

5. Create a social media post promoting a new product launch using the Template Pattern.
6. Generate a dialogue between two characters in a mystery novel using the Output Style and Tone.

Focus on using output indicators, template pattern, or specifying the desired style and tone to guide the language model towards the desired output format and style.

### 3.5 Constraints

Constraints are a specific type of instructional element used to limit or restrict the model's output in targeted ways. They work in tandem with the main instruction, which outlines the primary task or objective, providing additional control by setting boundaries on various output aspects like length, style, and tone. While the main instruction specifies what to generate, constraints define what should not be included or what limitations to adhere to.

By incorporating constraints, you ensure the generated content aligns with your intended purpose and audience. Constraints refine the model's output, acting as guardrails to keep it within desired boundaries and meeting specific requirements complementary to the main instruction.

It's important to note that constraints fall under the broader category of instructions. The Constraints Pattern offers a structured approach to effectively incorporate them, providing a main instruction followed by a set of constraints that limit the output by defining exclusions or adherence criteria.

This pattern involves first specifying to the language model what to generate through the main instruction, then following it with constraints that dictate output limitations or restrictions.

The main components of the Constraints Pattern are:

- **Instruction:** The primary task or objective you want the language model to accomplish.
- **Constraints:** Additional instructions that limit the model's output to meet specific requirements.

When using the Constraints Pattern, it's crucial to ensure that both the main instruction and the constraints are clear, concise, and unambiguous to guide the model effectively.

Here's an example of the Constraints Pattern:

- ...
- Instruction: [Primary task or objective], *while following all constraints.*

*Constraints:*

```
- [Constraint 1]
- [Constraint 2]
- [Constraint 3]
...
...
```

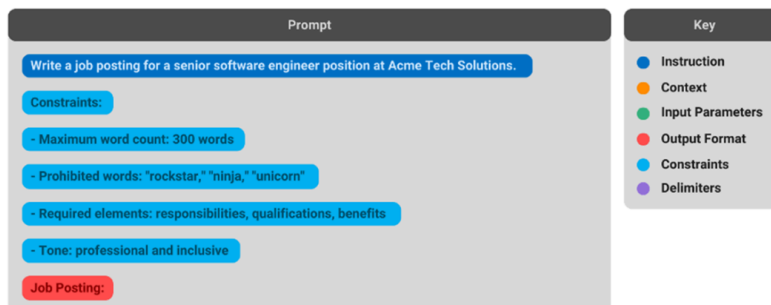
When applying constraints to your prompts, consider the following principles to ensure their effectiveness:

- Ensure that the constraints are clear, specific, and easily understandable. Avoid ambiguous or vague constraints that may confuse the model.
- Only include constraints that are directly relevant to the task at hand. Avoid overloading the prompt with unnecessary or irrelevant constraints.
- If using multiple constraints, ensure that they are consistent with each other and do not contradict the main instruction or context.
- Strike a balance between providing enough constraints to guide the model's output and allowing for some creativity and flexibility.

Different types of constraints can be used to address various challenges in prompt engineering. For example, length constraints can help control the verbosity of the generated content, while style constraints can ensure consistency in writing style across outputs.

However, it's crucial to strike a balance between providing sufficient constraints to guide the model and allowing for flexibility and creativity in the output. Overly restrictive constraints may limit the model's ability to generate diverse and meaningful content.

The following diagram illustrates a prompt that uses the Constraints Pattern to guide the generation of a job posting for a software engineer position while adhering to specific limitations on the generated output.



## INSTRUCTION

- The main instruction clearly specifies the task of writing a job posting for a senior software engineer position at Acme Tech Solutions.

- It sets the overall goal and direction for the generated content.

## CONSTRAINTS

- The constraints section provides specific limitations on the generated output.
- The maximum word count constraint ensures that the generated job posting does not exceed 300 words, keeping it concise and easily readable.
- The prohibited words constraint restricts the use of certain words ("rockstar," "ninja," "unicorn") that might be considered clichéd or exclusionary in a job posting context.
- The required elements constraint specifies that the job posting must include information about the responsibilities, qualifications, and benefits associated with the position, ensuring that key details are covered.
- The tone constraint guides the model to generate a job posting that is professional and inclusive, setting the desired style and approach for the output.

## OUTPUT PLACEHOLDER

- The "Job Posting:" placeholder serves as an output indicator, priming the model to generate a job posting after this point.
- It signals to the model that the text following the placeholder should be a job posting that adheres to the specified instructions and constraints.
- The output indicator helps the model understand the expected format and content of the generated output, guiding it to produce a well-structured job posting.

By using the Constraints Pattern with limitations on the generated output, the prompt effectively guides the model to generate a job posting for a senior software engineer position at Acme Tech Solutions that stays within the specified word count, avoids using prohibited words, includes information about responsibilities, qualifications, and benefits, and maintains a professional and inclusive tone. The constraints work in conjunction with the main instruction to shape the generated output and ensure it meets the desired criteria for a well-structured and appropriate job posting.

Let's explore a practical example of how the Constraints Pattern can be applied to a specific use case.

### 3.5.1 Practical Example 1: Generating Product Descriptions

Suppose you want to generate product descriptions for StrideLux's website. You can use the Constraints Pattern to specify soft limitations on the generated content.

## PROMPT

...

*Instruction: Write a product description for StrideLux's new premium leather sneaker, while following all constraints.*

*Constraints:*

- *Limit the description to 60-80 words*
- *Avoid mentioning competitors or making unsubstantiated claims*

*Product Description:*

...

## GENERATED CONTENT

...

*Introducing StrideLux's premium leather sneaker, a fusion of style and comfort. Crafted with the finest quality leather, these sneakers exude sophistication while providing exceptional durability. The sleek design ensures versatility, perfect for any occasion, while the plush interior guarantees all-day wearability. Elevate your footwear game with StrideLux's latest offering, where luxury meets functionality in every step.*

...

The Constraints Pattern provides guidelines, but language models treat them as soft limitations rather than strict rules. While aiming to satisfy high-level constraint requirements like conciseness, models can reasonably deviate from specific numeric constraints like word counts to improve quality and fluency.

For example, when instructed "Limit the description to 60-80 words", the model generated a 56-word response, determining that length sufficient to convey key information concisely.

It's important to note constraints do not guarantee strict compliance, as language models are probabilistic systems. Adherence varies based on factors like task complexity, instruction clarity, and model capabilities.

While influencing the output, models have flexibility to deviate slightly from numeric constraints if that improves overall quality and naturalness. By understanding constraints as soft guidelines rather than rules, you can generate tailored content while allowing the model to optimize for fluency and coherence through constraint experimentation.

### 3.5.2 Hands-On Practice

Try creating prompts using the Constraints Pattern for the following scenarios:

1. Generating a positive product review for a cordless vacuum cleaner focusing on user experience and maneuverability, using only words with 6 letters or fewer, and without mentioning the brand name