

# Introduction to Prompt Engineering

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# Most of us use ChatGPT and other LLMs for writing text. But it can do more.

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## Writing

- Elaboration – expands an idea into a larger text.
- Summarisation - summarises a large text into a smaller text.

## Conceptualisation

- Ideation – lateral expansion of a text/idea based on similarities
- Extraction – extracting data, features, and information from a text.
- Transformation – transform data from one format to another.

## Entity-relations

- Classification – classifying entities based on given data.
- Relationships – find relationships between entities in a text.

# Part I: Introduction to Prompts

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# What is a prompt?

A prompt is a natural language request submitted to a language model to receive a response.

Prompts can contain questions, instructions, contextual information, examples, and partial input for the model to complete or continue.

After the model receives a prompt, depending on the type of model being used, it can generate text, embeddings, code, images, videos, music, and more.

# What are the types of prompts?

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Input (required)

- Question
- Task
- Entity
- Completion

Context (optional)

Examples (optional)

# Question-type inputs

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A question input is a question that you ask the model that the model provides an answer to.

Example:

What are the top 10 most travelled destinations in Asia?



ChatGPT

As of my last update in January 2022, the top-10 most traveled destinations in Asia were often fluctuating based on various factors like tourism trends, events, and infrastructure development. However, some destinations consistently ranked high in terms of tourist arrivals:

1. Bangkok, Thailand
2. Tokyo, Japan
3. Singapore
4. Seoul, South Korea
5. Bali, Indonesia
6. Hong Kong
7. Kuala Lumpur, Malaysia
8. Phuket, Thailand
9. Shanghai, China
10. Beijing, China

Keep in mind that these rankings may have shifted slightly since then, so it's a good idea to check more recent sources for the latest data.

# Task inputs

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A task input is a task that you want the model to perform. For example, you can tell the model to give you ideas or suggestions for something.

Example:

Give me a list of steps (numbered) to travel from Paris to Moscow, using only public transport.



ChatGPT

Sure, here's a numbered list of steps to travel from Paris to Moscow using only public transport:

1. **Take a Train or Bus to Brussels:** Begin your journey by taking a train (e.g., Thalys) or bus from Paris to Brussels, Belgium. This journey typically takes around 1.5 to 2.5 hours by train or bus.
2. **Travel from Brussels to Berlin:** From Brussels, take a train to Berlin, Germany. This journey usually takes around 6 to 8 hours by train.
3. **Take a Train from Berlin to Warsaw:** Once in Berlin, board a train to Warsaw, Poland. The train journey from Berlin to Warsaw takes approximately 5 to 6 hours.
4. **Travel from Warsaw to Minsk:** In Warsaw, take a train or bus to Minsk, Belarus. The journey duration varies depending on the mode of transportation but generally takes around 8 to 10 hours by train and longer by bus.
5. **Take a Train from Minsk to Moscow:** Finally, from Minsk, take a train to Moscow, Russia. The train journey from Minsk to Moscow typically takes around 8 to 10 hours.

Keep in mind that travel times may vary based on factors such as schedules, connections, and the availability of direct routes. It's also advisable to check for any visa requirements or travel restrictions for crossing international borders, especially when traveling through multiple countries.



# Entity inputs

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An entity input is what the model acts on, such as classifying or summarising. This type of input can benefit from the inclusion of instructions.

Example:

Classify the following items as [large, small].

Elephant

Mouse

Snail



**ChatGPT**

Sure, here's how I would classify those items:

- Elephant: large
- Mouse: small
- Snail: small





# Completion inputs

A completion input is a text that the model is expected to complete or continue.

Example:

Some simple writing devices to use in fiction would be...



ChatGPT

Certainly! Here are some simple writing devices commonly used in fiction:

1. **Metaphor:** A figure of speech that compares two unlike things by stating that one thing is another. For example, "The world is a stage."
2. **Simile:** Similar to a metaphor but uses "like" or "as" to make a comparison. For example, "Her smile was as bright as the sun."
3. **Foreshadowing:** Hinting at events or outcomes that will occur later in the story, creating anticipation and tension.
4. **Flashback:** A scene that interrupts the chronological order of the story to depict something that happened in the past, providing context or insight into a character or situation.
5. **Suspense:** Building tension and uncertainty to keep readers engaged and eager to know what will happen next.
6. **Irony:** A literary technique that involves a contradiction between expectation and reality, often for humorous or dramatic effect.
7. **Symbolism:** Using objects, characters, or settings to represent abstract ideas or concepts. For example, a dove symbolizing peace.
8. **Dialogue:** Conversation between characters that reveals their personalities, motivations, and relationships.
9. **Imagery:** Vivid descriptions that appeal to the senses, creating a mental picture for the reader.
10. **Characterization:** The process of developing and portraying characters, including their traits, motivations, and conflicts.



