

Software Engineering

Hands-On Lecture – 03

Software Engineering in the era of AI

Make / Activate venv

가상환경(venv) 만들기 및 활성화

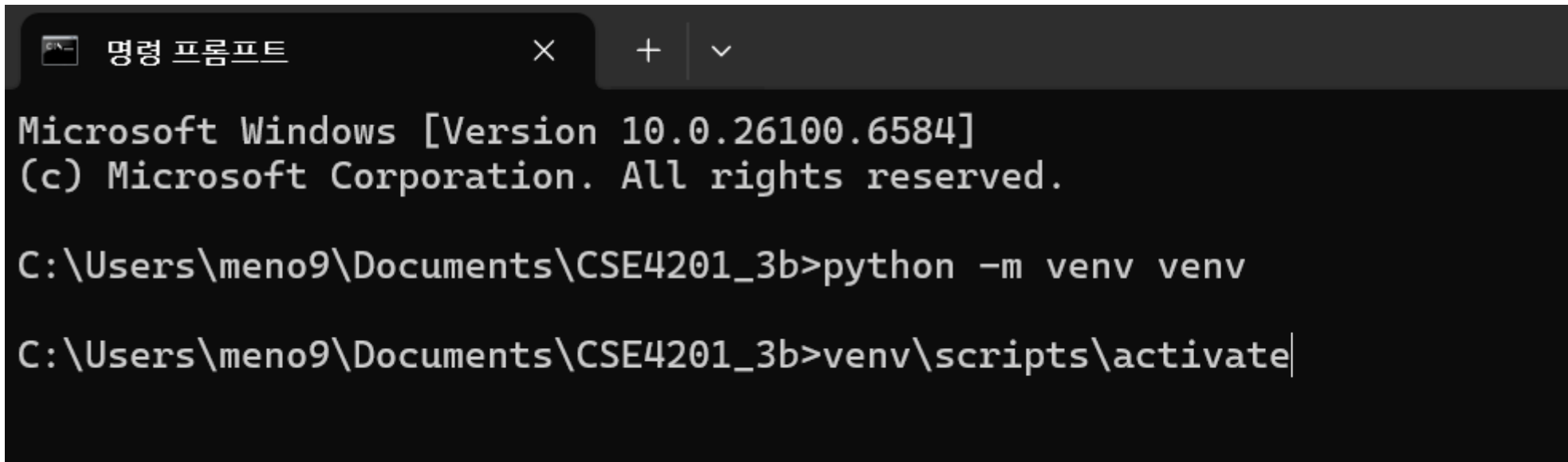
- 적절한 폴더에서 터미널 Open
- 파이썬의 경우 `python -m venv {name}` 를 통해 간단히 가상환경 생성

`python -m venv venv`

-> (mac) : `python3 -m venv venv`

`venv\scripts\activate`

-> (mac) : **source** `venv/bin/activate`



```
명령 프롬프트
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

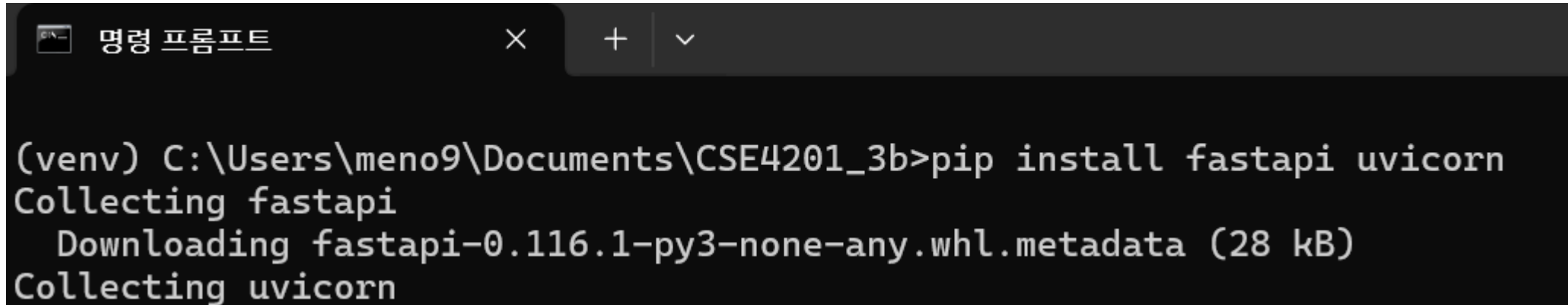
C:\Users\meno9\Documents\CSE4201_3b>python -m venv venv

C:\Users\meno9\Documents\CSE4201_3b>venv\scripts\activate|
```

