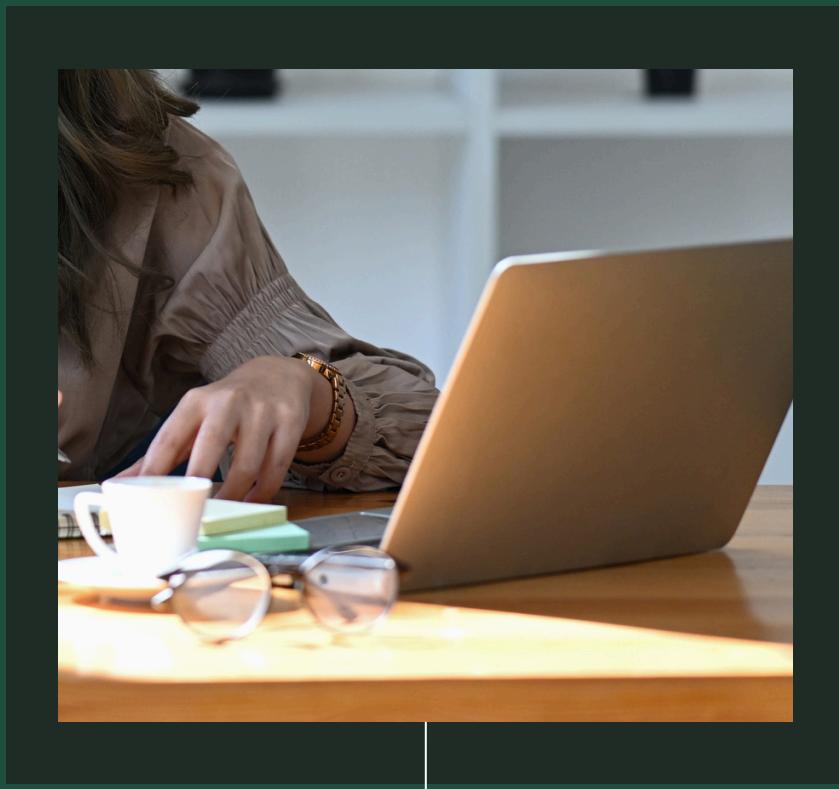


# WORKBOOK



# CHATGPT WORKBOOK

Created by Kasia Pilch



## **Welcome to the Prompt Engineering Workbook, your bonus guide to mastering the art of effective communication with ChatGPT!**

This workbook is designed to complement and enhance your learning experience from my course, giving you hands-on tools and strategies to apply everything you learn!

**In this workbook, you will once again dive deeper into the practical side of prompt engineering. Whether you're a beginner or already experienced, this workbook is packed with quick, essential takeaways, tips, best practices, and exercises to help you refine your skills. But don't forget, the course is the main event—this workbook is a bonus, a handy reference to help reinforce the knowledge and insights you gain throughout the core learning journey!**



# 1: WHAT DOES GPT MEAN AND HOW CHATGPT WORKS

## What is GPT?

- GPT stands for *Generative Pretrained Transformer*, an AI model developed by OpenAI to generate human-like text based on prompts.
- **Generative**, because it creates responses based on your input.
- **Pretrained**, because it has already learned from vast amounts of text.

**Transformer**, because its architecture enables it to understand and process language.

## How Does GPT Work?

- It mimics human decision-making, using layers of neural networks to understand and respond to our inputs.
- It's similar to an ambitious student who learns from a library of texts and is always ready to help (*without judging you!*)
- GPT's responses are unique each time due to its generative capabilities, *meaning no two outputs are identical*.



### **First one - Test the Model's Flexibility**

Experiment with different prompts to see how GPT responds to the same question with slight variations. For example:

- Prompt A: "Write a 50-word description of a productivity app."
- Prompt B: "In 50 words, describe a new app that helps boost productivity."

- Compare the responses and note how GPT varies its output based on slight changes in wording!