# Context: an example

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Marbles:

Color: red

Number: 12

Color: blue

Number: 28

Color: yellow

Number: 15

Color: green

Number: 17

How many green marbles are there?



**ChatGPT**

There are 17 green marbles.



**You**  
red?



**ChatGPT**

There are 12 red marbles.

# Context: transformation

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E.g.,

Transform this data into JSON format.

```
json Copy code  
  
{  
  "marbles": [  
    {  
      "color": "red",  
      "number": 12  
    },  
    {  
      "color": "blue",  
      "number": 28  
    },  
    {  
      "color": "yellow",  
      "number": 15  
    },  
    {  
      "color": "green",  
      "number": 17  
    }  
  ]  
}
```

# Context: transformation

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E.g.,

Convert this to an unordered list in LaTeX.

Here's the JSON representation converted into an unordered list in LaTeX format:

```
\begin{itemize}
\item \textbf{Color:} red, \textbf{Number:} 12
\item \textbf{Color:} blue, \textbf{Number:} 28
\item \textbf{Color:} yellow, \textbf{Number:} 15
\item \textbf{Color:} green, \textbf{Number:} 17
\end{itemize}
```

# Part II: General Considerations

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# Clear definition of the task

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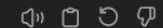
Example:

Give me a paragraph arguing that Large Language Models can help humans discover new, unseen connections.



ChatGPT

Large language models (LLMs), such as GPT-3, possess a remarkable capability to help humans uncover new and unseen connections across various domains. By analyzing vast amounts of diverse text data, these models excel at identifying patterns, relationships, and correlations that might elude even the most astute human minds. Through their ability to generate coherent and contextually relevant text based on input prompts, LLMs can provide fresh perspectives and novel insights that can spark creativity and innovation. Whether it's in scientific research, artistic expression, or problem-solving in business, the sheer computational power and linguistic prowess of LLMs enable them to traverse vast expanses of information and synthesize complex ideas, ultimately leading to the discovery of new connections and the expansion of human knowledge. Moreover, by serving as collaborative tools for human users, LLMs can complement and augment human intelligence, offering a symbiotic relationship that enhances the capacity for discovery and exploration in ways previously unimaginable.



# Applying constraints

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Example:

This paragraph was a bit too long. Give me a 50-word paragraph.



**ChatGPT**

Large language models (LLMs), like GPT-3, enable humans to uncover unseen connections. By analyzing vast text data, LLMs identify patterns and correlations. Their ability to generate relevant text prompts sparks creativity. In research, art, or business, LLMs' computational power augments human intelligence, facilitating new discoveries and insights.

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# Setting rules

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Example:

Expand the above paragraph to a 100-word paragraph. The word "inevitable" must be there. Mark that word with a bold text.



ChatGPT

Large language models (LLMs), such as GPT-3, play a pivotal role in facilitating the discovery of new and unseen connections across diverse domains. Through their unparalleled ability to analyze vast amounts of text data, LLMs excel at identifying intricate patterns, correlations, and relationships that may elude human perception. By generating contextually relevant text prompts, they ignite creativity and inspire innovative thinking. In research, art, and business, LLMs' computational power and linguistic prowess make the uncovering of novel insights almost **inevitable**. Their collaborative nature fosters a symbiotic relationship with human users, augmenting intelligence and expanding the horizon of possibilities.



