Vibe Coding Part 2

CS 691 / SWE 699

Fall 2025

GEORGE MASON UNIVERSITY

Logistics

- Lecture 2 video questions were due today at 4:30pm
- Lecture 3 reading questions for next week due 9/11 at 4:30pm
- Reflection 1: Due 9/11 at 4:30pm

Reminder: Late Policy

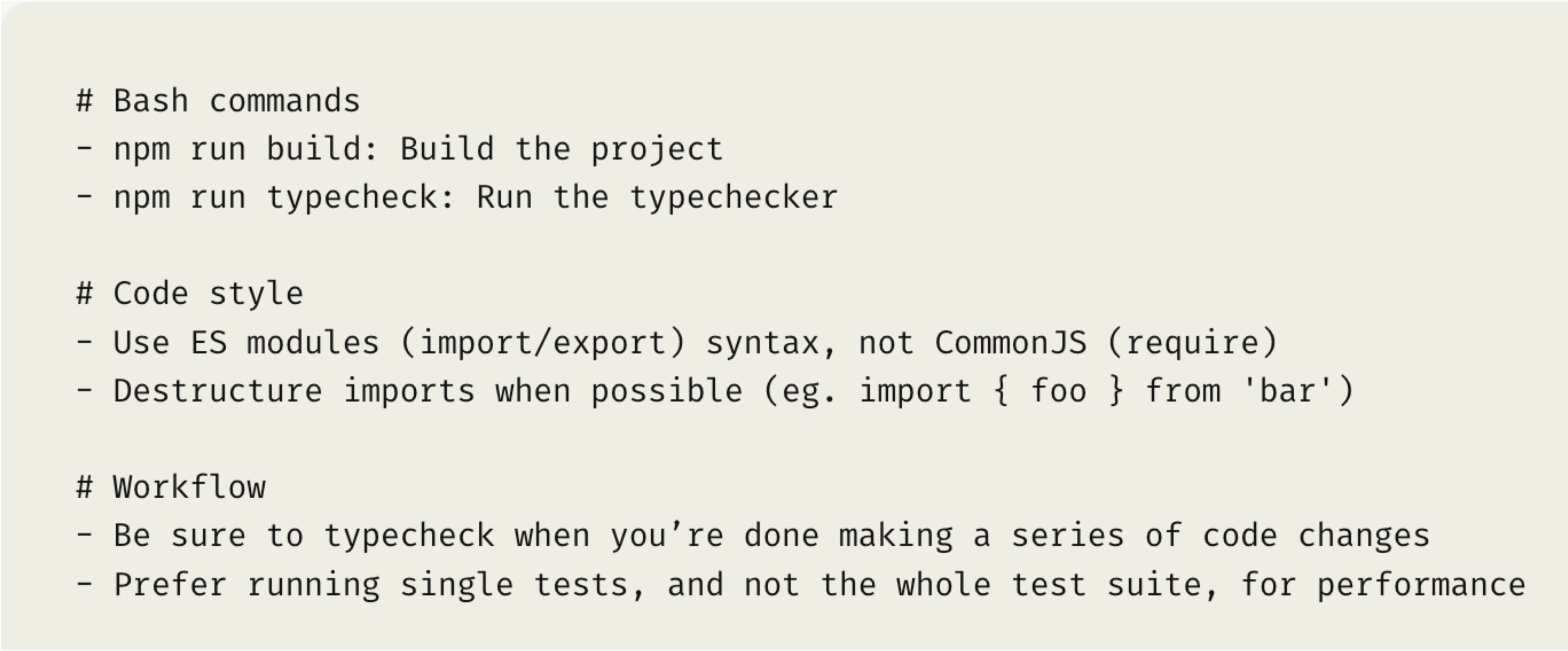
- Assignments can be turned in up to 24 hours late for a 10% penalty
- Assignments submitted more than 24 hours late will receive a 0.

