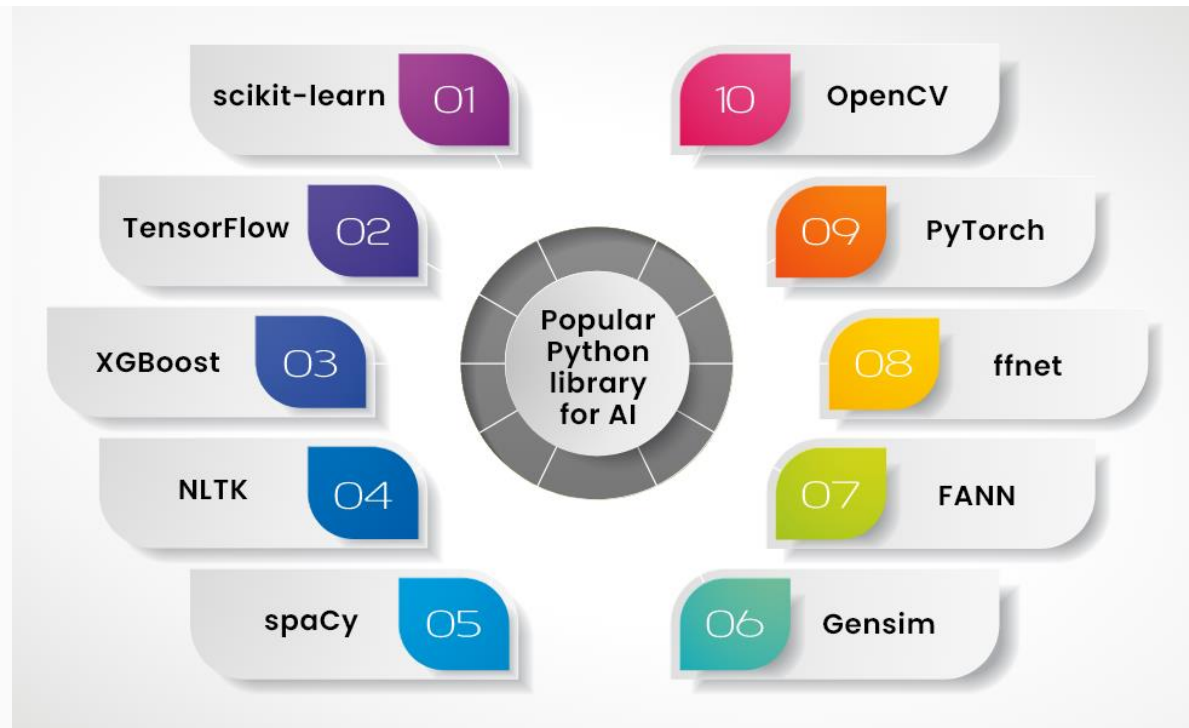
Llama Index



Diffusers



Acme



Python 설치

■ 파이썬 다운로드

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

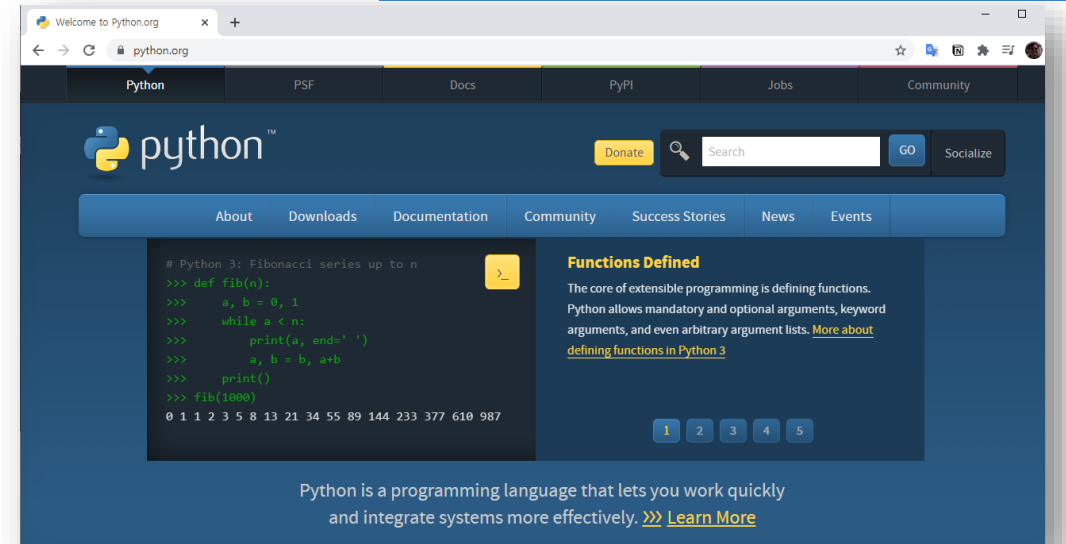
Stable Releases

- [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](#)