### **Exercise 2:** Explore GPT's Capabilities

- Task: Ask ChatGPT to perform a range of tasks:
  - Write a blog post outline
  - Explain a complex scientific concept
  - Generate a social media post for your profile

## 2: CHATGPT LIMITATIONS AND WHAT CHATGPT IS NOT

### **Key takeaways from the course:**

- GPT sometimes “hallucinates,” meaning it generates factually incorrect information.
- It accumulates responses from the data it was trained on, without verifying truthfulness.
- Always fact-check results, especially when working with important or sensitive information!
- ChatGPT is not capable of feeling emotions or understanding human context beyond patterns.
- It mimics human responses based on statistical analysis, not actual empathy or emotional reasoning.
- GPT is trained on large datasets that reflect human biases. As a result, it may produce biased or unfair responses, particularly on sensitive topics :( It simply inherits the flaws and biases from the data it's trained on, which means discriminatory outputs are possible.



Spot bias!

**Task for you:** Ask ChatGPT about a controversial or sensitive topic (e.g., “What is the role of AI in policing?” or “How should governments approach immigration?”).

**Objective:** Observe if and how bias might influence its response. Reflect on how the dataset GPT was trained on could impact its view of sensitive issues.

# 3: WHAT IS PROMPT ENGINEERING?

- Prompt engineering is the skill of crafting clear, precise instructions for AI to generate the most accurate and useful responses!
- Think of AI as a super-efficient assistant or ambitious intern—your input needs to be clear for the best results.

## **Why does prompt engineering matter so much?**

- High-quality prompts lead to high-quality responses, saving time and ensuring AI meets your expectations.
- Just like giving clear directions in a new city, prompt engineering guides AI to give you the outcome you NEED.
- AI is advanced, but it still relies on clear communication to understand and deliver on your needs.
- By 2025–2026, it's predicted that 10% of global data will be generated by AI. Skilled prompt engineers will be in high demand to guide AI's data output.
- Prompt engineering helps unlock AI's full potential—whether it's generating articles, images, or even veryyy complex code.



### | **Exercise 1:** Improve the prompt

- **Task:** Take a vague prompt you've used in the past and refine it for better results.
  - For example -> Original prompt: "*Write about AI.*"
  - Refined prompt: "*Write a 100-word article about how AI can improve productivity in the workplace.*"
  - **The goal:** Notice the difference in specificity and quality of the output after refining the original prompt.

### | **Exercise 2:** Test recision vs. ambiguity

- **Task:** Once again, provide two different prompts to ChatGPT, one highly specific and one vague, and compare the results.
  - **Prompt A:** "Describe the economic impact of the 2008 financial crisis in the U.S. in under 150 words."
  - **Prompt B:** "Tell me about the 2008 financial crisis."
  - **The goal:** Identify how more precise prompts yield better-targeted and detailed responses.

# 4: UNDERSTANDING PROMPTS AS TOKENS

## What is a token?!

- A token is a small piece of text, like a word, part of a word, or even a single character (*like a dot or comma*).
- AI models, like our GPT-4o for example, break down sentences into tokens to read and understand them more efficiently.
- Think of tokens as the “building blocks” that help AI understand what you’re asking!

## **Why tokens matter:**

- As you already know, when you give a prompt to GPT, it doesn’t read the full sentence like we do. Instead, it splits the text into tokens. **EVERY SINGLE TIME!**
- Tokens help the AI manage memory and computing power, letting it process more information at once and give you better results.

## **Easy example?**

- Imagine tokens as pieces of a puzzle. One piece alone doesn’t show the full picture, but when you put them together, they create something meaningful—just like how tokens form sentences AI can understand.

## Fun Fact:

The word “fantastic” is broken into three tokens: “fan,” “tas,” and “tic.” This process is called **tokenization**, and it’s exactly how the AI breaks down words to understand them.