Install Requirements

라이브러리 설치

- `pip install fastapi uvicorn`



```
명령 프롬프트
(venv) C:\Users\meno9\Documents\CSE4201_3b>pip install fastapi uvicorn
Collecting fastapi
  Downloading fastapi-0.116.1-py3-none-any.whl.metadata (28 kB)
Collecting uvicorn
```

VSCode 실행

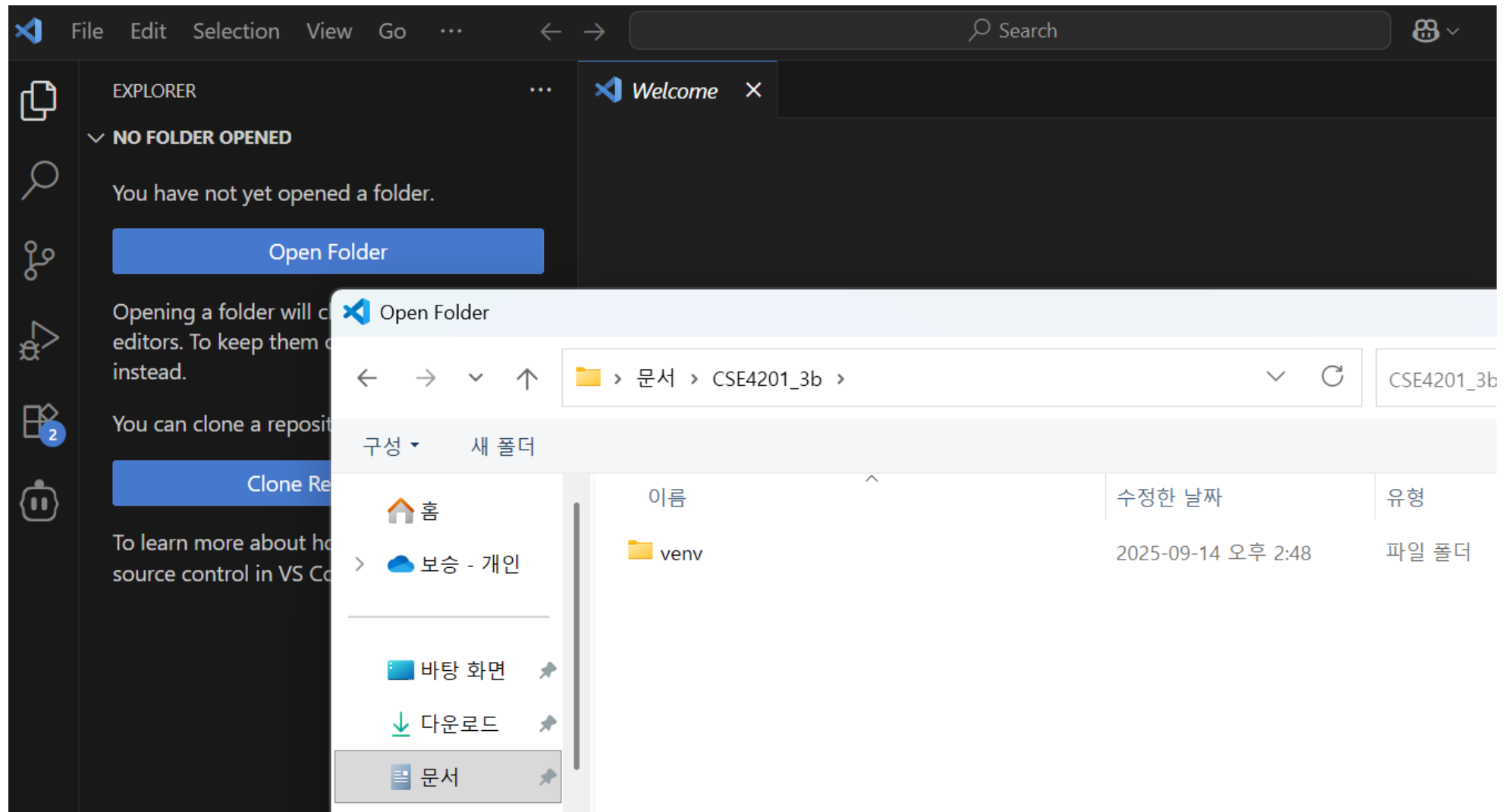
- 설치 완료 후 터미널에 code 입력

```
Installing collected packages: typing-extensions, sniffio, idna, h11, colorama, annotated-types, click, anyio, uvicorn, starlette, pydantic, fastapi
Successfully installed annotated-types-0.7.0 anyio-4.10.0 click-8.2.1 colorama-0.4.6 fastapi-0.115.0 pydantic-2.11.9 pydantic-core-2.33.2 sniffio-1.3.1 starlette-0.47.3 typing-extensions-4.12.2 uvicorn-0.35.0
```