Today

- Lecture
  - A few Vibe Coding best practices
- In-Class Activity
  - Continue building city simulation from last week
- HW (due next week before class)
  - Reflection due on Lecture 2 activity

Rules files

- Describe information to help LLM know your codebase, where to find things, when and how to use tools
  - Coding styles and guidelines
  - Testing instructions
  - SE best practices
  - Architecture & design of codebase, purpose of key modules
- Rules files get added to context window as part of prompt
- In Cursor: agents.md, stored in root directory
- Just like prompt, no guarantee that tool successfully follows what's in rule
  - More rules / longer prompts may lead LLM to pay less attention to parts of the prompt



```
# Bash commands
- npm run build: Build the project
- npm run typecheck: Run the typechecker

# Code style
- Use ES modules (import/export) syntax, not CommonJS (require)
- Destructure imports when possible (eg. import { foo } from 'bar')

# Workflow
- Be sure to typecheck when you’re done making a series of code changes
- Prefer running single tests, and not the whole test suite, for performance
```

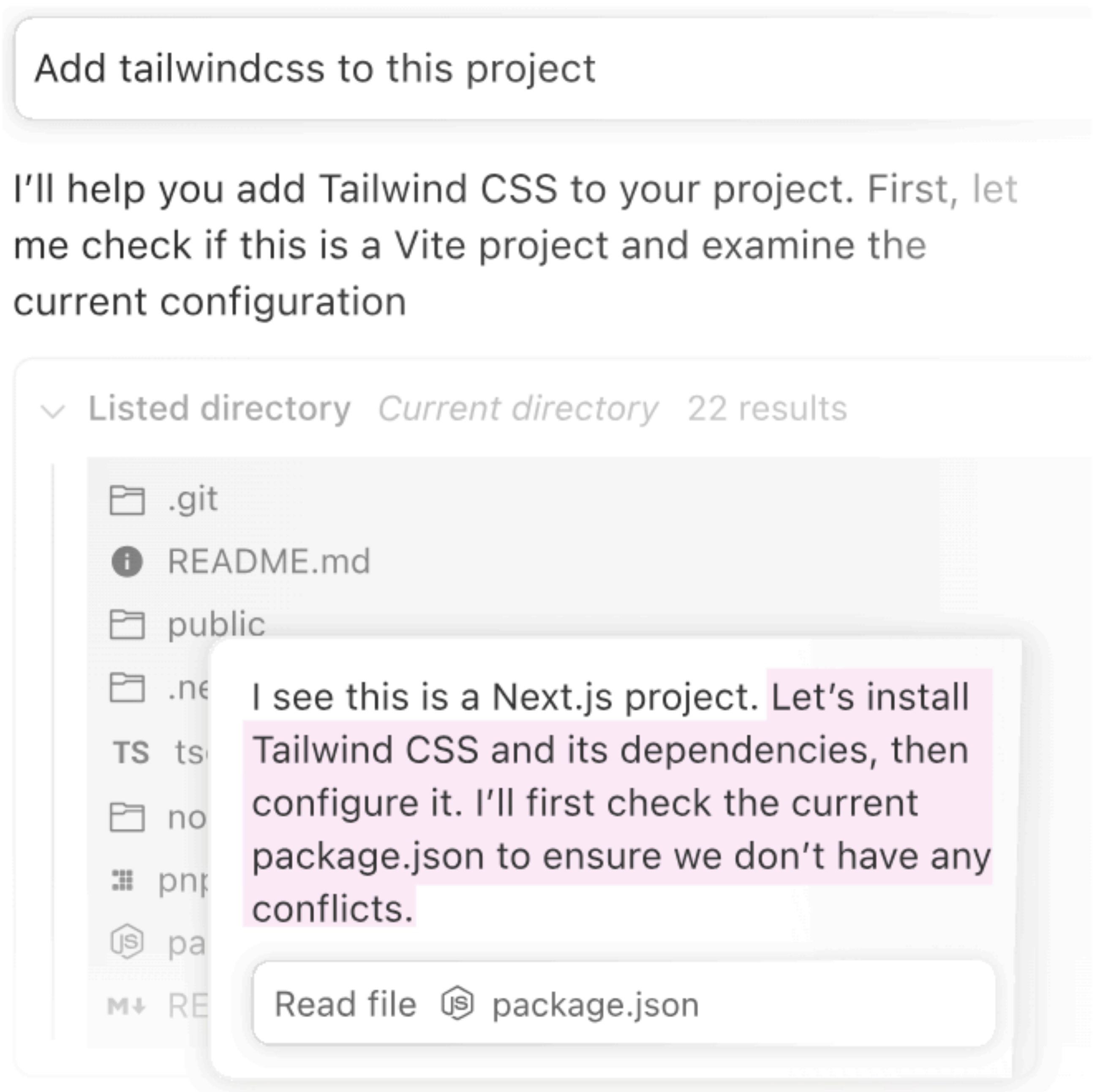
Common workflows

- Ask to read relevant files, images, or URLs, providing either general pointers ("read the file that handles logging") or specific filenames ("read logging.py"), but explicitly tell it not to write any code just yet.

- Ask it to build a plan and then discuss and review the plan before proceeding.

- Ask it to write tests before implementing and then ensure that the implemented logic passes the tests (test driven development)

Using Cursor



Add tailwindcss to this project

I'll help you add Tailwind CSS to your project. First, let me check if this is a Vite project and examine the current configuration

Listed directory *Current directory* 22 results

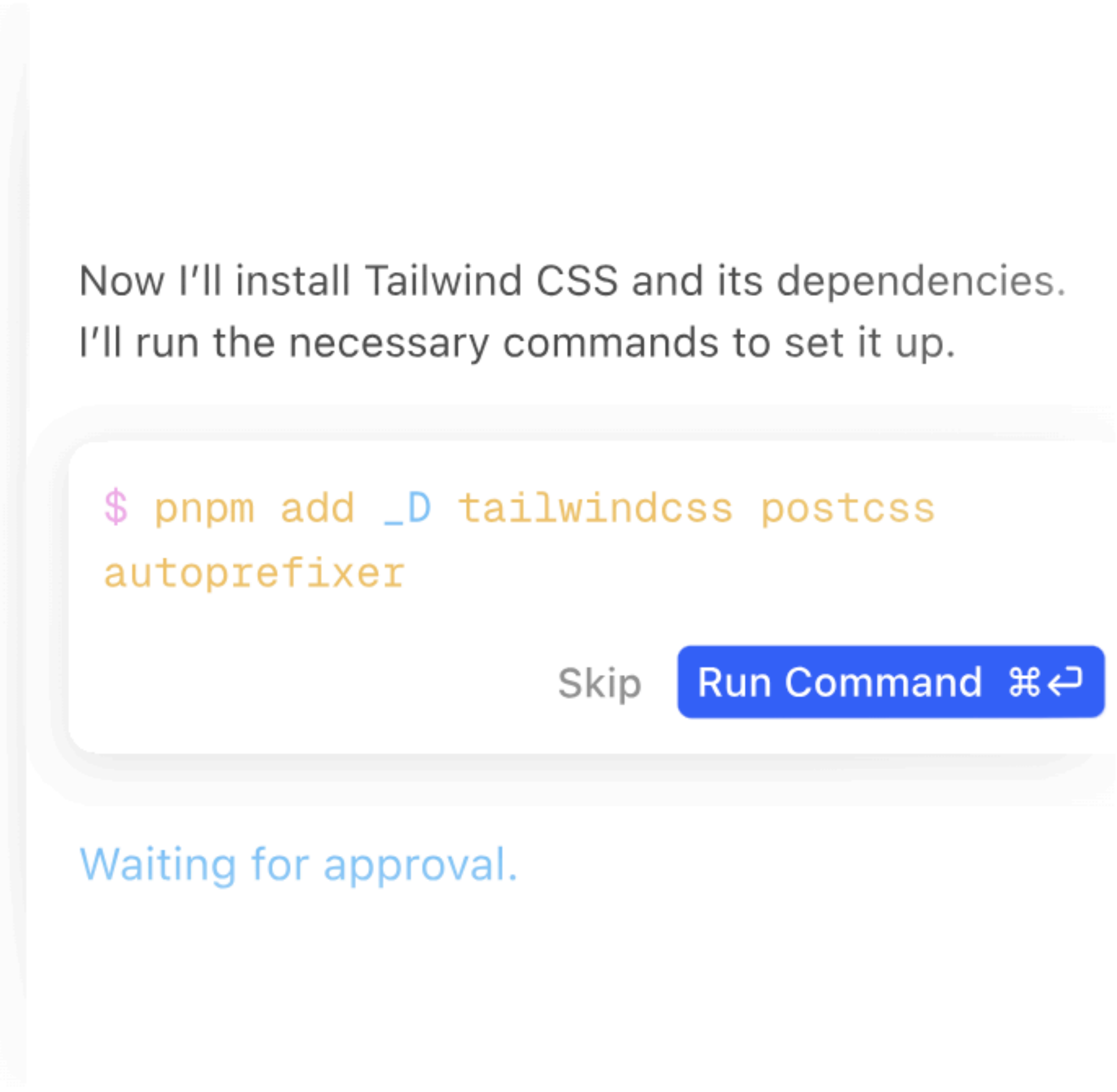
- .git
- README.md
- public
- .ne
- TS ts
- no
- pnp
- pa
- RE

