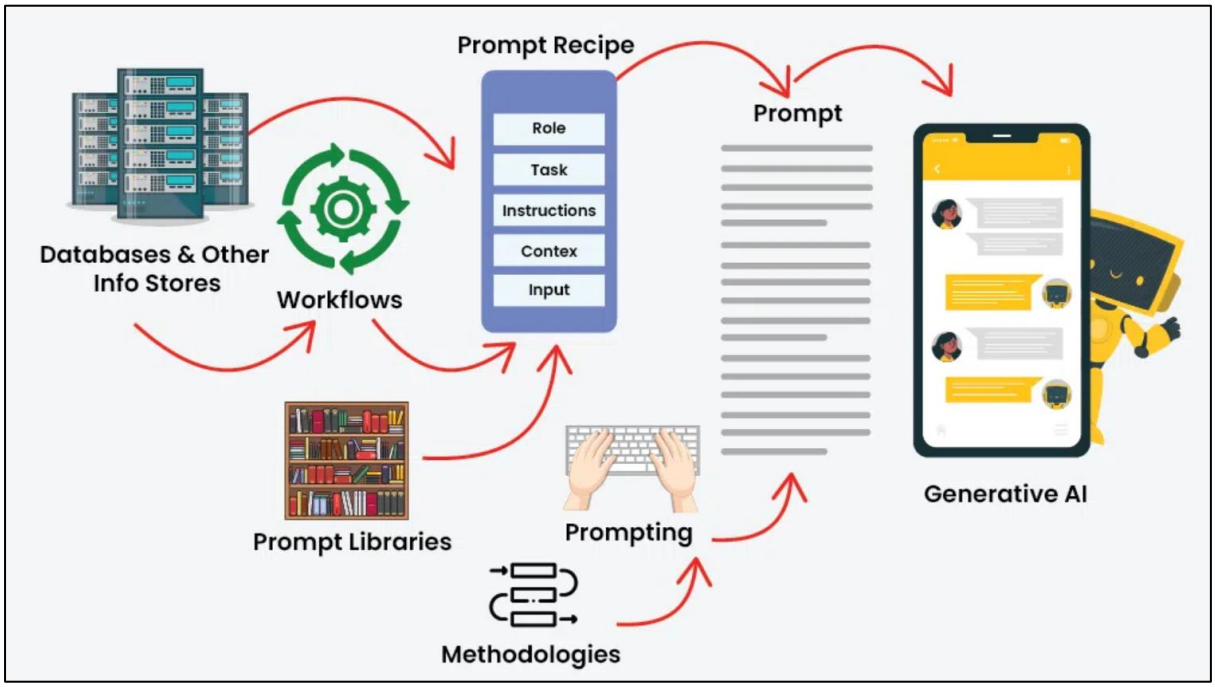
What Is Prompting in AI?

In artificial intelligence, **prompting** refers to the process of crafting inputs (called *prompts*) that guide a model to produce desired outputs. A prompt can be a question, instruction, example, or context that helps the model understand what you want.

Prompting is especially critical in **generative AI**, where models generate text, images, code, or other content based on the prompt.



What Is Prompt Engineering?

Prompt engineering is the art and science of designing effective prompts to optimize the performance of AI models. It involves:

- Understanding how the model interprets language
- Structuring prompts to reduce ambiguity
- Using techniques to improve accuracy, creativity, or reasoning

Prompt engineering is essential for:

- Developers building AI-powered apps
- Researchers exploring model capabilities
- Everyday users trying to get better results

Why Prompt Engineering Matters?