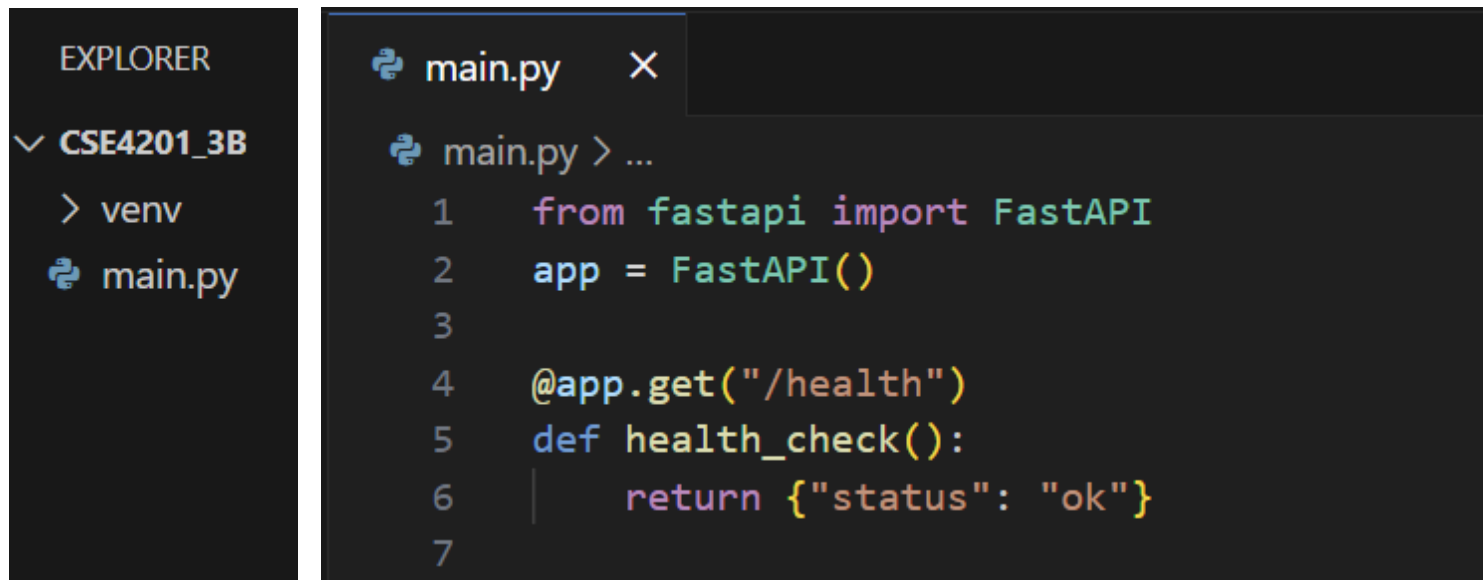
```
[notice] A new release of pip is available: 25.0.1 -> 25.2
[notice] To update, run: python.exe -m pip install --upgrade pip
```

```
(venv) C:\Users\meno9\Documents\CSE4201_3b>code
```

```
(venv) C:\Users\meno9\Documents\CSE4201_3b>|
```