## Exercise: explore tokenization

- Use the OpenAI tokenizer tool (<https://platform.openai.com/tokenizer>) and type in a few sentences. See how the text is split into tokens!
- Notice how your sentence is broken into smaller pieces (tokens). This helps the AI understand what you’re asking.



# 5: OUR INTERACTIONS WITH AI – INPUTS AND OUTPUTS

## What are inputs and outputs?

- **Input:** This is what you provide to the AI—your prompt, which could be a question, command, or task. It's the information you give to the AI.
- **Output:** This is the AI's response based on your input. It could be an answer, a translation, a list, or whatever you've asked for!

## Real-world analogy... Baking a cake: 🎂

- **Input:** Think of it like giving your smart baking assistant a list of ingredients (flour, eggs, sugar) and instructions (mix, bake at 350°F). These are your inputs, telling the assistant what to do.
- **Output:** The baked cake is the result of following your instructions. That's the output! In the same way, the AI gives you an answer or action based on your prompt.
- Just like in baking, the quality of the result (output) depends on how clear and accurate your instructions (input) are.

## + Why this matters for prompt engineering:

- Understanding how input (your prompt) and output (AI's response) work together helps you create better prompts. The more precise your prompt, the better the AI's output will be.



## Exercise: Improving prompts for better outputs!

- Below are examples of vague or unclear prompts. Rewrite each prompt to make it more specific, so the AI can provide a better output.

1. Prompt: "Tell me about animals."

- Improved Prompt: \_\_\_\_\_

2. Prompt: "What should I do today?"

- Improved Prompt: \_\_\_\_\_

3. Prompt: "How does a phone work?"

- Improved Prompt: \_\_\_\_\_

## 6: AI RESPONSE MECHANISMS AND HOW AI TALKS BACK

### **AI response mechanism – *how it works:***

- The AI (like GPT-4o and next versions) generates responses by breaking down your prompt into small parts (*tokens*) and analyzing them. This process is powered by something called the Transformer Architecture.
- The Transformer architecture is a type of model used in AI, especially for understanding and generating language. Imagine it like a super-smart system that processes and understands text by looking at all parts of a sentence at once, instead of one word at a time.

 Here's a simple way to think about it:

- **Attention mechanism:** The Transformer pays special attention to certain words in a sentence based on their importance. For example, in the sentence "The dog chased the ball," it knows that "chased" relates to both "dog" and "ball."
- **Parallel processing:** Instead of reading sentences like humans do—word by word—the Transformer can look at all the words at the same time, which helps it understand context faster and more accurately.
- So AI "thinks" by recognizing patterns and relationships between words, predicting the next part of a sentence based on the highest probability.



# Tasks FOR YOU

## **Exercise 1:** Test AI's memory and context understanding ->

- Task: Ask the AI a series of related questions, then see how it builds on the previous answers.
  - Prompt 1: "Who is Albert Einstein?"
  - Prompt 2: "What was his most famous theory?"
  - The goal: Observe how the AI uses memory to connect answers and deliver more contextually aware responses!

## **Exercise 2:** play with probability in responses

- Task: Give the AI an open-ended prompt and notice how it uses probabilities to form responses.
  - For example, test out the prompt: "Describe an interesting place to visit in Europe."
  - The goal: Try the prompt multiple times and compare how the AI's response might change slightly due to probability-driven variations in word choices!