Effective prompting can:

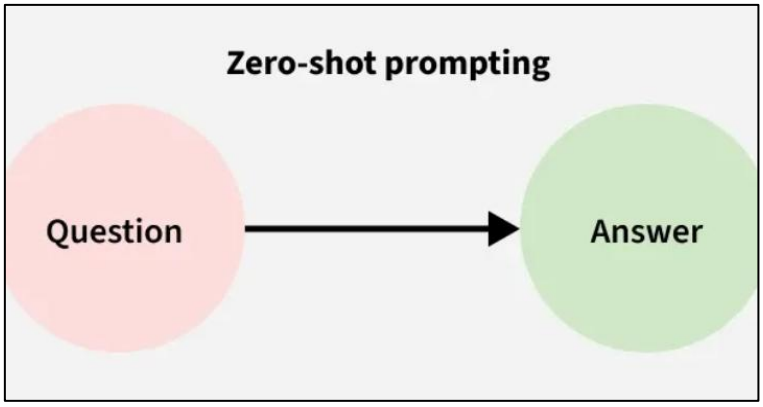
- Improve accuracy and relevance
- Reduce hallucinations (false outputs)
- Enable complex tasks like coding, summarization, or reasoning
- Customize tone, style, and persona

Real-World Applications

- **Customer Support**: "Act as a support agent. Help the user reset their password."
- **Education**: "Explain photosynthesis to a 10-year-old."
- **Coding**: "Write a Python function to sort a list."
- **Marketing**: "Generate 5 catchy slogans for a fitness brand."

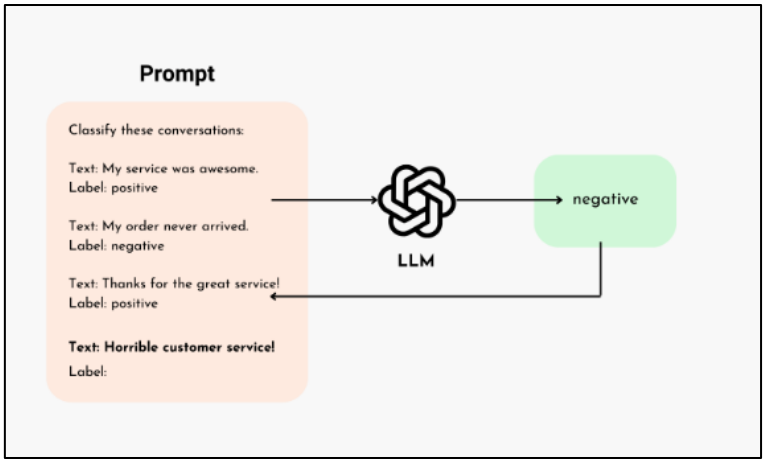
Types of Prompting in AI:

1. **Zero-shot Prompting**



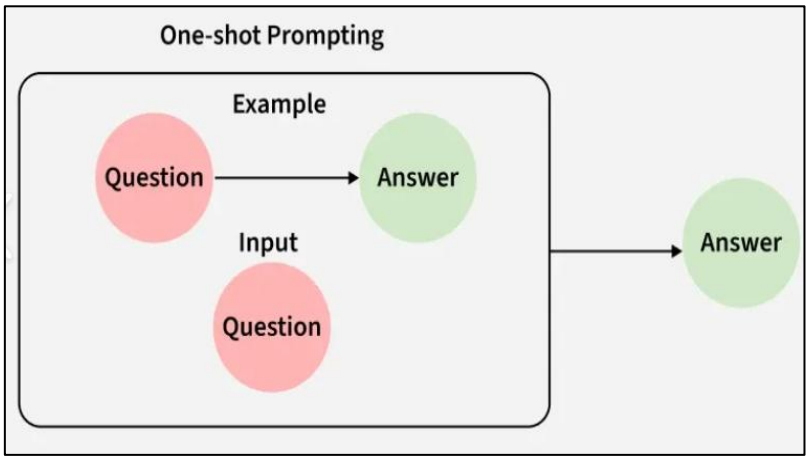
- **Definition**: Asking the model to perform a task without giving any examples.
- **Example**: "Translate 'Good morning' to French."
- **Use Case**: Quick tasks where the model already understands the concept.