I see this is a Next.js project. Let's install Tailwind CSS and its dependencies, then configure it. I'll first check the current package.json to ensure we don't have any conflicts.

Read file package.json

Finds Context

Using custom retrieval models, Cursor can understand a codebase. This reduces the need to manually add context.



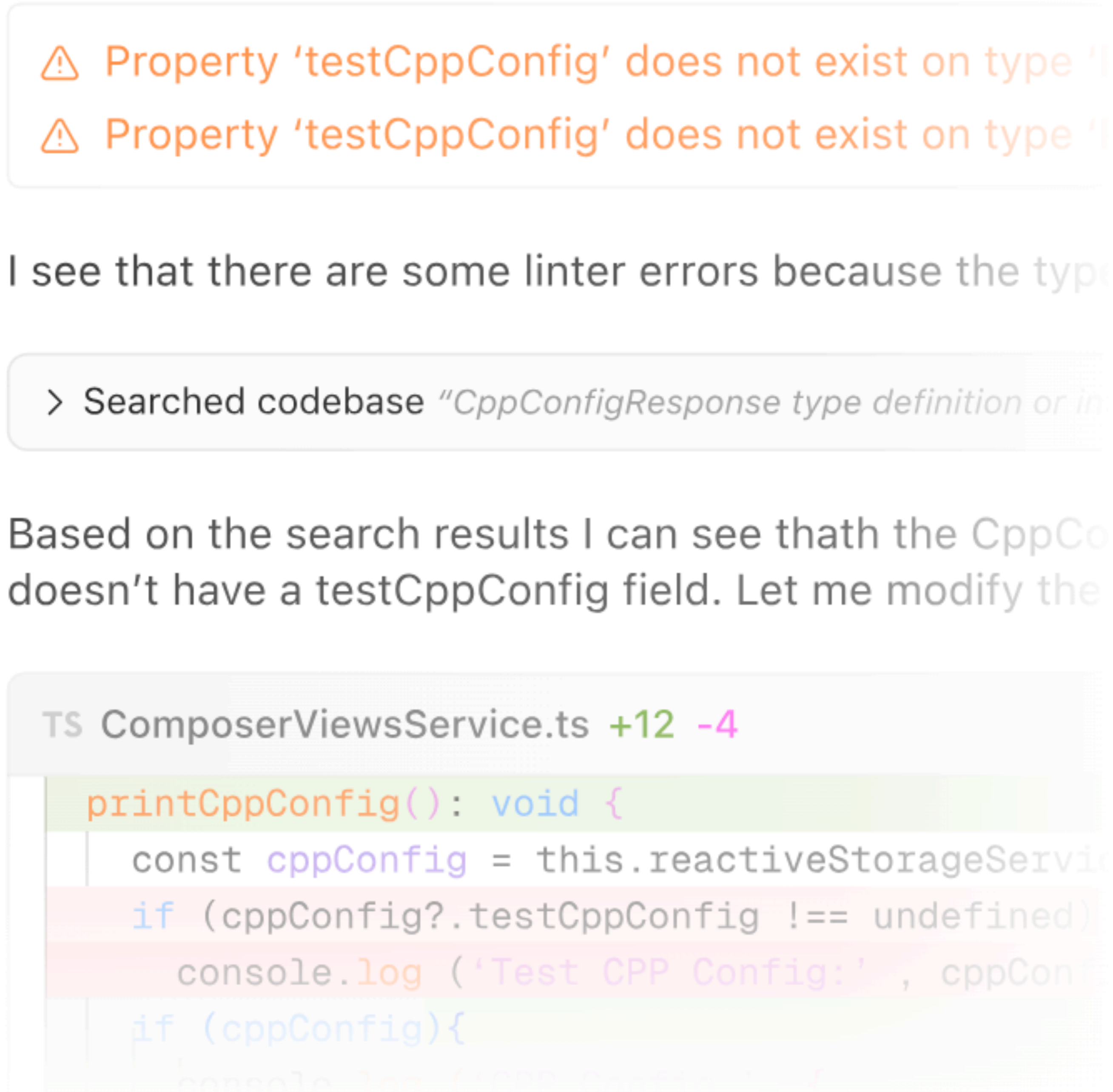
Now I'll install Tailwind CSS and its dependencies. I'll run the necessary commands to set it up.

```
$ pnpm add _D tailwindcss postcss
autoprefixer
```