## 7: THE ANATOMY OF AN EFFECTIVE PROMPT

### 1. Good prompt is *always specific and clear* ->

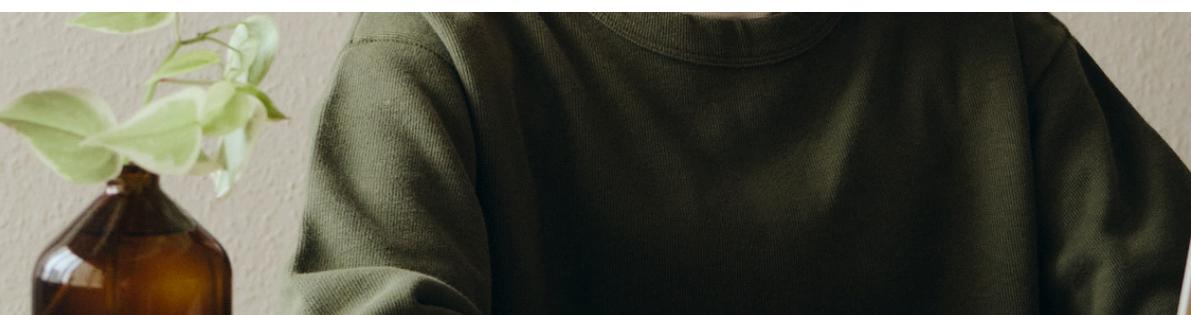
- Vague prompts often lead to broad, less useful answers. The more details you provide, the better AI understands what you're looking for!

### 2. Contextual Information:

- Adding context to your prompt helps the AI generate a more relevant and accurate response.

### 3. Set the tone and writing style:

- Very important thing: AI adapts to the tone and style of YOUR prompt! Whether you ask in a formal or casual manner, the response will reflect that.
- Your choice of tone (formal, conversational, humorous) really influences how AI delivers its answer.



**Experiment with different tones:**

- Write two different prompts about the same topic but in different tones!
  - For example -> Prompt A (Formal): “Please provide an in-depth analysis of how social media affects mental health.”
  - Prompt B (Casual): “What’s the deal with social media messing with our heads?”

**The goal:** Compare the responses to see how the AI matches its style to your tone!

## 8: PROMPTING TECHNIQUES -> ROLE PLAYING TECHNIQUE

Imagine you’re talking to an AI, and instead of just asking it a regular question, you want it to pretend to be someone specific—like a teacher, a doctor, or even a travel guide. This trick is called **the role-playing technique**.

**Here’s how it works:**

- When you give AI a role, you’re asking it to act like a specific person or professional. For example, you could ask it to explain something as if it’s a teacher, or give you advice like a doctor would.
- The AI will adjust how it answers to fit that role, which can help you get more detailed, useful, and appropriate responses!



**Why it’s super useful:**

- By assigning a role, the AI focuses its response based on the job or character you’ve given it, so *the answer is more likely to be exactly what you’re looking for*.
- If you want the answer to sound more professional, friendly, or specific to a subject, giving the AI a role helps set the tone of the response.

**How to use the role-playing technique:**

- Choose a role: Think of who would give the best answer to your question. Maybe it’s a scientist, a tutor, or even a travel guide?
- Give clear instructions: When you type your question, tell the AI who you want it to be.

- for example: “Explain how photosynthesis works as if you’re a biology teacher.”

## +

### Examples of the difference it makes? Here we go ->

- *Without role-playing*: “Tell me about climate change.”

AI Response: “Climate change is the long-term change in temperature and weather patterns.”

- *With role-playing*: “Explain climate change as if you’re a science teacher talking to high school students.”

AI Response: “Climate change is like when the Earth’s temperature slowly rises over time. This happens because of gases, like carbon dioxide, that trap heat in the atmosphere, making the planet warmer, which affects the weather.”

Notice how the second answer is more relatable and easier to understand? That’s the power of assigning roles!



#### **Exercise 1: Assign a role for clarity**

- Write a simple prompt you would normally use, then rewrite it using the role-playing technique.

*The goal:* Compare how the role assignment changes the depth and tone of the response!

#### **Exercise 2: Tailor a review**

Ask AI to write a review of something you’ve recently used and loved, then refine it by assigning a more specific role.

*The goal:* Notice how adding a role leads to a more detailed and context-appropriate review.





# 9: ZERO-SHOT, ONE-SHOT, AND FEW-SHOT PROMPTING

There are three main ways to prompt AI based on how much help you give it: Zero-Shot, One-Shot, and Few-Shot prompting. Let's break these down!