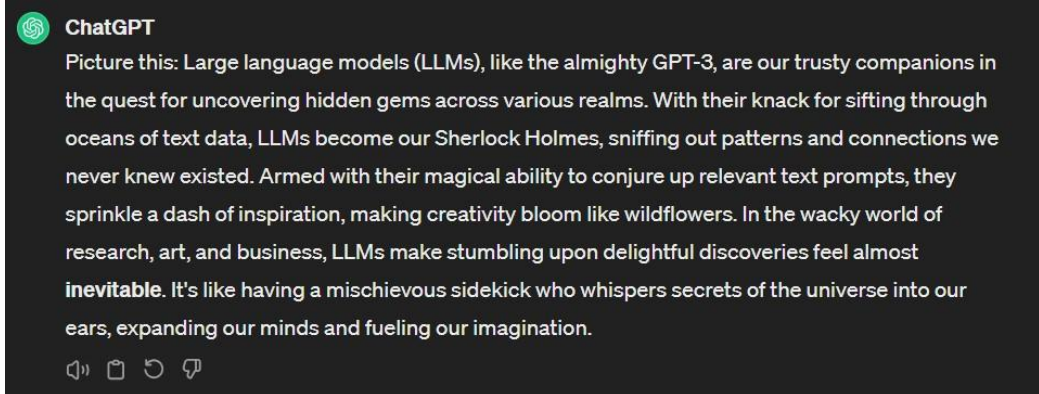


# Setting the tone

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Example:

Rewrite the same paragraph in a playful tone.

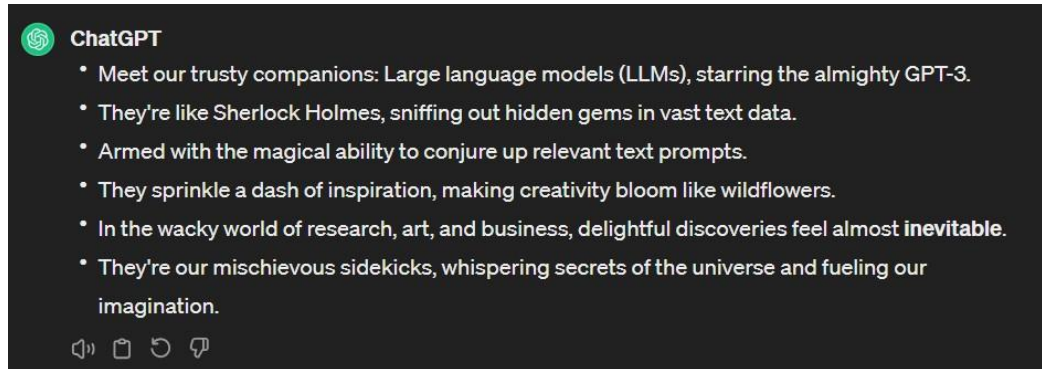


# Define the format

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Example:

Transform the same to a bullet list. Preserve the tone.



# Few-shot, one-shot, and zero-shot

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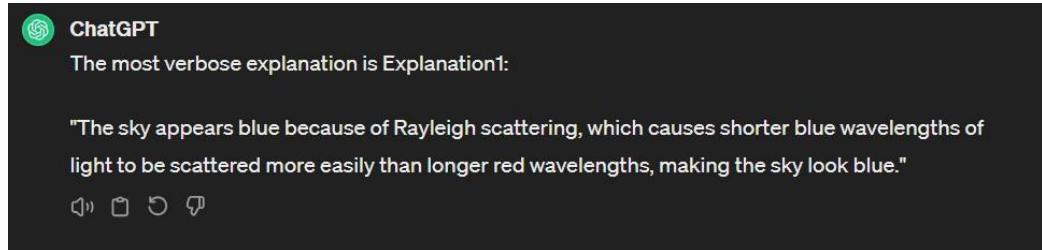
Example:

Please choose the most verbose explanation from these two:

Question: Why is sky blue?

Explanation 1: The sky appears blue because of Rayleigh scattering, which causes shorter blue wavelengths of light to be scattered more easily than longer red wavelengths, making the sky look blue.

Explanation 2: Due to the Rayleigh scattering effect.



# Context, context, context...

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Example:

Consider the following exchange:

Ella: Being a woman is not cosplay.

Betty: That's transphobic!

Context: Ella is a natural-born female, hardcore Christian, and politically conservative, whereas Betty is an atheist trans-woman.

Is Betty's exclamation justified?



**ChatGPT**

In the given context, Betty's exclamation of "That's transphobic!" seems unjustified. Ella's statement, "Being a woman is not cosplay," does not inherently involve or target transgender individuals. Rather, it addresses the authenticity and significance of the experience of being a woman. While Betty may have personal reasons for feeling sensitive about discussions related to gender identity, it's important to differentiate between critique of gender expression and discrimination against transgender individuals. Without further context or evidence of malice or intent to marginalize transgender people, labeling Ella's statement as transphobic appears to be an overreaction.