Waiting for approval.

Runs Commands

Cursor can automatically write and run terminal commands. By default, you'll be asked to confirm all commands.



⚠ Property 'testCppConfig' does not exist on type '

⚠ Property 'testCppConfig' does not exist on type '

I see that there are some linter errors because the typ

› Searched codebase *"CppConfigResponse type definition or in*

Based on the search results I can see thath the CppCo doesn't have a testCppConfig field. Let me modify the

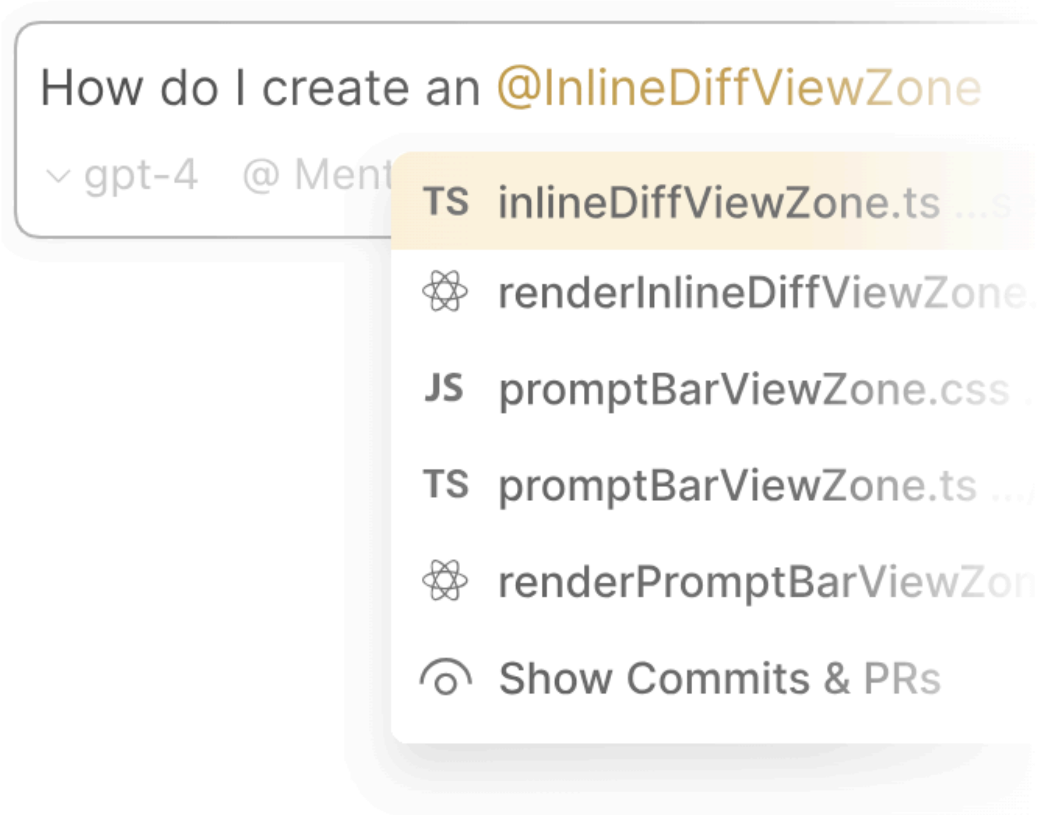
TS ComposerViewsService.ts +12 -4

```
printCppConfig(): void {
  const cppConfig = this.reactiveStorageServi
  if (cppConfig?.testCppConfig !== undefined)
    console.log ('Test CPP Config:' , cppCon
  if (cppConfig){
```