What do these terms mean?

- **Zero-Shot prompting:**

- You give the AI no examples and ask it to figure out the task by itself.
- For example: “Translate ‘Good morning’ to French.”

- **One-Shot prompting:**

- You give the AI one example to show what kind of response you expect.
- For example a prompt like this:

Give me another knock-knock joke similar to this one: Knock, knock. Who's there? Lettuce. Lettuce who? Lettuce in, it's cold out here!

AI Response: Knock, knock. Who's there? Cow says. Cow says who? No silly, cow says moo!

- **Few-Shot prompting:**

- You give the AI a few examples before asking it to complete the task. This helps the AI understand even better.

For example a prompt like this ->

“Example 1: “A riddle: ‘I speak without a mouth and hear without ears. I have no body, but I come alive with wind. What am I?’ Answer: An echo.”

Example 2: “A riddle: ‘The more of this there is, the less you see. What is it?’ Answer: Darkness.”

Example 3: “A riddle: ‘What has keys but can’t open locks?’ Answer: A piano.”

Now: “Give me a new riddle.”

These Few-Shot Prompts give multiple examples to show the AI what type of response you expect, leading to more accurate or creative outputs!

### Why these methods matter:

- Zero-Shot prompting: The AI has to work it out on its own. It's quick but not always the most accurate!
- One-Shot prompting: Giving one example helps the AI understand better and usually leads to better responses.
- Few-Shot prompting: The more examples you give, the better the AI gets at understanding what you want, especially for complex tasks.

### When to use each:

- Zero-Shot is good when the task is simple and the AI has probably seen it before (like translations or facts).
- One-Shot is useful when you need to show a quick example to guide the AI.
- Few-Shot works best for harder tasks or when you need a specific kind of answer (like storytelling or formatting).



#### Task 1: Identify the best prompting technique

For each scenario below, choose the best prompting technique (Zero-Shot, One-Shot, or Few-Shot) and explain why it's the most suitable option.

Scenario 1: You want the AI to give a list of famous landmarks.

Scenario 2: You want the AI to write a poem similar to one you like.

Scenario 3: You want the AI to generate some creative writing based on multiple examples of your style.

#### Task 2: Few-Shot practice -> Teaching the AI

Provide the AI with several examples to generate a similar result. Choose a task like writing riddles or jokes.

- Give 3 Examples, here's my prompt to inspire you:

"What has keys but can't open locks? A piano. What can travel around the world while staying in one corner? A stamp. I'm tall when I'm young, and I'm short when I'm old. What am I? A candle. Now, create a new riddle."

**The goal:** Practice Few-Shot prompting to train the AI to generate something specific, using multiple examples!



# 10: CHAIN OF THOUGHT PROMPTING TECHNIQUE

## What is the Chain of Thought technique?

- It's a method where you guide the AI to explain its thinking process step by step, rather than jumping *straight* to the answer.
- By asking the AI to break down its reasoning, you get more detailed and accurate responses, especially for tasks involving logic, reasoning, or complex problems!

## **Why it's a smart idea to use the Chain of Thought technique?**

- When the AI explains its thinking process, it's more likely to get the answer right.
- You can follow the AI's steps, which makes it easier to understand how it arrived at its conclusion.

## How does Chain of Thought work?

Instead of just giving the AI a question and expecting a final answer, you ask it to explain *each step of the process*. Here's how it works in different scenarios:

To exemplify it better -> Math problem example:

- Regular Prompt: "What is  $12 \times 15$ ?"
  - AI Response: "180."
- Chain of Thought Prompt: "Explain how to solve  $12 \times 15$  step by step."
  - AI Response: "First, break it down:  $12 \times 15$  is the same as  $(10 \times 15) + (2 \times 15)$ .  $10 \times 15 = 150$ , and  $2 \times 15 = 30$ . Add them together:  $150 + 30 = 180$ ."

