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Mastering Prompt Engineering: The Fusion of Art and Science

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Mastering Prompt Engineering

Fusion of Art and Science



Aroh Shukla

Regional Microsoft Cloud Architect

MVP Alumni, MCT



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Aroh Shukla

MVP Alumni, MCT

Global Speaker

- Passionate to **learn**.
- Passionate to **share knowledge**.
- Passionate to work on **Microsoft Technologies**



Aroh.Shukla@gmail.com



/arohshukla



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AGENDA SLIDE

Part 1



01

Introduction

What Exactly is Prompt Engineering?..



02

OpenAI Playground

A step-by-step guide on using the OpenAI Playground for prompt testing and development.



03

5 Principles Prompt Engg

Key principles to follow for effective prompt creation



04

AI Work

An overview of the mechanisms and processes that drive AI technologies.



05

Demos

Practical demonstrations showcasing prompt engineering in action.



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Why AI Basics is KEY?

Its impossible
to keep with AI



Don't event TRY
😊



Focus is BASICS

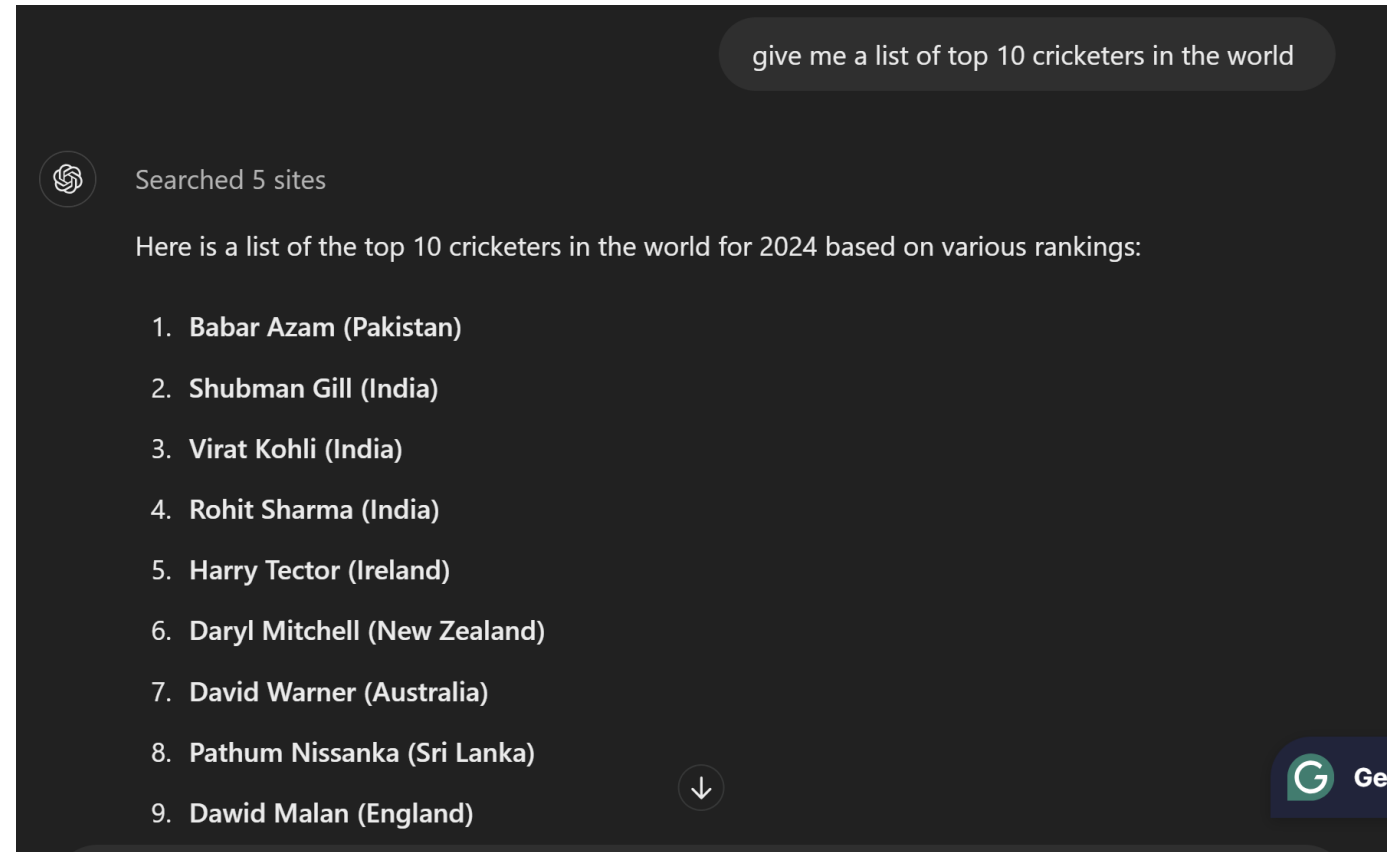


Principles never
change, AI
Updates DOES



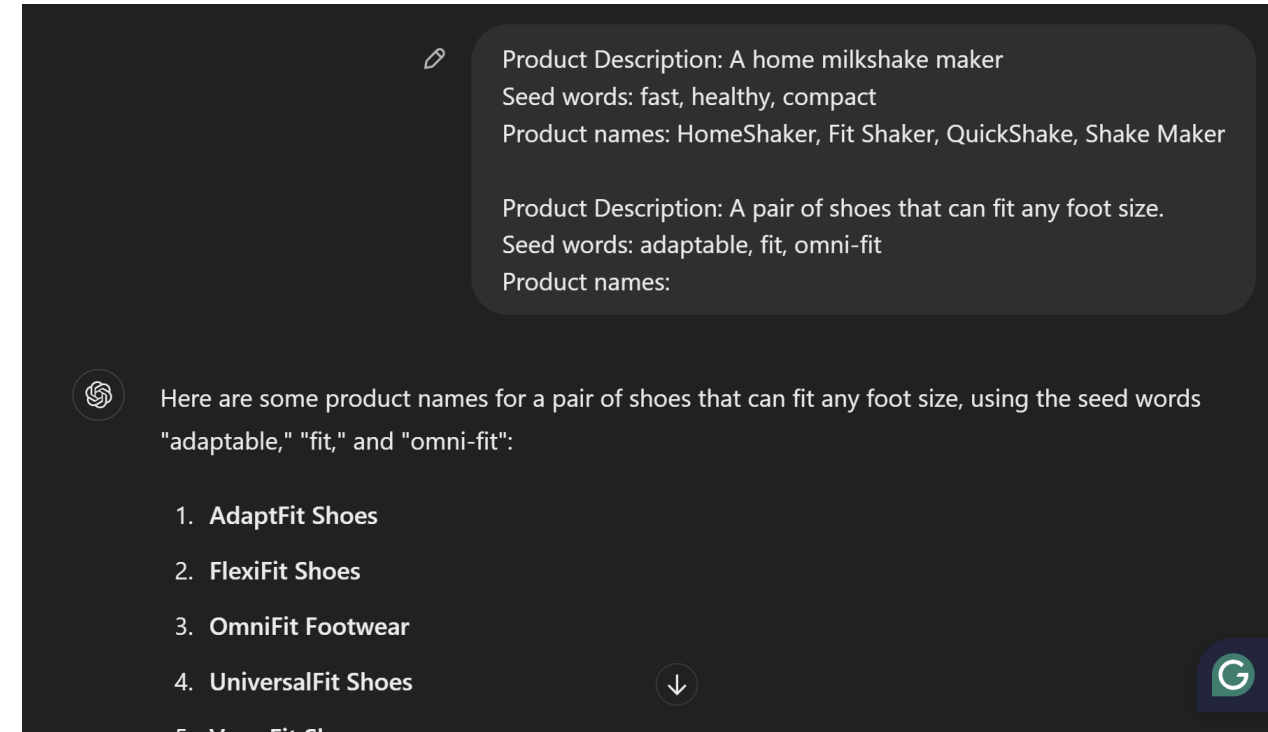
What is a prompt?

- Text you input to AI models when interfacing with them.
- Naïve prompt / base line prompt
- One time task
- Unreliable
- Prompt should be reliable



What is a prompt engineering?

- process of discovering prompts which reliably yield useful or desired results.
- This sample is little more engineered compared to naïve prompt in last example
- Consistent format
- A template can be used.