2. **Few-shot Prompting**



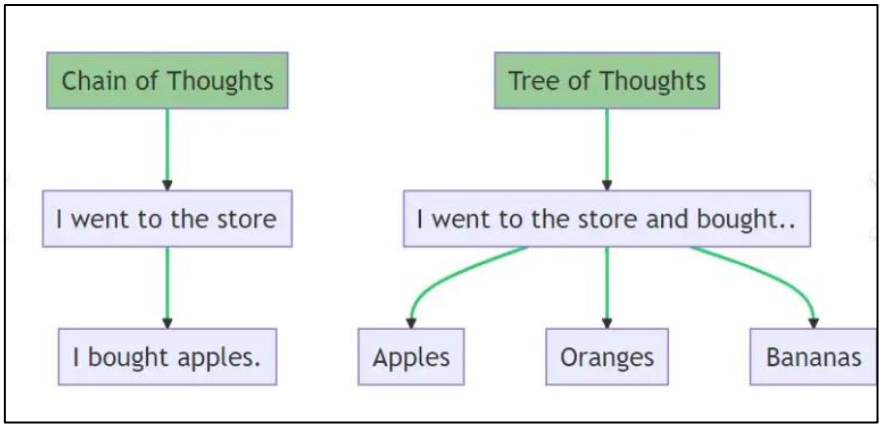
- **Definition**: Providing a few examples to guide the model's behaviour.
- **Example**:
- Translate the following:
- English: Hello → French: Bonjour
- English: Goodbye → French: Au revoir
- English: Thank you → French:
- **Use Case**: Improves accuracy for tasks with subtle patterns.

3. **One-shot Prompting**



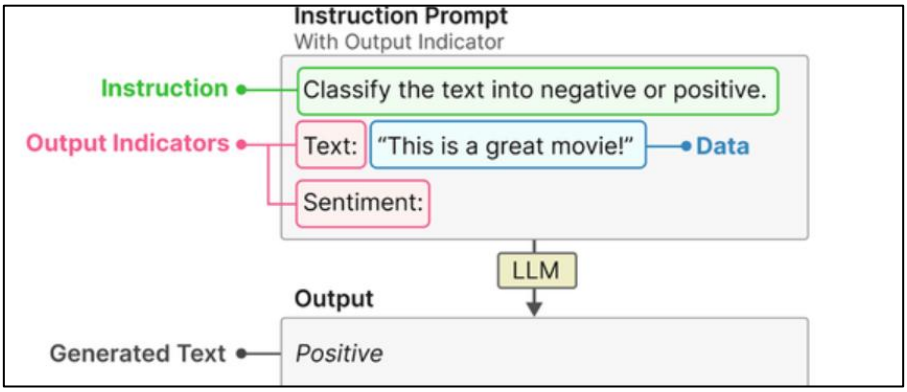
- **Definition**: Giving exactly one example before the task.
- **Example**:
- English: Hello → French: Bonjour
- English: Please → French

4. **Chain-of-thought Prompting**



- **Definition**: Encouraging the model to reason step-by-step before answering.
- **Example**:
- Q: If John has 3 apples and gives 1 to Mary, how many does he have left?
- A: Let's think step by step. John starts with 3 apples. He gives 1 to Mary. So, he has 2 apples left.
- **Use Case**: Great for math, logic, and complex reasoning tasks.

5. **Instruction-based Prompting**



- **Definition**: Giving clear instructions to guide the model's behaviour.
- **Example**: "Summarize this article in two sentences."

6. Role-based Prompting

- **Definition**: Assigning a persona or role to the model.
- **Example**: "You are a helpful travel agent. Suggest a 3-day itinerary for Paris."

7. Contextual Prompting

- **Definition**: Embedding the task within a realistic or narrative context.
- **Example**: "Imagine you're writing a letter to a friend about your weekend. Describe what you did."

8. Multimodal Prompting (for models that support it)

- **Definition**: Combining text with images, audio, or other inputs.
- **Example**: "Describe what's happening in this image." (with an image attached)

Advanced Prompt Engineering Techniques

Technique	Description	Benefit
Prompt Chaining	Linking multiple prompts to guide complex workflows	Enables multi-step tasks
Prompt Templates	Reusable prompt formats with placeholders	Improves consistency
Prompt Tuning	Training small models to optimize prompts	Boosts performance on specific tasks
Retrieval-Augmented Prompting	Combining prompts with external knowledge sources	Enhances factual accuracy