main.py



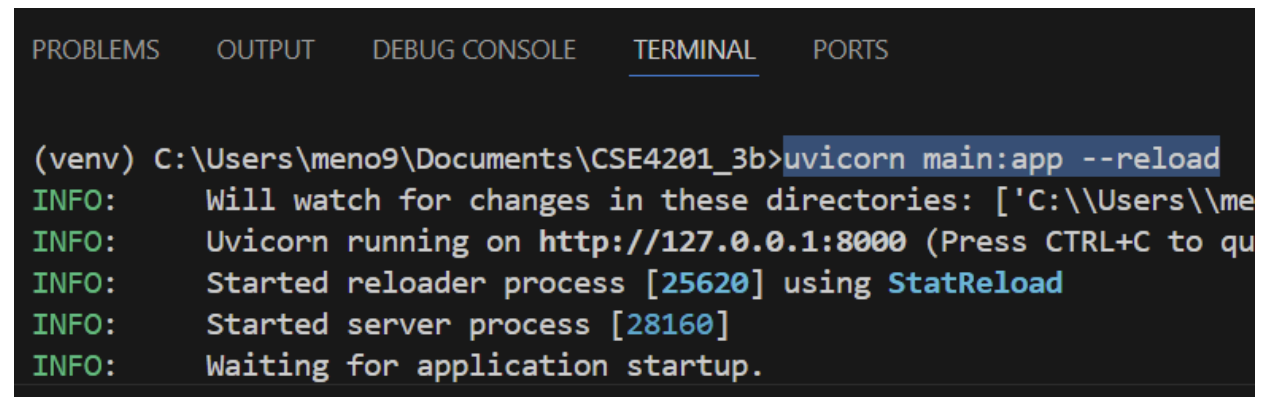
```
EXPLORER
CSE4201_3B
  venv
    main.py

main.py
1  from fastapi import FastAPI
2  app = FastAPI()
3
4  @app.get("/health")
5  def health_check():
6      return {"status": "ok"}
7
```

uvicorn main:app --reload

```
from fastapi import FastAPI
app = FastAPI()
```

```
@app.get("/health")
def health_check():
    return {"status": "ok"}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
(venv) C:\Users\meno9\Documents\CSE4201_3b>uvicorn main:app --reload
INFO: Will watch for changes in these directories: ['C:\\Users\\me
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to qu
INFO: Started reloader process [25620] using StatReload
INFO: Started server process [28160]
INFO: Waiting for application startup.
```


Open docs

- <http://localhost:8000/docs> (또는 <http://127.0.0.1:8000/docs>)

FastAPI 0.1.0 OAS 3.1

/openapi.json

default

GET

/health Health Check

Install Gemini Extension

Marketplace에서 Gemini CLI 설치

The screenshot displays the Visual Studio Code interface with the Extensions Marketplace open. The search bar at the top of the marketplace contains the text "Gemini CLI". The search results list several extensions, with "Gemini CLI Companion" by Google being the top result. This extension is highlighted with a blue background. To the right of the search results, a detailed view of the "Gemini CLI Companion" extension is shown. It features the extension's logo, a "Preview" badge, the publisher "Google" with a verified badge and "google.com" link, a download count of 124,365, and a 5-star rating from 6 reviews. The description states: "Enable Gemini CLI with direct access to your IDE workspace." Below the description are "Install" and "Auto Update" buttons. The interface also shows a snippet of code "main.py" in the background editor.

