

CHAT GPT:

1 Zero-Shot Prompting

- ◆ Meaning:

Zero-shot prompting means giving the AI a task **without providing any examples**. The model answers based only on the instruction.

- ◆ Example:

Prompt:

Translate "Good morning" into French.

Output:

Good morning in French is *Bonjour*.

2 Few-Shot Prompting

- ◆ Meaning:

Few-shot prompting means giving the AI **a few examples first**, then asking it to perform a similar task.

- ◆ Example:

Prompt:

Apple → Fruit

Carrot → Vegetable

Salmon → Fish

Mango → ?

Output:

Mango → Fruit

3 Chain-of-Thought Prompting

- ◆ **Meaning:**

Chain-of-thought prompting encourages the AI to **show step-by-step reasoning** before giving the final answer.

- ◆ **Example:**

Prompt:

If a book costs ₹50 and you buy 4 books, how much do you pay? Explain step by step.

Output:

One book costs ₹50.

4 books cost $50 \times 4 = ₹200$.

So, the total cost is ₹200.

4 Role-Based Prompting

- ◆ **Meaning:**

Role-based prompting tells the AI to **act as a specific role or expert** before answering.

- ◆ **Example:**

Prompt:

Act as a science teacher and explain photosynthesis to a 10-year-old student.

Output:

Photosynthesis is how plants make their own food using sunlight, water, and air. It helps plants grow and gives us oxygen to breathe.

Criteria	Meaning	Importance
accuracy	Correctness of the response generated by the AI	Ensures reliable and trustworthy answers
Coherence	Logical flow and clarity of the response	Makes the answer easy to understand
Simplicity	How simple and easy the response is	Helps users quickly grasp the information
Speed	Time taken to generate the response	Important for quick problem-solving
User Experience	Overall satisfaction and ease of interaction	Improves usability and engagement

GEMINI:

1. Zero-Shot Prompting

This is the "just do it" approach. You give the AI a task with no examples and expect it to understand the context based on its training.

- **Best for: Common tasks, simple summaries, or quick translations.**
- **Example: "Translate 'The cat is on the mat' into French."**

2. Few-Shot Prompting

Here, you provide a few examples (shots) to show the AI the pattern, tone, or format you want before asking it to perform the task.

- **Best for: Formatting data, mimicking a specific writing style, or sentiment analysis.**
- **Example:**
 - **"Great movie! // Positive"**
 - **"It was okay, but a bit long. // Neutral"**
 - **"Absolute waste of time. // Negative"**

- "The acting was superb but the plot was thin. //"
(The AI then completes the pattern).

3. Chain-of-Thought (CoT)

This forces the AI to show its work. By asking it to "think step-by-step," you significantly reduce logic errors in complex reasoning or math.

- Best for: Math problems, symbolic logic, or complex decision-making.
- Example: "I have 5 apples. I give 2 to Bob. Bob gives 1 back to me and keeps 1. How many apples do I have? Let's think step-by-step."

4. Role-Based Prompting

You assign the AI a specific persona. This sets the tone, expertise level, and boundaries for the conversation.

- Best for: Professional advice, creative writing, or technical troubleshooting.
- Example: "Act as a senior software architect with 20 years of experience. Review this Python code for security vulnerabilities."

Metric	Zero-Shot	Few-Shot	Chain-of-Thought	Role-Based
Accuracy	Moderate; prone to "hallucinations" on complex tasks.	High; examples provide a clear roadmap for the AI.	Highest ; forced logic reduces calculation/logic errors.	High for tone/context; varies for factual data.
Coherence	Generally high, but can drift if the prompt is vague.	Very High; follows the structural pattern of your examples.	High, though the "thought process" can sometimes get wordy.	Consistent; maintains a specific "voice" throughout.
Simplicity	Highest ; just ask and go.	Low-Moderate; requires you to provide quality examples.	Moderate; requires asking for "step-by-step" logic.	Simple; requires a clear persona description.
Speed	Fastest ; minimal input and immediate output.	Moderate; longer prompts take slightly longer to process.	Slowest; the model takes time to "think" through steps.	Fast; negligible impact on processing time.
User Experience	Great for quick wins and simple queries.	Best for developers or users needing specific formats.	Best for students, researchers, or complex problem-solving.	Best for coaching, creative writing, or professional advice.

Copilot:

◆ **Zero-shot**

- **Definition:** The model is asked to perform a task without being given any examples.
- **Example:** Asking, “*Translate ‘Hello’ into French*” without showing any prior translation examples.
- **Use case:** Quick tasks where the model is expected to generalize from its training.

◆ **Few-shot**

- **Definition:** The model is given a handful of examples before being asked to perform the task.
- **Example:** Showing a few English-to-French translations, then asking it to translate a new sentence.
- **Use case:** Helps the model understand the format, tone, or style you want.

◆ Chain-of-thought

- **Definition:** The model is encouraged to “think aloud” by breaking down reasoning step by step before giving the final answer.
- **Example:** Instead of just saying “42” to “*What is 6 × 7?*”, the model might respond: “*6 × 7 means adding 6 seven times. $6 + 6 + 6 + 6 + 6 + 6 + 6 = 42$. So the answer is 42.*”
- **Use case:** Complex reasoning tasks like math, logic puzzles, or multi-step problem solving.

◆ Role-based

- **Definition:** The model is asked to adopt a specific persona or role to guide its responses.
- **Example:** “*You are a history professor. Explain the causes of World War I to your students.*”
- **Use case:** Useful for tailoring tone, perspective, or expertise in responses

Approach	Accuracy	Coherence	Simplicity	Speed	User Experience
Zero-shot	Moderate — depends on model's training	Variable — may miss context	Very simple (no examples needed)	Fast — minimal setup	Quick but sometimes unpredictable
Few-shot	Higher — guided by examples	Stronger — follows demonstrated patterns	Slightly less simple (requires examples)	Slower — examples add overhead	More reliable and tailored
Chain-of-thought	High for reasoning tasks	Very coherent — step-by-step logic	Less simple — verbose reasoning	Slower — longer outputs	Transparent, builds user trust
Role-based	Moderate to high — depends on role clarity	Coherent — consistent persona	Simple once role is defined	Fast — role sets tone quickly	Engaging, personalized, immersive