# CHAIN OF THOUGHT (COT) VS. TREE OF THOUGHTS (TOT) PROMPTING

# Chain of Thought (CoT) Prompting

What is Chain of Thought (CoT)?
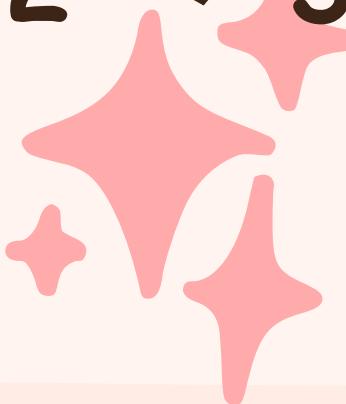
Linear reasoning: step-by-step thinking process.

Helps AI explain logic clearly and improve accuracy.

Used for problem-solving and analysis tasks

Visual:

A single straight arrow or path showing steps 1 → 2 → 3.

# How does it works?

You instruct the model to reason through intermediate steps before giving an answer.

This helps improve logic, accuracy, and transparency in complex reasoning tasks.

<u>Example:</u>

"Let's solve this step by step: If a train leaves at 3 PM and travels 60 km/h for 2 hours, how far does it go?"

<u>Result:</u> The AI explains:

Step 1: Speed × Time = Distance → 60 × 2 = 120 km.
 Step 2: Therefore, the train travels 120 km.

# Tree of Thoughts (ToT) Prompting

## What is Tree of Thoughts (ToT)?

Branching reasoning method — explores multiple paths.
Evaluates and selects the best reasoning route.
Great for creativity, planning, and strategy.

# How does it works?
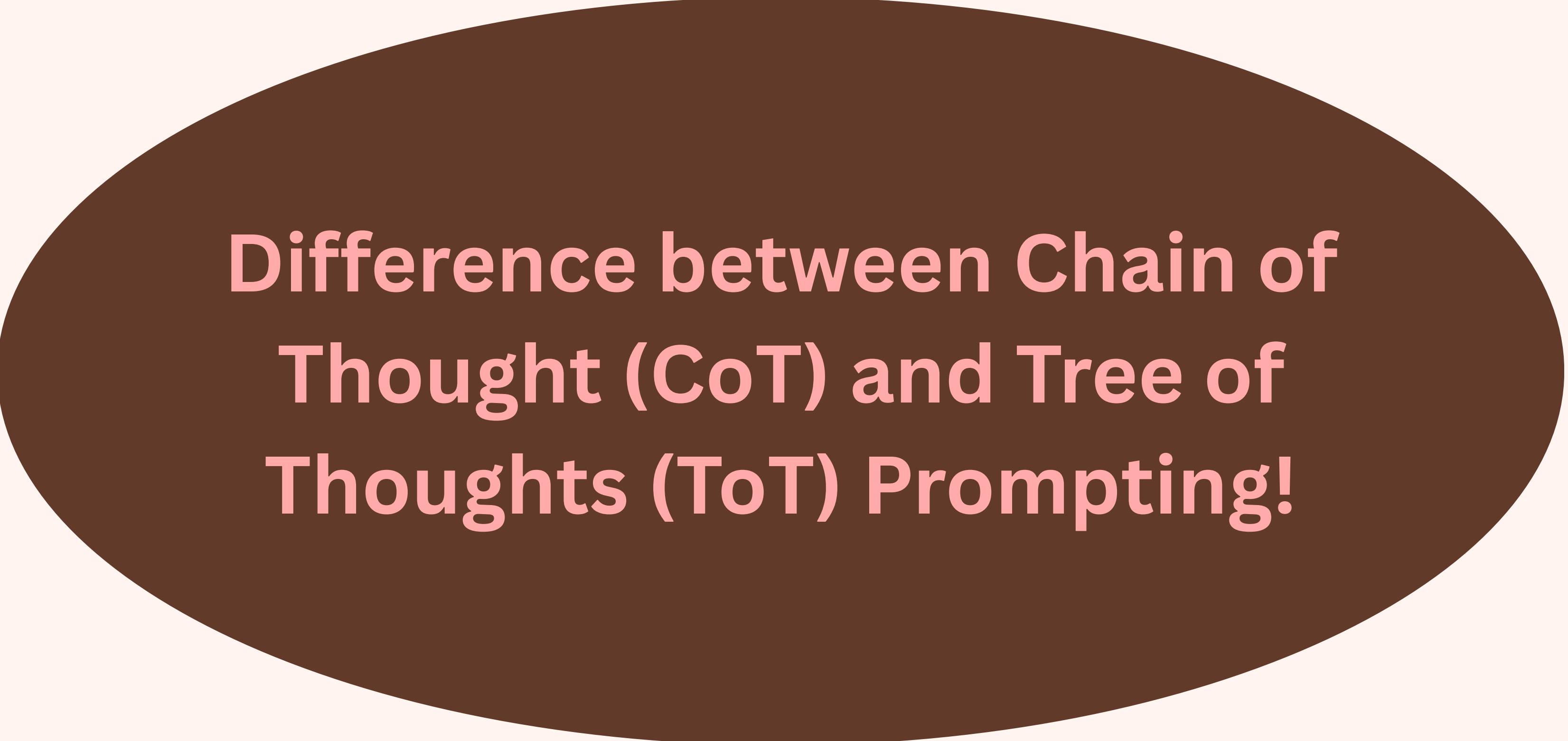
The AI generates several possible "thought branches."
It evaluates, compares, and selects the most promising reasoning path.

## Example:

For a creative writing task, the AI might brainstorm 3 story ideas (branches), evaluate each one, and continue expanding the best option.
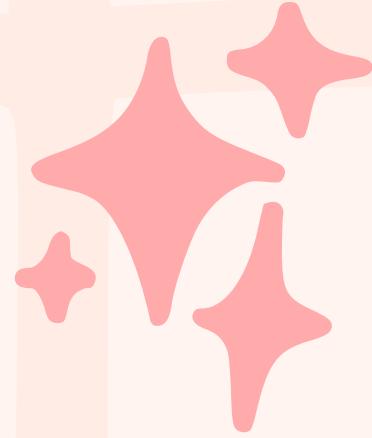
## Result:

More structured and creative reasoning, especially useful for brainstorming, planning, or problem-solving with multiple possible answers.

# Difference between Chain of Thought (CoT) and Tree of Thoughts (ToT) Prompting!

| Aspect | Chain of Thought (CoT) | Tree of Thoughts (ToT) |
|---|---|---|
| Approach | Linear reasoning | Branching, multi-path reasoning |
| Focus | Step-by-step logical explanation | Exploring and evaluating multiple possibilities |
| Use Case | Math problems, logic puzzles | Creative writing, strategic planning, decision-making |
| Complexity | Simpler to implement | More advanced and computationally heavier |

# Real-World Example :

CoT Example: Used in AI tutoring systems that solve math or logic problems step by step.

ToT Example: Used in AI-assisted decision-making (e.g., business strategy tools) where multiple potential actions are evaluated before selecting the best one.

Conclusion :
Both CoT and ToT improve AI reasoning —
CoT builds logic 🔢 while ToT sparks creativity 🌳

Thank You