Pace of AI Innovation



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Technology



ChatGPT sets record for fastest-growing user base - analyst note

Time to reach 100M users



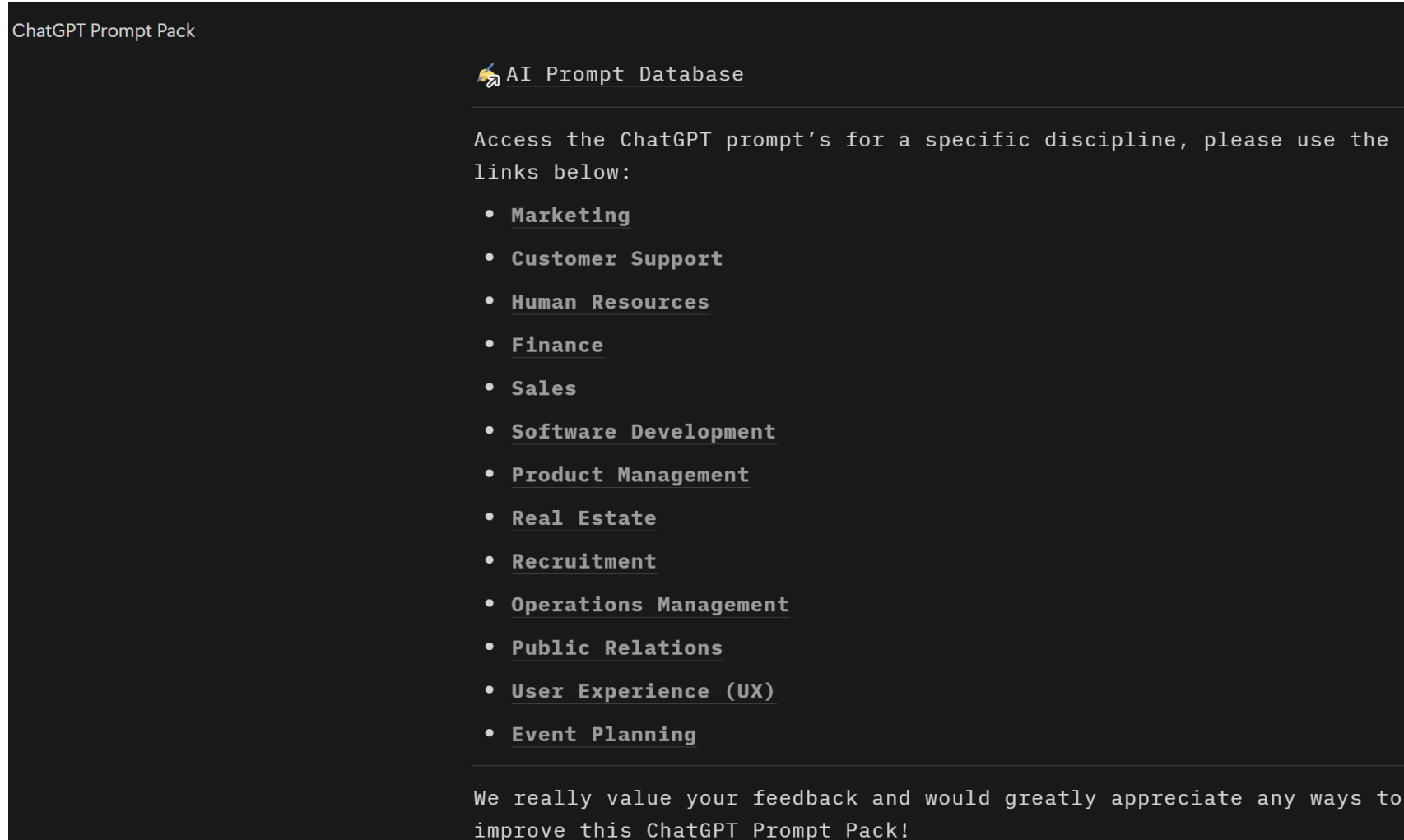
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Prompt Engineering Interest