File Edit Selection View Go Run Terminal Help

EXTENSIONS: MARKETPLACE

Gemini CLI

Gemini CLI Compani... 124K ★ 4.5
Enable Gemini CLI with direct acces...
Google Install

Gemini CLI Chat 6K
Complete Gemini AI integration for ...
TC Chan Install

Gemini CLI on VSCode 2K ★ 5
Run Gemini & Codex CLI (GPT-5) in ...
Joji Jorge Senda Install

Gemini CLI Launcher 824

main.py

Extension: Gemini CLI Companion X

Gemini CLI Companion Preview

Google google.com | 124,365 | ★★★★★ (6)

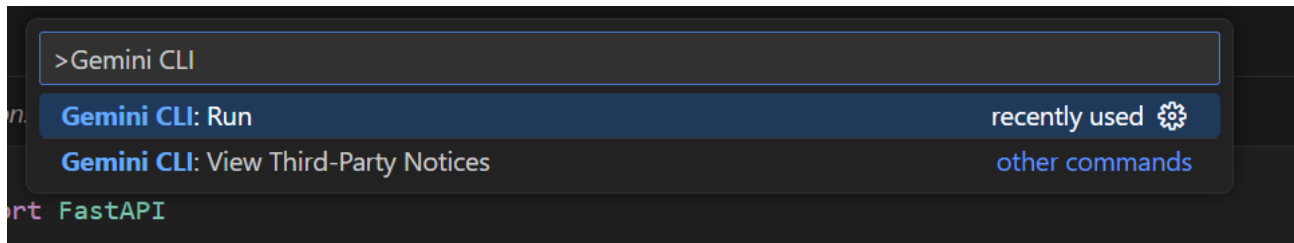
Enable Gemini CLI with direct access to your IDE workspace.

