

Pair-programming with LLMs

2023-11-17

1 Exercise: Explaining code

For this exercise, please begin by deciding which coding language you are most proficient in `Python` or `R`, so you can work with the other one:

- If you chose `R`:

Check out the code under `./data/code.py`, and the data under `./data/input-data-script.txt`. Can you figure out what is going on here, what is the code doing? Use either the API or the Browser version of ChatGPT to help you figure out what the code is doing.

- If you chose `Python`:

Check out the code under `./data/code.R`, and the data under `./data/input-data-script.txt`. Can you figure out what is going on here, what is the code doing? Use either the API or the Browser version of ChatGPT to help you figure out what the code is doing.

This is an example of a complex task where GPT-4 works a lot better than GPT-3.5. Do note however that at the time of writing GPT4-base (in: \$0.03 / 1K tokens, out: \$0.06 / 1K tokens) is ~30 times more expensive than GPT-3.5 (in: \$0.0010 / 1K tokens, out: \$0.0020 / 1K tokens). GPT4-turbo (in: \$0.01 / 1K tokens, out: \$0.03/1K tokens) is ~10 times more expensive than GPT-3.5.

Answer [This code is a solution to a Bingo puzzle from Advent of Code 2021](#)

In the next sections we are going to keep working with this code

2 Exercise: Document code

Part of the reason why this code was so hard to read was that it was written without documentation. We're going to fix that. Use ChatGPT to help you write decent documentation for your file of choice. Adjust the file accordingly, this will be needed for the next section.

3 Exercise: Translation between code languages

While it is fun to work in a different language, we prefer to work in the language we know best. Use ChatGPT to help you translate the code to your language of choice.

Don't blindly run code generated by LLMs, make sure you understand what is going on! For this toy example the risks are very low, but it's best to make this a habit from the start.

Tips:

- Doing this per section of the code makes it easier
- You already know what answer it should generate, use this as your unit-test!

4 Exercise (optional): Generate unit-test

We are going to optimize the code you translated from language A to language B. Here we need to be a bit more careful if nothing breaks by editing the code. Use ChatGPT to write unit tests for the following:

- Does reading the data give the expected result?
- Does drawing a number do what we expect?
- Does `return_winner` detect a win?

5 Exercise (optional): Optimize the code

Use ChatGPT to see if there are any parts of your code that can be optimized. I suggest doing this per section to make sure the LLM remains focussed on the relevant parts.

6 Exercise: (Challenge) Generating code

Try to solve part 2 of the puzzle on: <https://adventofcode.com/2021/day/4>

Answer The answer to the second part of the puzzle for our input should be 2776 with board 34.

Your code should now solve for the puzzle inputs of Advent-of-Code day 4 2021 as a second check.

7 Exercise: (Challenge) Generating code

See if you can also get the solution to the second part for the language that wasn't your first choice!