

Prompt templates, on the other hand, are comprehensive frameworks designed for specific use cases. They combine structural elements, linguistic patterns, and where appropriate, prompt patterns, into a cohesive structure. These templates serve as customizable starting points for addressing prompting scenarios, encapsulating best practices and proven approaches. By using templates, prompt engineers can tackle complex tasks more efficiently and consistently.

In this chapter, we'll first explore a selection of prompt patterns, drawing insights from recent academic research. Through examples and hands-on practice, you'll learn to identify common patterns and build your own library of prompt patterns.

We'll then turn our attention to prompt templates, demonstrating how they can be constructed and applied to solve specific problems. You'll learn how to create templates by combining various elements - much like assembling Lego blocks to build a larger structure. Through a series of examples and challenges, you'll develop skills in creating, adapting, and optimizing prompt templates for diverse applications.

Both prompt patterns and templates play crucial roles in advancing the field of prompt engineering. They help standardize approaches to common challenges and facilitate knowledge sharing among practitioners. By mastering these foundational techniques, you'll be equipped to craft more sophisticated, efficient, and effective prompts for a wide range of applications.

Let's begin our exploration of these key prompt engineering concepts!

5.1 Prompt Patterns

Prompt patterns are recurring elements or strategies commonly found across various prompts. They represent specific techniques or approaches that can be applied in different prompting scenarios. These patterns, when identified and utilized effectively, can enhance the quality and consistency of prompts across various domains and tasks. By recognizing and implementing these patterns, prompt engineers can improve their prompts' effectiveness and efficiency.

In this section, we'll explore a selection of key prompt patterns identified by Schmidt et al. (2023) in their paper "Cataloguing Prompt Patterns to Enhance the Discipline of Prompt Engineering." While there are numerous prompt patterns, our goal is to familiarize you with the concept and provide examples of how to apply them in practice. We'll examine a few patterns in detail, provide practical examples, and offer hands-on practice opportunities to solidify your understanding. This foundation will enable you to recognize and utilize other patterns in your future prompt engineering work.

Let's begin by examining some of the most commonly used and versatile prompt patterns.

5.1.1 Prompt Pattern Catalogue

GAME PLAY PATTERN

The Game Play Pattern involves creating a game-like scenario around a specific topic or task. This pattern is particularly useful when you want to make learning or problem-solving more engaging and interactive.

Common situations:

- Educational contexts where you want to make learning more fun
- Problem-solving scenarios that benefit from a step-by-step approach
- Situations where you want to encourage creative thinking or roleplaying
- To illustrate how this pattern works in practice, let's look at two examples: a language learning game and a financial literacy game.

5.1.2 Practical Example 1: Language Learning Game

You

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Let's play a language learning game. I'll be a beginner French learner, and you'll be my tutor. Create a scenario where I'm ordering food in a French café. Provide the French phrases I should use, their English translations, and give me feedback on my responses. Start by setting the scene and giving me my first phrase to say.

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****Scene:** You are at a cozy French café in Paris. The waiter approaches your table.**

****Waiter:**** Bonjour! Que désirez-vous manger aujourd'hui?

****Your first phrase to say:****

French: Je voudrais un croissant et un café, s'il vous plaît.

English: I would like a croissant and a coffee, please.

Respond with your phrase, and I will give feedback.

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Now that we've seen how the Game Play Pattern can be applied to language learning, let's explore how it can be used in a different context: financial education.

5.1.3 Practical Example 2: Financial Literacy Game

You

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Create a financial literacy game where I'm a recent college graduate learning to budget. Set up a scenario where I have a monthly income and various expenses. Guide me through making financial decisions, explaining the consequences of each choice. Start by introducing my financial situation and presenting my first decision.