**You**

But what if Ella has a history of mocking Betty's photos on social media?



**ChatGPT**

If Ella has a history of mocking Betty's photos on social media, it could change the context of the exchange. In this case, Betty may perceive Ella's statement, "Being a woman is not cosplay," as a continuation of that mockery, suggesting that Betty's gender identity is merely a costume or performance. Given this context, Betty's reaction might be more understandable, as she may feel targeted and invalidated by Ella's words. However, even in this scenario, it would be important to consider the specific language and intent behind Ella's statement. If Ella's comment was not explicitly targeting Betty's gender identity but rather expressing a broader viewpoint, then Betty's accusation of transphobia might still be seen as an overreaction. Context and intent are crucial factors in understanding and interpreting interpersonal interactions.

# Enforce selection (1)

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Example:

What should I do to fix my disconnected wifi?  
The light on my Wifi router is yellow and blinking slowly.



ChatGPT

A yellow light blinking slowly on your WiFi router typically indicates that there's an issue with the connection or configuration. Here are some steps you can take to troubleshoot and fix the problem:

1. **Restart Your Router:** Sometimes, simply restarting your router can resolve temporary connectivity issues. Unplug the power cable from your router, wait for about 30 seconds, and then plug it back in. Allow the router to reboot fully and check if the light turns solid green.
2. **Check Internet Service Provider (ISP) Status:** Visit your ISP's website or contact their customer support to see if there are any reported outages or maintenance in your area. Sometimes, network issues are beyond your control and require intervention from your ISP.
3. **Check Physical Connections:** Ensure that all cables connected to your router are securely plugged in. Verify that the cable connecting your router to the modem (if applicable) is firmly connected at both ends.
4. **Check Modem Connection:** If you have a separate modem, ensure that it's powered on and functioning properly. Try restarting both your modem and router to establish a fresh connection.
5. **Check WiFi Settings:** Access your router's administration interface through a web browser and review the WiFi settings. Ensure that the SSID (network name) and password are correctly configured. You may also want to check if your WiFi channel is congested and consider changing it to a less crowded one.

# Enforce selection (2)

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**S You**

Answer the question using the text below. Respond with only the text provided.

Question: What should I do to fix my disconnected wifi? The light on my Google Wifi router is yellow and blinking slowly.

Text:

Color: Slowly pulsing yellow

What it means: There is a network error.

What to do:

Check that the Ethernet cable is connected to both your router and your modem and both devices are turned on. You might need to unplug and plug in each device again.

Color: Fast blinking yellow

What it means: You are holding down the reset button and are factory resetting this device.

What to do:

If you keep holding down the reset button, after about 12 seconds, the light will turn solid yellow. Once it is solid yellow, let go of the factory reset button.

Color: Solid yellow

What it means: Router is factory resetting.

What to do:

This can take up to 10 minutes. When it's done, the device will reset itself and start pulsing white, letting you know it's ready for setup.

Color: Solid red

What it means: Something is wrong.

What to do:

Critical failure. Factory reset the router. If the light stays red, contact Wifi customer support.



**ChatGPT**

Check that the Ethernet cable is connected to both your router and your modem and both devices are turned on. You might need to unplug and plug in each device again.

# Enforce selection (3)

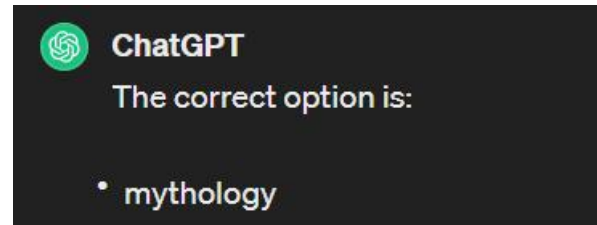
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Example:

Multiple choice problem: Which of the following options describes the book The Odyssey?