Loops on Errors

Cursor can detect lint errors automatically and apply fixes, reducing the need for manual debugging.

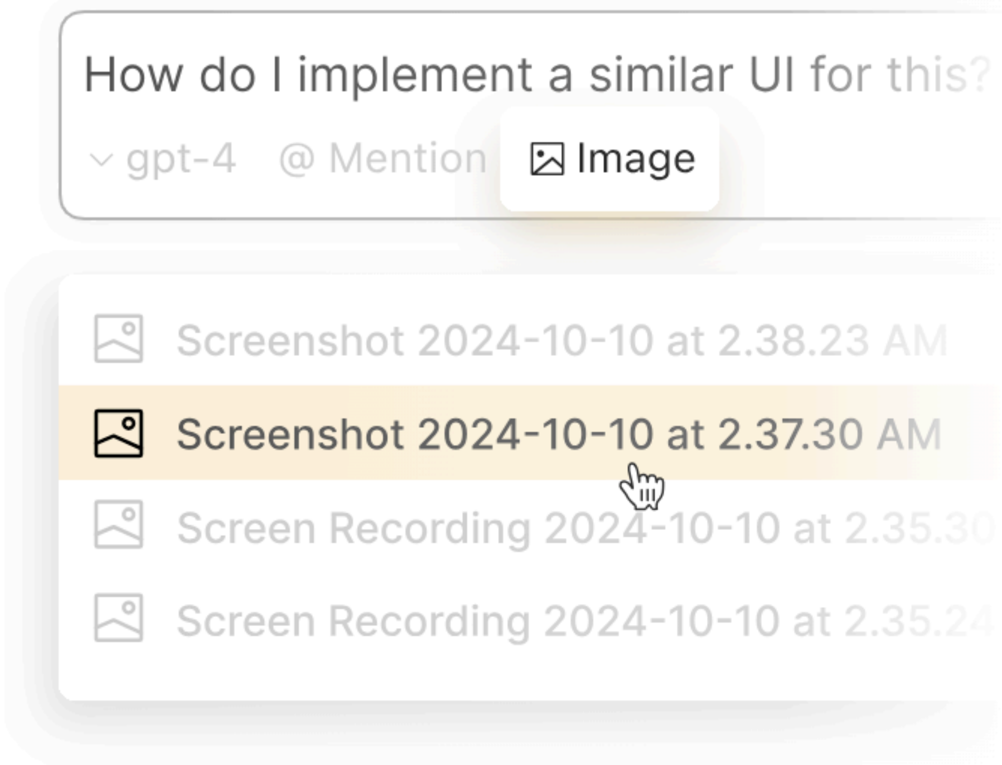
Using Cursor



How do I create an @InlineDiffViewZone

Reference your Code

Reference code with @ symbols to be used as context for the AI. Just type @ to see a list of all the files and code symbols in your folder.