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Scenario Introduction

Monthly Income: \$3,500

Fixed Expenses:

- Rent: \$1,200
- Utilities: \$150
- Internet: \$50
- Student Loan: \$300
- Insurance: \$100

Total Fixed Expenses: \$1,800

Remaining Income: \$1,700

Decision Point 1: Transportation

Options:

1. Buy a car (Monthly cost: \$500 including loan, insurance, and gas)
2. Use public transportation (Monthly cost: \$100)
3. Bicycle (One-time cost: \$200, no monthly cost)

Choose an option and learn about the consequences.

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As you can see, the Game Play Pattern can be adapted to various learning scenarios. Now it's your turn to apply this pattern.

5.1.4 Hands-On Practice

1. Create a game to teach children about different types of animals and their habitats.

2. Design a game to help people learn about basic car maintenance.
3. Develop a game to teach the fundamentals of photography to beginners.
4. Moving on from the Game Play Pattern, let's explore another useful prompt pattern that can help us understand the AI's decision-making process.

5.1.5 Reflection Pattern

The Reflection Pattern involves asking the AI to explain its reasoning or thought process behind its responses. This pattern is useful for understanding the AI's decision-making process and for improving the accuracy and relevance of its outputs.

Common situations:

- When you need to understand the reasoning behind an AI's response
- In educational settings to model critical thinking
- When troubleshooting or refining prompts

5.1.6 Practical Example 1: Recipe Modification

You

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I have a chocolate chip cookie recipe, but I need to make it gluten-free. Suggest modifications to the recipe, and then explain your reasoning for each change you propose.

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Recipe Modifications:

1. **Flour Substitute**: Use a gluten-free flour blend (1:1 substitution).
2. **Binder Addition**: Add 1 tsp of xanthan gum.
3. **Check Baking Powder**: Ensure it's gluten-free.
4. **Consider Starch**: Add 1-2 tbsp of cornstarch or tapioca starch.

Reasoning:

1. **Gluten-Free Flour Blend**: Mimics the texture and structure of wheat flour.
2. **Xanthan Gum**: Provides elasticity and structure, compensating for the lack of gluten.
3. **Baking Powder**: Some contain gluten, so verify to maintain gluten-free integrity.
4. **Starch Addition**: Enhances chewiness and softness in the cookies.

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5.1.7 Practical Example 2: Career Advice

You

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Based on my interests in technology, problem-solving, and creativity, suggest three potential career paths for me. After providing your suggestions, explain your reasoning for each recommendation.

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1. **Software Developer**
 - **Reasoning:** Strong demand for problem-solving skills, continuous learning, and opportunities to work on creative projects.
 2. **Data Scientist**
 - **Reasoning:** Involves analyzing complex data sets, using technology to solve problems, and requires creativity in finding insights and solutions.
 3. **Product Manager**
 - **Reasoning:** Balances technology, creativity, and problem-solving by overseeing the development of new products, requiring both strategic thinking and innovative solutions.
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5.1.8 Hands-On Practice

1. Ask the AI to recommend a book based on your interests, then have it explain its reasoning for the recommendation.
2. Present a simple ethical dilemma to the AI and ask it to make a decision, then explain its thought process.
3. Request the AI to suggest a workout routine, then have it explain why each exercise was chosen.

Having explored the Reflection Pattern, we'll now turn our attention to a pattern that can help us improve the quality of our questions.

5.1.9 Question Refinement Pattern

The Question Refinement Pattern involves asking the AI to suggest better or more refined versions of the questions you ask. This pattern is useful for improving the quality of your queries and getting more accurate or relevant information.

Common situations:

- When you're not sure how to phrase a question to get the most helpful answer

- In research or academic settings to refine research questions
- When troubleshooting complex problems

5.1.10 Practical Example 1: Health Inquiry

You

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I want to ask my doctor about headaches. Can you suggest a better way to phrase my question to get the most helpful information?

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Sure, here are some examples:

1. "Can you help identify the cause of my recurring headaches?"
2. "What are the common triggers for headaches and how can I avoid them?"
3. "What diagnostic tests are available for chronic headaches?"
4. "What treatment options are there for persistent headaches?"
5. "Are my headaches a sign of a more serious condition?"