-> Decision-making example:

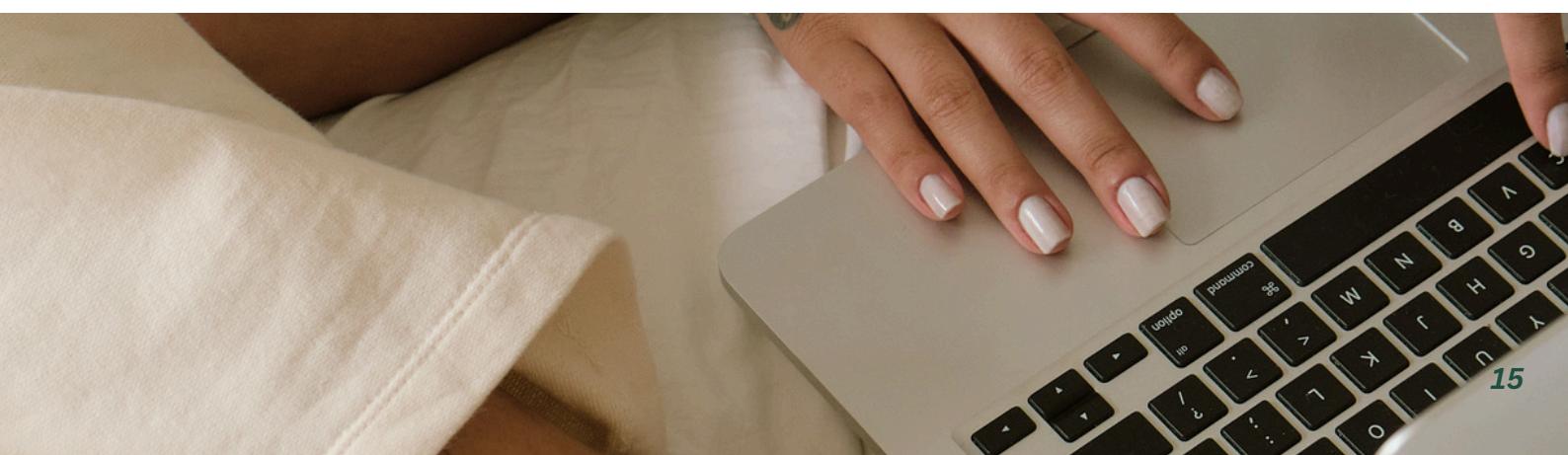
- Regular Prompt: "Should I study for an exam or go out with friends?"
  - AI Response: "You should study."
- Chain of Thought Prompt: "Explain your reasoning step by step for whether I should study for an exam or go out with friends."
  - AI Response: "First, consider the timing of the exam. If it's soon, studying may be more important. Next, think about how prepared you are. If you feel confident, you could spare some time with friends. Finally, balance long-term goals—doing well on the exam might benefit you more in the long run."

### **How to use the Chain of Thought technique ->**

- Ask for step-by-step reasoning: start by asking the AI to explain how it would solve a problem or answer a question step by step.
  - Example: "*Solve  $48 \div 6$  step by step.*"
- Guide the AI's process. If the task is complex, ask the AI to *walk through* each part of the problem.
  - Example: "*Explain how you decide which exercise routine is best for me, step by step.*"
- *Use the AI's step-by-step explanation to better understand the reasoning or process it's using.*

### **When to use the Chain of Thought technique?**

- **Complex problems.** For things like math, logic puzzles, or long-form explanations.
- **Decision making!** When you need to weigh different options and want the AI to analyze each factor.
- When you want the AI to explain how or why something works in detail (like scientific concepts or historical events).



### **Task 1: Solve a math problem using Chain of Thought technique**

Ask the AI to solve a math problem step by step. Choose a multiplication or division problem.

For example: “Solve  $36 \div 4 \times 29292 + 3893 - 21$  step by step.”

Write down each step and explain how the AI broke the problem down.