Options:

- thriller
- sci-fi
- mythology
- biography





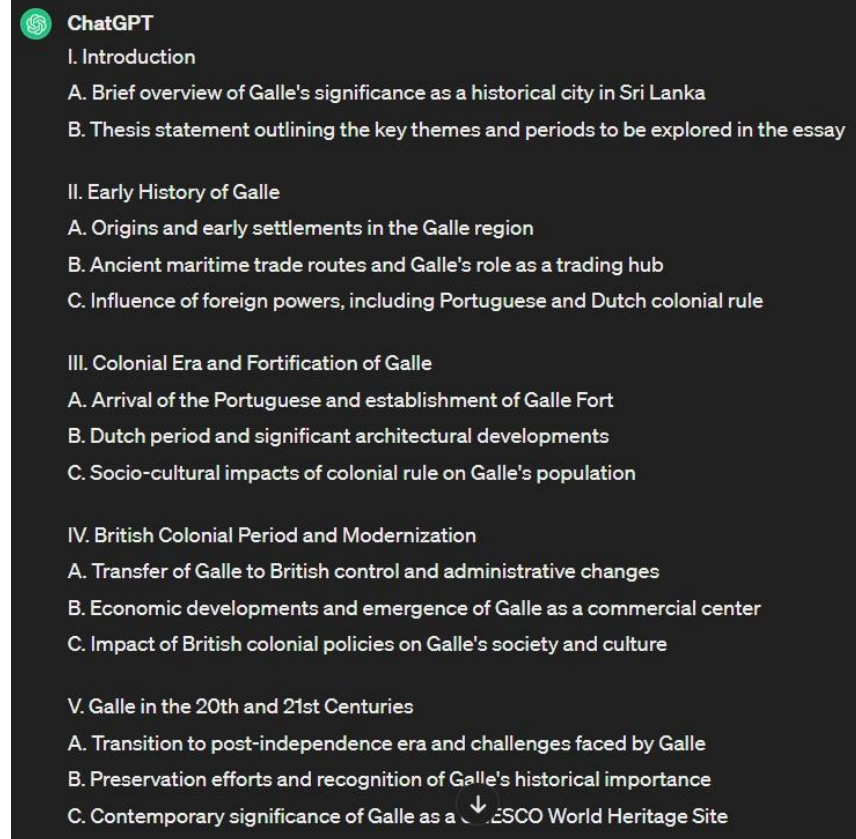
# Prompt not just the content, but the format as well (1)

Example:

Create an outline for an essay about the history of Galle, Sri Lanka.

I. Introduction

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The screenshot shows a ChatGPT interface with a dark background. The text is white and organized into a hierarchical outline format. The outline starts with a main title 'Galle, Sri Lanka: A Historical Overview' and is divided into five main sections (I to V). Each section has sub-points (A, B, C) that provide a detailed structure for the essay. The sub-points cover the city's significance, early history, colonial era, British colonial period, and its modern status as a UNESCO World Heritage Site.

**ChatGPT**

- I. Introduction
  - A. Brief overview of Galle's significance as a historical city in Sri Lanka
  - B. Thesis statement outlining the key themes and periods to be explored in the essay
- II. Early History of Galle
  - A. Origins and early settlements in the Galle region
  - B. Ancient maritime trade routes and Galle's role as a trading hub
  - C. Influence of foreign powers, including Portuguese and Dutch colonial rule
- III. Colonial Era and Fortification of Galle
  - A. Arrival of the Portuguese and establishment of Galle Fort
  - B. Dutch period and significant architectural developments
  - C. Socio-cultural impacts of colonial rule on Galle's population
- IV. British Colonial Period and Modernization
  - A. Transfer of Galle to British control and administrative changes
  - B. Economic developments and emergence of Galle as a commercial center
  - C. Impact of British colonial policies on Galle's society and culture
- V. Galle in the 20th and 21st Centuries
  - A. Transition to post-independence era and challenges faced by Galle
  - B. Preservation efforts and recognition of Galle's historical importance
  - C. Contemporary significance of Galle as a UNESCO World Heritage Site



# Prompt not just the content, but the format as well (2)

Example:

At a particular food joint, an order can contain between 0-5 of the following: Ulundu Vadai, Masala Vadai, Alu Bonda, and Chai.

A customer orders 2 Masala Vadai + a Chai.

Display the order in JSON format. Display zero-volume items as well. Display as a copiable code block.

```
json Copy code
{
  "order": {
    "items": [
      {
        "item": "Ulundu Vadai",
        "quantity": 0
      },
      {
        "item": "Masala Vadai",
        "quantity": 2
      },
      {
        "item": "Alu Bonda",
        "quantity": 0
      },
      {
        "item": "Chai",
        "quantity": 1
      }
    ]
  }
}
```