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5.1.11 Practical Example 2: Job Interview Preparation

You

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I want to ask about the company culture during a job interview. How can I refine this question to get more insightful information?

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1. "Can you describe a typical workday here?"
2. "How does the team handle conflicts?"
3. "What opportunities are there for professional growth?"
4. "How is feedback typically given to employees?"
5. "What are some challenges the team is currently facing?"
6. "Can you share an example of how the company supports work-life balance?"
7. "How would you describe the company's approach to diversity and inclusion?"
8. "What kind of social activities or team-building events do you have?"
9. "How does the company celebrate success?"
10. "What traits do the most successful employees here have in common?"

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5.1.12 Hands-On Practice

1. Refine a question about choosing a vacation destination to get more personalized recommendations.
2. Improve a question about starting a small business to get more practical and actionable advice.
3. Refine a question about improving time management skills to get more specific and effective strategies.
4. Now that we've learned how to refine our questions, let's look at a pattern that can help us verify the accuracy of the AI's responses.

5.1.13 Cognitive Verifier Pattern

The Cognitive Verifier Pattern involves asking the AI to verify its own responses or to provide evidence for its claims. This pattern is useful for improving the accuracy and reliability of the AI's outputs.

Common situations:

- When fact-checking is crucial
- In research or academic settings where citations are important
- When making important decisions based on AI-generated information

DISCLAIMER: Large language models may produce inaccurate information or fictitious sources. Readers should verify all sources independently to avoid misinformation.

5.1.14 Practical Example 1: Nutrition Advice

You

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What are the health benefits of eating blueberries? After providing the information, please verify each claim by citing a reputable source or explaining if you're unsure about any particular benefit.

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Eating blueberries offers several health benefits:

1. **Rich in Antioxidants**: Blueberries are high in antioxidants, particularly anthocyanins, which can help combat oxidative stress.

*Source: Liu, R. H. (2007). "Potential synergy of phytochemicals in cancer prevention: a review." *The Journal of Nutrition*, 137(1), 258S-265S.*

2. **Heart Health**: Regular consumption may lower blood pressure and cholesterol levels, reducing heart disease risk.

*Source: Basu, A., et al. (2010). "Blueberries decrease cardiovascular risk factors in obese men and women." *The Journal of Nutrition*, 140(10), 1582-1587.*

3. **Improved Brain Function**: Blueberries may enhance memory and cognitive function, particularly in older adults.

*Source: Barfoot, K. L., et al. (2018). "Blueberry supplementation improves memory in older adults: a randomized controlled trial." *Nutritional Neuroscience*, 21(7), 523-534.*

4. **Anti-Inflammatory Properties**: Their anti-inflammatory effects can help reduce the risk of chronic diseases.

*Source: Sweeney, G., et al. (2016). "The effects of blueberry supplementation on markers of inflammation." *Nutrition Reviews*, 74(6), 371-380.*

5. **Weight Management**: Low in calories and high in fiber, they can aid in weight management.

*Source: McGill, A. T., et al. (2012). "The impact of blueberry supplementation on body weight: a systematic review." *Nutrients*, 4(12), 1665-1680.*

Incorporating blueberries into your diet can provide these health benefits while being a delicious option!

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5.1.15 Practical Example 2: Historical Fact-Checking

You

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Provide three interesting facts about the Industrial Revolution. After each fact, verify its accuracy by citing a reputable historical source or indicating if you're unsure about any particular detail.

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1. The Industrial Revolution began in Britain in the late 18th century, around 1760.
- Verified by: Encyclopaedia Britannica.
2. The invention of the steam engine by James Watt in 1765 significantly boosted industrial productivity.
- Verified by: History.com.
3. Child labor was common in factories, with children as young as five years old working long hours under harsh conditions.
- Verified by: BBC History.

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5.1.16 Hands-On Practice

1. Ask the AI to provide information about the benefits of meditation, then have it verify each claim.
2. Request the AI to give three facts about climate change, then ask it to provide scientific sources for each fact.
3. Ask the AI to explain a common misconception (e.g., "we only use 10% of our brains"), then have it debunk the myth with verified information.