Install ✓ Auto Update

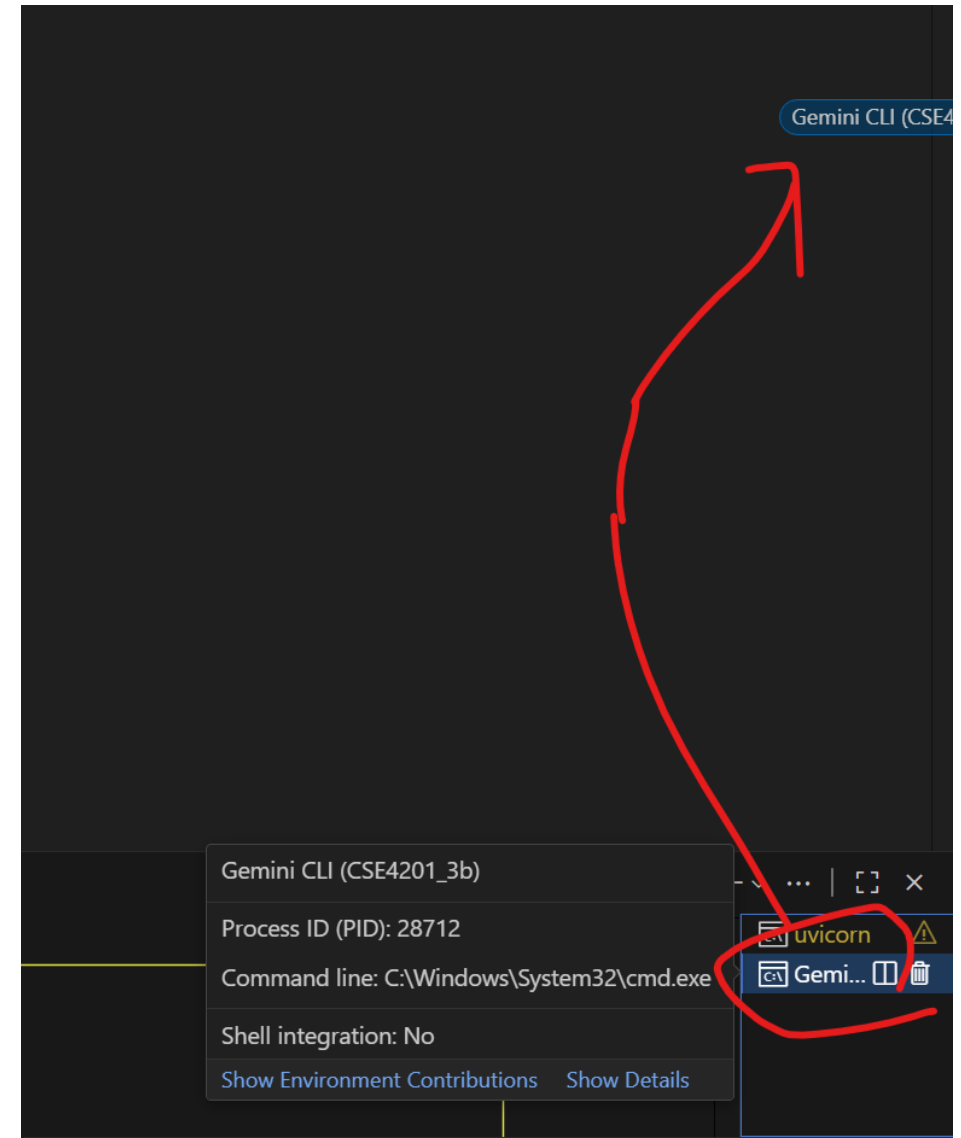
DETAILS FEATURES

Gemini CLI Companion

Open Gemini CLI



- Ctrl (CMD) + Shift + P
- Gemini 입력 > Gemini CLI: Run



Connect VSCode



The screenshot shows a terminal window titled "Gemini CLI (CSE4201_3b)". At the top, there is a large, pixelated "GEMINI" logo in blue and purple. Below the logo, a list of tips for getting started is displayed. A yellow-bordered box contains a prompt asking if the user wants to connect VS Code to Gemini CLI, along with instructions and a list of options. At the bottom, the terminal shows the current directory and model information.

```
Gemini CLI (CSE4201_3b) X
```

GEMINI

Tips for getting started:


1. Ask questions, edit files, or run commands.
2. Be specific for the best results.
3. `/help` for more information.

> Do you want to connect VS Code to Gemini CLI?
If you select Yes, the CLI will have access to your open files and display
diffs directly in VS Code.

- 1. Yes
- 2. No (esc)
- 3. No, don't ask again

```
~\Documents\CSE4201_3b  no sandbox (see /docs)  gemini-2.5-pro (100% context left)
```

Prototyping

i  Connected to VS Code

Using: 1 open file (ctrl+g to view) | 1 GEMINI.md file

> 안녕하세요 Gemini, python과 fastAPI를 이용하여 간단한 TODO List 메모장 프로그램을 만들려고 합니다. 제가 참고할 수 있도록 간단한 프로토타입을 만들어줄 수 있을까요 ? ■

~\Documents\CSE4201_ no sandbox (see
3b /docs)

◆ 프로토타입 코드를 `main.py` 파일에 작성했습니다. 이제 다음 명령어를 사용하여 애플리케이션을 실행할 수 있습니다.

```
uvicorn main:app --reload
```

서버가 실행되면 다음 API 엔드포인트를 사용하여 TODO 리스트와 상호 작용할 수 있습니다.