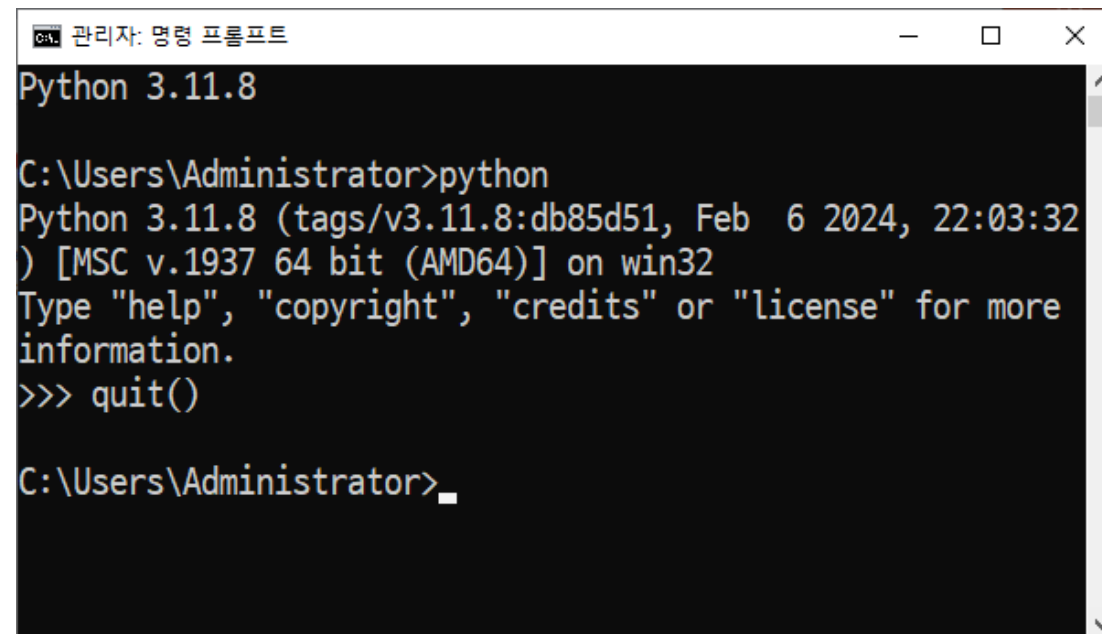
Python 설치

■ 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**

Colaboratory에 오신 것을 환영합니다
파일 수정 보기 삽입 런타임 도구 도움말

+ 코드 + 텍스트 + 드라이브

목차 코드 스니펫

Colaboratory 소개
시작하기
추가 리소스
머신러닝 예제: Seedbank
섹션

모두 실행 Ctrl+F9
이전 셀 실행 Ctrl+F8
초점이 맞춰진 셀 실행 Ctrl+Enter
선택항목 실행 Ctrl+Shift+Enter
이후 셀 실행 Ctrl+F10
실행 중단 Ctrl+M
런타임 다시 시작 Ctrl+M
다시 시작 및 모두 실행
런타임 초기화
런타임 유형 변경
세션 관리
런타임 로그 보기

Google Colab
Python 3
하드웨어 가속기 ?
☐ CPU ☒ T4 GPU ☐ A100 GPU ☐ V100 GPU
☐ TPU
프리미엄 GPU를 이용하시겠어요? 추가 컴퓨팅 단위 구매
취소 저장

고성능GPU(Graphics Processing Unit)



OpenAI API 사용

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

The image shows two overlapping browser windows. The background window is the OpenAI developer platform overview at `platform.openai.com/overview`. It features a navigation bar with 'Overview', 'Documentation', and 'API reference'. In the top right, there are 'Log in' and 'Sign up' buttons, with a red box and the number '1' highlighting the 'Log in' button. The main content area says 'Welcome to the OpenAI developer platform' and 'Start with the basics', with two cards: 'Quickstart tutorial' (Make your first Chat Completions API request) and 'Prompt examples' (Explore what OpenAI mode...). The foreground window is the login page at `auth0.openai.com/u/login/identifier`. It says 'Welcome back' and has an '이메일 주소' (Email address) input field, a '계속' (Continue) button, and a link '계정이 없으신가요? 가입하기' (Don't have an account? Sign up). Below these are three social login options: 'Google 계정으로 계속' (Continue with Google account), 'Microsoft Account 계정으로 계속' (Continue with Microsoft Account), and 'Apple 계정으로 계속' (Continue with Apple). A red box and the number '2' highlight the 'Google 계정으로 계속' button.

Overview - OpenAI API x +
platform.openai.com/overview

Overview Documentation API reference

1 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

auth0.openai.com/u/login/identifier x +
auth0.openai.com/u/login/identifier?state=hKF...