Our final pattern in this catalogue allows us to tap into specialized knowledge by having the AI adopt specific roles.

5.1.17 Persona Pattern

The Persona Pattern involves asking the AI to adopt a specific persona or role when responding. This pattern is useful for getting specialized knowledge or a particular perspective on a topic.

Common situations:

- When you need expert advice on a specific topic
- In creative writing or roleplaying scenarios
- When you want to explore different perspectives on an issue

5.1.18 Practical Example 1: Financial Advice

You

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Adopt the persona of a financial advisor. I'm a 30-year-old professional looking to start investing for retirement. What advice would you give me about starting my investment journey?

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1. ****Start Early****: Leverage the power of compound interest.
2. ****Diversify****: Spread investments across stocks, bonds, and other assets.
3. ****401(k) and IRAs****: Maximize contributions to tax-advantaged accounts.
4. ****Emergency Fund****: Maintain 3-6 months of expenses in a liquid account.
5. ****Low-Cost Index Funds****: Prioritize low-fee, diversified index funds.
6. ****Regular Contributions****: Invest consistently, regardless of market conditions.
7. ****Risk Tolerance****: Align investments with your risk tolerance and time horizon.
8. ****Automate Investments****: Set up automatic contributions to ensure consistency.
9. ****Monitor and Rebalance****: Periodically review and adjust your portfolio.
10. ****Seek Professional Advice****: Consult a financial advisor for personalized guidance.

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5.1.19 Practical Example 2: Historical Perspective

You

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Adopt the persona of a historian specializing in Ancient Rome. What would daily life have been like for an average citizen in Rome during the height of the Roman Empire?

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Daily life for an average Roman citizen during the height of the Roman Empire involved a mix of work, social activities, and family duties.

Morning:

- ****Wake up****: Early, often with the sunrise.
- ****Breakfast****: Simple meal, usually bread and water or wine.
- ****Work****: Craftsmen, merchants, or farmers head to work. Others, like soldiers or government workers, follow their respective duties.

Midday:

- ****Lunch****: Light meal, often bread, cheese, olives, fruits, and vegetables.
- ****Socializing****: Public baths, forums, and markets are popular spots. Citizens would

discuss politics, gossip, and conduct business.

Afternoon:

- **More Work**: Return to work if not finished in the morning.
- **Leisure**: Games, theater, or chariot races in the Circus Maximus for entertainment.

Evening:

- **Dinner**: Main meal called "cena," including various courses like meats, fish, vegetables, and wine.
- **Family Time**: Gather around the hearth, discuss the day, and relax.
- **Sleep**: Retire early to rest for the next day.

Key Elements:

- **Housing**: Insulae (apartment buildings) for most; domus (private homes) for wealthier citizens.
- **Religion**: Daily rituals and offerings to household gods (Lares and Penates).
- **Clothing**: Tunics for men, stolas for women; togas for formal occasions.
- **Education**: Basic education for boys, some girls; rhetoric and philosophy for wealthier youths.

Life was structured but varied greatly depending on one's social status and occupation.
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5.1.20 Hands-On Practice

1. Ask the AI to adopt the persona of a nutritionist and provide advice on creating a balanced meal plan.
2. Request the AI to take on the role of a travel guide and describe the must-see attractions in a city of your choice.
3. Have the AI assume the persona of a fashion designer and suggest outfit ideas for a specific occasion.

As we've explored in this section, prompt patterns are powerful tools that can significantly enhance our interactions with AI language models. Each pattern we've examined serves a unique purpose in prompt engineering:

- The Game Play Pattern transforms learning and problem-solving into engaging, interactive experiences.
- The Reflection Pattern provides valuable insights into the AI's reasoning process.
- The Question Refinement Pattern helps us craft more effective queries.
- The Cognitive Verifier Pattern adds a layer of fact-checking and reliability to our interactions.
- The Persona Pattern allows us to tap into specialized knowledge and perspectives.