Chapter 3: Anatomy of a Prompt

🎯 Learning Objectives

By the end of this chapter, learners will be able to:

- Break down the structure of a well-crafted prompt

- Understand different components that influence model responses

- Differentiate between instructions, context, input data, and formatting

- Identify how small changes in structure impact AI behavior

3.1 What is a Prompt?

A **prompt** is the input you give to a language model to receive a response. It's how you "communicate" with the model—whether asking a question, giving a task, or simulating a scenario.

Think of a prompt as a set of instructions + context + goal.

3.2 Core Components of a Prompt

A good prompt often consists of the following elements:

Component	Purpose
Instruction	What you want the model to do
Context	Background information or examples
Input Data	The actual text, question, or content to process
Output Format	Specification of the desired format (e.g., bullet points, table)
Tone/Style (optional)	Desired tone: friendly, formal, concise, persuasive etc.

3.3 Examples of Each Component

🧩 1. Instruction

"Summarize the following article in 5 bullet points."

This tells the model **what** to do.

🧩 2. Context

"The article is about climate change's impact on Arctic wildlife."

Adds background to guide response.

🧩 3. Input Data

"According to recent studies, Arctic ice melt has accelerated…"

Actual data the model needs to analyze or transform.

🧩 4. Output Format

"Respond in this format: \n - Point 1 \n - Point 2…"

Helps ensure the response is usable and consistent.

🧩 5. Tone/Style

"Write in a professional tone suitable for a business report."

Refines the "voice" of the AI.

3.4 Prompting Patterns

Pattern	Example
Instruction only	"Translate to French."
Q&A format	"Q: What is photosynthesis? \n A:"
Fill-in-the-blank	"The mitochondria is the _____ of the cell."
Contextual prompt	"Given this job description, write a cover letter."
Multi-turn prompt	"You're an interviewer. Ask me 3 questions."

3.5 Prompt Length and Clarity

- **Be concise:** Avoid vague or overly long instructions.

- **Avoid ambiguity:** "Summarize" vs. "Create a 1-line summary" can yield different outputs.

- **Specify format early:** Helps the model prepare correct structure.

🚫 "Write something"
✅ "Write a persuasive paragraph (50–70 words) explaining why daily exercise is beneficial."

3.6 Temperature & Prompting

Even with a great prompt, model behavior is affected by **temperature settings**:

- Low temperature: strict adherence to prompt

- High temperature: more creativity, possibly less control

Use low temperature when format or precision is important.

3.7 Prompt Failures: Why Results Vary

Cause	Example
Vague instructions	"Explain this." ← unclear what "this" refers to
Missing context	"Summarize it." ← what is "it"?
Contradictory commands	"Be brief, but explain in detail."
Unclear output expectation	No indication of format = inconsistent responses

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3.8 Best Practices

✅ Start with a clear task
✅ Add relevant context
✅ Be explicit about format and tone
✅ Use delimiters like `"""` for long content blocks
✅ Iterate if first output is unsatisfactory

🔍 Sample Prompt Breakdown

Prompt:

> "You are a career coach. A student is applying to Google for a data science internship. Write a 4-line summary of their strengths using a confident tone. Use bullet points."

Component	Value
Instruction	Write a summary of strengths
Context	Student applying to Google as data science intern
Tone	Confident
Output Format	Bullet points, 4 lines only
Role Simulation	"You are a career coach" to condition model's role

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📌 Summary

The structure of your prompt determines the structure of the model's response. By breaking prompts into instructions, context, input, output format, and tone, you can reliably guide the model. Prompt engineering is a design skill as much as a technical one.