(This is an easy example, haha, but I just wanted to show you the direction!)

### **Task 2: Explain a scientific concept using this technique**

Choose a scientific concept (like how rain forms or how the heart works) and ask the AI to explain it step by step.

Prompt example: “Explain how the water cycle works, step by step.”

### **Task 3: Analyze a decision with Chain of Thought**

Ask the AI to analyze a personal decision, like whether you should spend the weekend studying or hanging out with friends. Ask it to walk you through its reasoning!

Prompt example: “Should I study first or play video games? Explain step by step.”



# 11: HOW TO ALWAYS GET THE BEST RESULTS FROM AI

No matter which prompting technique you use—**zero-shot**, **one-shot**, or **few-shot**—there are certain strategies you can always follow to ensure high-quality responses from AI. By refining your prompts and providing clear, relevant information, you can significantly improve the output you get. Let's dive into these key strategies to elevate your interactions with AI!

## Define your needs MORE CLEARLY

When asking AI to create something, whether it's creative writing, marketing copy, or even a detailed analysis, it's important to be crystal clear about your needs. The more specific you are, the better the AI can tailor its response.

### How to define your needs:

- Include intended use: Are you writing a blog post, a social media ad, or a product description? Let AI know so it can match its output to your purpose!
- Clearly define who the content is for. AI will deliver different tones and styles depending on your audience.

### How to define your target audience in your prompts:

- Instead of saying “fashion industry,” make it more precise, for example: “sustainable, linen lingerie for eco-conscious women aged 25–35 in urban areas.”
- Highlight unique selling points! If your product has a unique angle, such as “handmade, gluten-free cookies,” be sure to mention it.
- Provide audience details:
  - **Demographics:** “This content is for women aged 30–40, working professionals, based in Europe.”
  - **Psychographics:** “The audience values sustainability and minimalist design, prefers eco-friendly products.”
  - **Pain Points & needs:** “The content should address how this product solves the problem of finding eco-friendly but stylish workwear.”

- Define your communication channel. Knowing where the content will be published is crucial for AI to optimize the output based on the platform's unique requirements. Each channel (e.g., social media platforms, blogs, newsletters) has different criteria.
- Add custom instructions! One of the most powerful ways to get high-quality responses is by adding custom instructions to your prompt. These instructions guide the AI on how to structure the response, the level of detail, and the tone to use. Here are a few of my favorite ones ->

// Be highly organized and use bullet points to make the content easier to read.

// Provide detailed explanations, but in simple terms that a beginner could understand.

// Suggest creative solutions that are outside the box – things people wouldn't usually think of.



## Tasks FOR YOU

### Exercise 1: Define your needs for creative writing

Write a prompt for AI to create a blog post or an Instagram post for a specific audience and include your DETAILED needs.

Observe how defining the needs results in a more targeted and useful output!

### Exercise 2: Tailoring tone to audience

Ask the AI to generate content for two different audiences to see how tone and style change based on your prompt! Analyze in detail how the tone and style differ between the two outputs, and why specifying the audience led to better-targeted content. Here's my prompt example to inspire you:

Prompt -> You need to write a social media post for a skincare product. Give me options for two different audiences:

1. Audience 1: "Write a social media post for luxury anti-aging skincare targeting women aged 40-60 who prefer high-end, science-backed products."
2. Audience 2: "Write a social media post for vegan, all-natural skincare targeting eco-conscious women aged 18-30 who are passionate about sustainability and cruelty-free products."

AND...

# THAT'S A WRAP!



**I'm so glad you made it to the end of this workbook! If you enjoyed it, I'd be more than happy to hear from you—your feedback and thoughts mean everything to me.**

I truly hope this experience has sparked your interest in AI, and I'd love to see you in my future courses, where we'll continue exploring more exciting topics. I'm keeping my fingers crossed for you and your progress with AI—remember, every small step counts!

See you soon!

Kasia Pilch