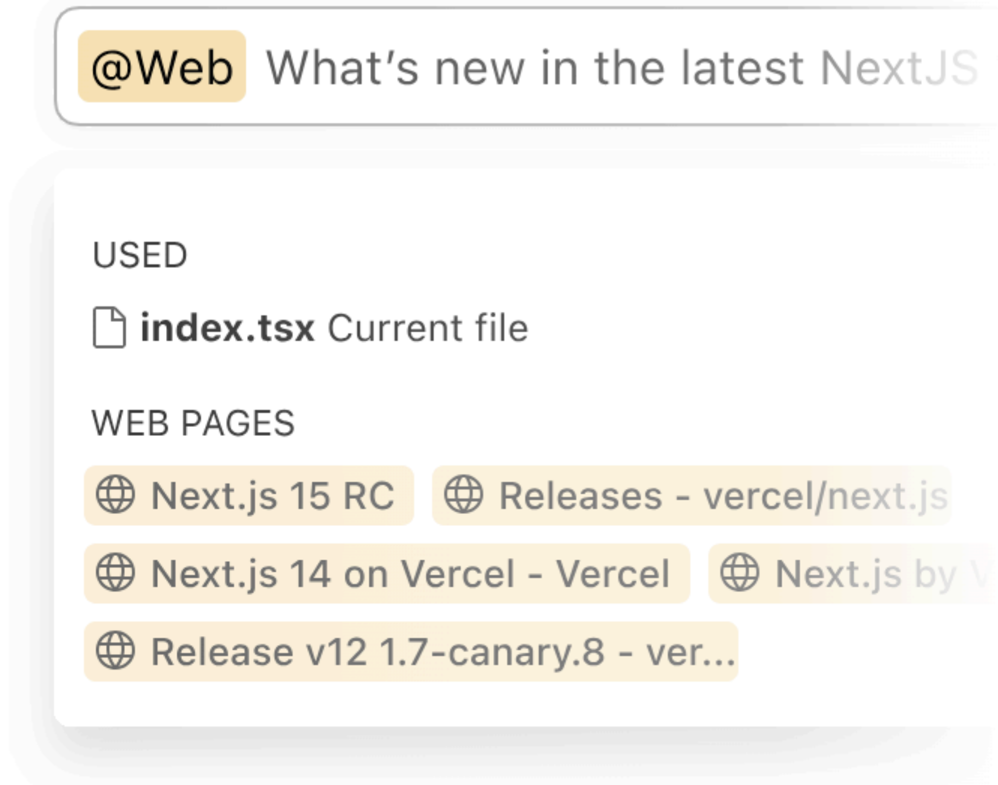


How do I implement a similar UI for this?

gpt-4
@ Mention
Image
Screenshot 2024-10-10 at 2.38.23 AM
Screenshot 2024-10-10 at 2.37.30 AM
Screen Recording 2024-10-10 at 2.35.30
Screen Recording 2024-10-10 at 2.35.24

Use Images

Hit the image button under chat or drag an image into the input box to include visual context into chat.