* GET /todos: 모든 TODO 항목을 가져옵니다.
`http://127.0.0.1:8000/docs` 로 접속하시면 API 문서를 확인하고 테스트해볼 수 있습니다.

Prototyping

static
venv
main
TODO_Tools
TODO_Tools_checklist

Using: 1 open file (ctrl+g to view) | 1 GEMINI.md file

> 좋아요. 작성한 코드를 바탕으로 HTML 기반의 프론트엔드를 적용하려고 합니다. `./static` 디렉터리를 생성한 뒤 `index.html`, `style.css`, `scripts.js` 세가지 파일을 만들어주세요.
또한, 이를 수행하기 전에 우선 app에서 제공하는 기능에 대한 API 문서 `TODO_Tools.md` 를 작성합니다. 이후 요구사항의 단계적 구현을 위한 `TODO_Tools_checklist.md` 를 작성하고, 순차적으로 구현을 시작합니다.█

~\Documents\CSE4201_
3b

no sandbox (see
/docs)

gemini-2.5-pro (99% context
left)

Result – Sample

TODO List


테스트1 - 설명1

Delete

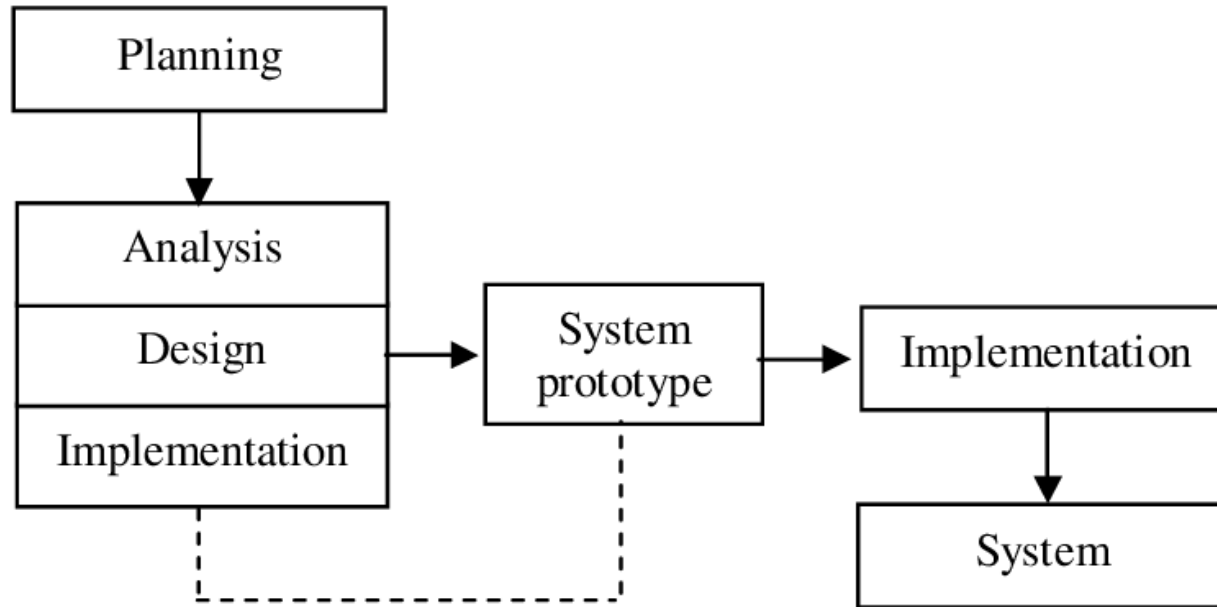
TODO List

테스트1
설명1

Delete



Discussion



- AI Tool을 이용하여 Prototype에서 다음 개발단계를 어떻게 수립하고 수행할 수 있을지 논의합니다