Welcome back

이메일 주소

계속

계정이 없으신가요? 가입하기

또는

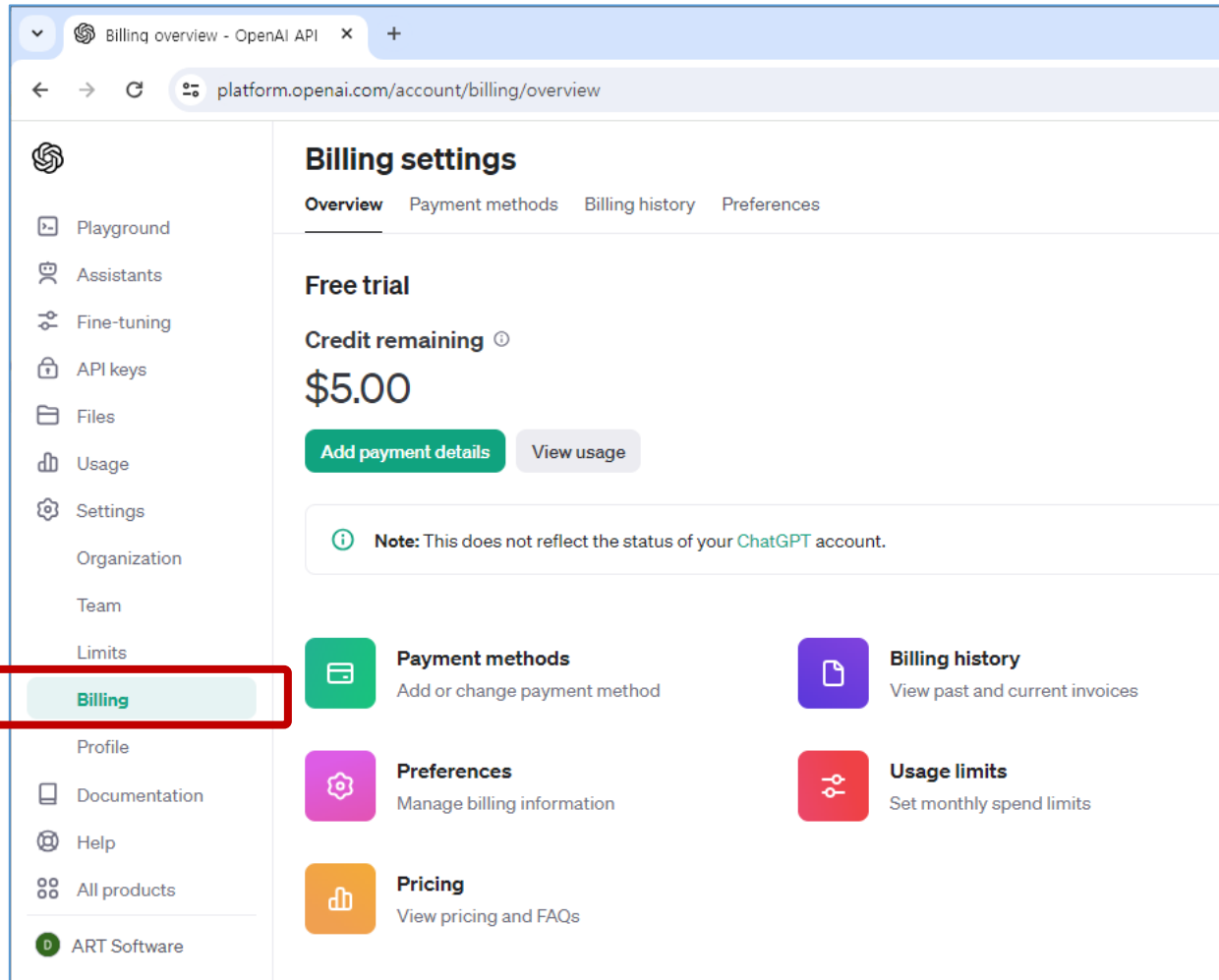
2 Google 계정으로 계속

Microsoft Account 계정으로 계속

Apple 계정으로 계속

OpenAI API 무료사용

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



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 includes tabs for Overview, Payment methods, Billing history, and Preferences. The Overview tab shows a "Free trial" status with "Credit remaining \$0.00" and buttons for "Add payment details" and "View usage". A note states: "Note: This does not reflect the status of your ChatGPT account." Below this are four cards: "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 (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.

Billing overview - OpenAI API

platform.openai.com/account/billing/overview

Billing settings

Overview Payment methods Billing history Preferences

Free trial

Credit remaining ⓘ

\$0.00

[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

Usage limits
Set monthly spend limits

Pricing
View pricing and FAQs

What best describes you?

☒ **Individual**
I'm an individual

☐ **Company**
I'm working on behalf of a company

Add payment details

Add your credit card details below. This card will be saved to your account and can be removed at any time.

Card information

Name on card

Billing address

[Cancel](#) [Continue](#)

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 😊