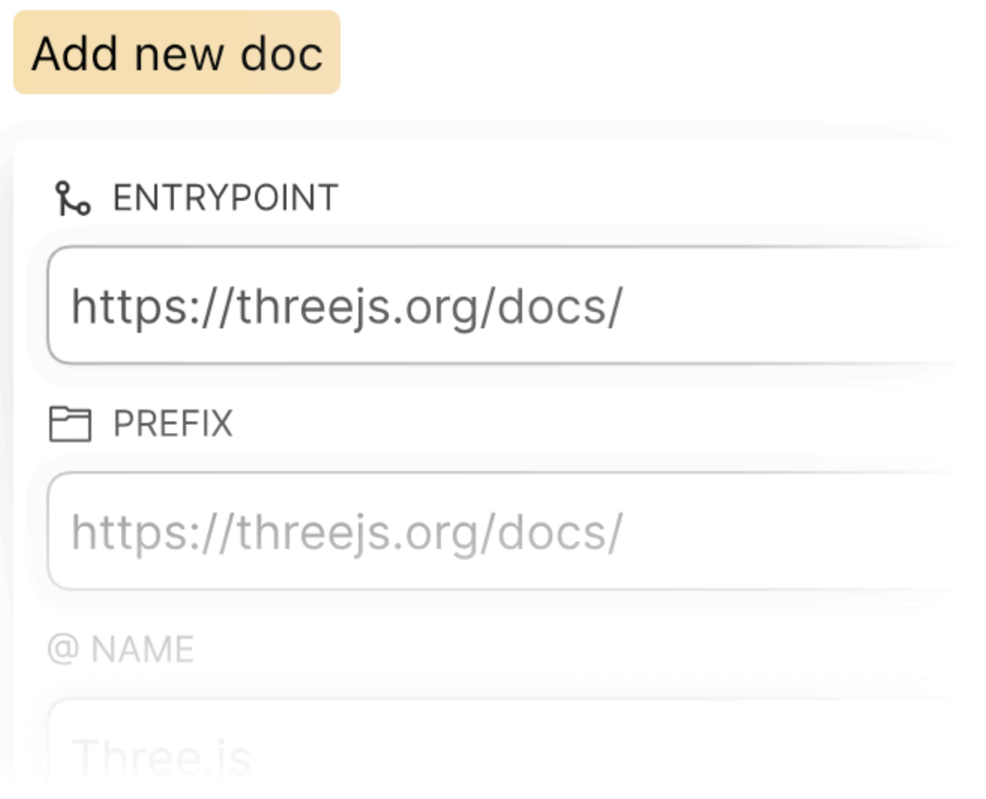


@Web What's new in the latest NextJS

USED
index.tsx Current file
WEB PAGES
Next.js 15 RC
Releases - vercel/next.js
Next.js 14 on Vercel - Vercel
Next.js by
Release v12 1.7-canary.8 - ver...

Ask the Web

Get up-to-date information from the internet with @Web. Cursor will search the web for you and use the latest information to answer your question.



ENTRYPOINT https://threejs.org/docs/

PREFIX https://threejs.org/docs/

NAME Three.js

Use Documentation

Reference popular libraries using @LibraryName, or add your own using @Docs → Add new doc.

In-Class Activity

- Played with vibe coding last week
- Goal today: see how far you can go
- Use Cursor today, with a more code-centric experience
  - Try using rules files.
  - Try having it write tests.
- Will continue the app you started last week in Replit
  - Download the code, import into Cursor project
- Not important to finish, but want to push limits on what you can do and see where that breaks down
  - But 5 points extra credit for the 2 groups that complete the most features
- Use Kaltura to record your screen for all of your programming work, upload video at end of class
- HW assignment (due next week) will ask you to reflect on your experiences today in class, and will be helpful to go back and reference your video

List of Features

1. Enable users to place parks, schools, hospitals, power plants.

2. Enable users to zone 2x2 blocks as residential, commercial, or industrial buildings

3. Enable users to build a road network tile by tile, with the tile icon changing to indicate connections to adjacent road tiles.

4. Enable users to create a power network tile by tile, connecting buildings together to a power plant.

5. Determine and indicate when a building is operating, based on connection to road and power.

6. Determine a desirability score for a zoned building, calculated based on its proximity to parks, schools, and power plants and its commute distance (by road) to other zoned buildings

7. Enable zoned buildings to change their current state every day, based on changes to their operating state and their desirability score

8. Build a money system. Revenue is earned every day based on what buildings are currently built in zoned buildings. Money is spent to maintain parks, schools, hospitals, power plants, roads.

9. Enable disasters (fire, tornados) and support disaster services (fire, police) to fight disasters

10. Calculate traffic every day, based on the number of commutes occurring, indicating this visually and reducing the desirability score for locations with high traffic on commutes

In-Class Activity

- Have from now till end of class period to work (7:10pm)
    - Any project work done after is ineligible for extra credit
- Share video at end of class
    - Upload your video to your own OneDrive space
    - Include a link in your reflection (make sure visibility set to make it viewable)