ChatGPT AI Prompt Pack – 690 Effective Prompts

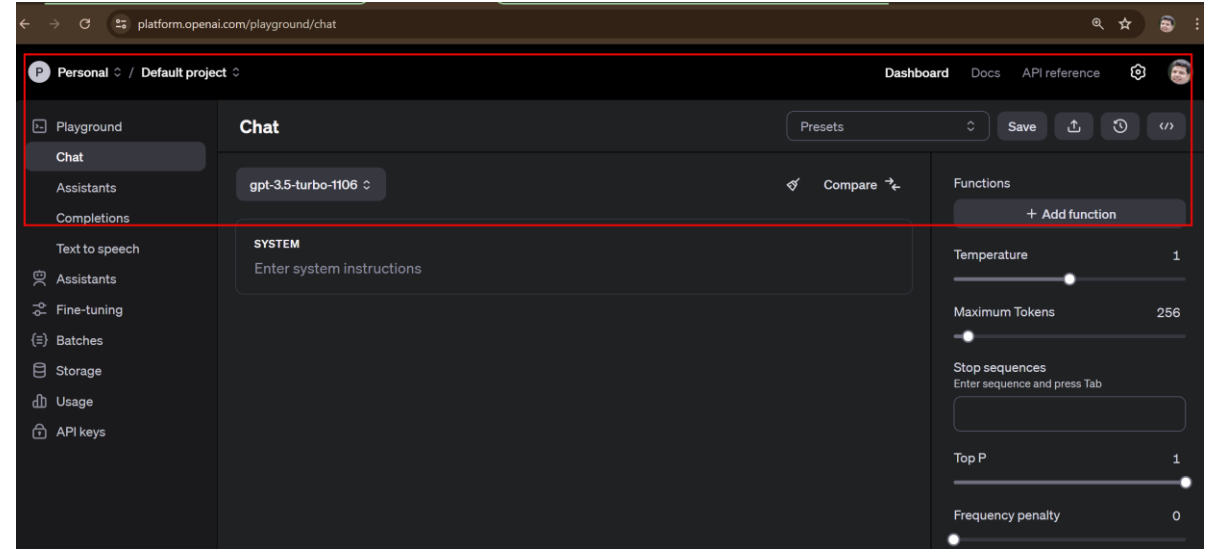


DEMO 1: ChatGPT AI Prompt Pack



Using Prompt Template

- Standardize your work
- Normal ChatGPT is personal
- Azure Playground – Template
- ChatGPT Playground – Template

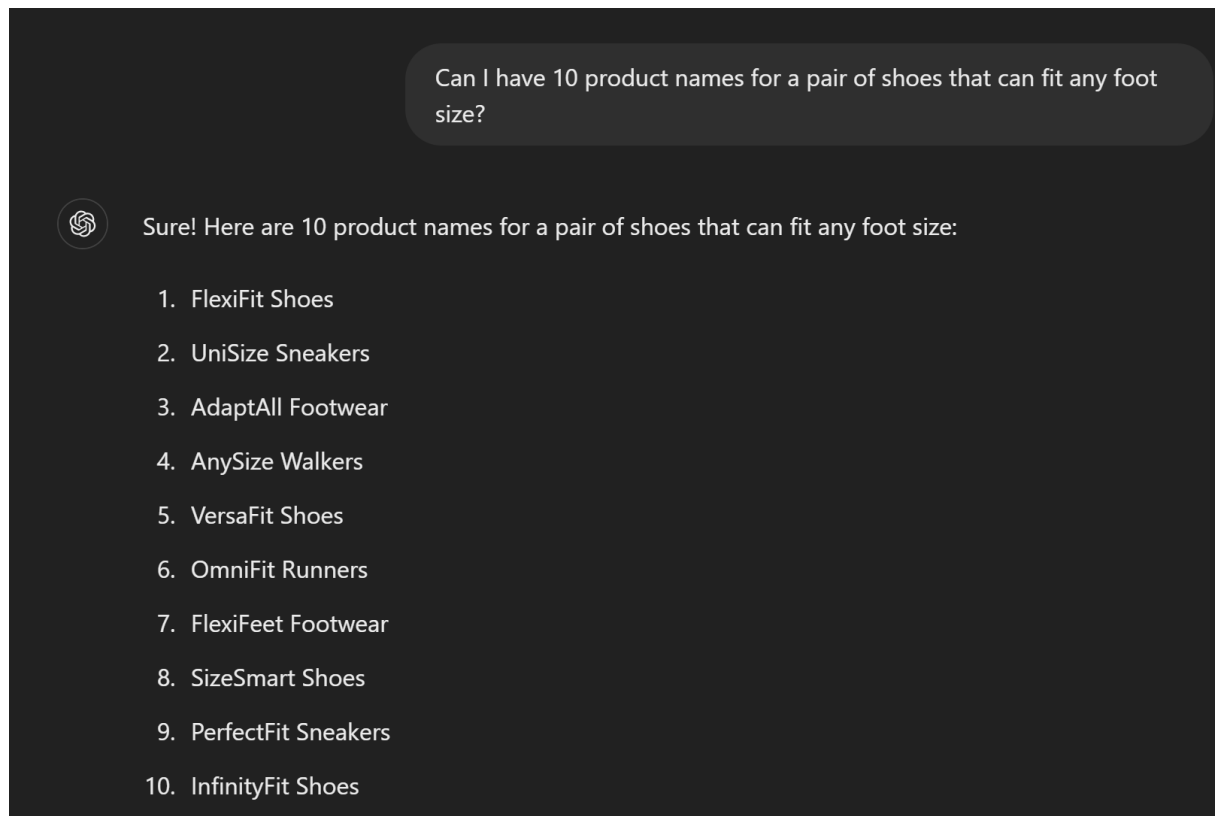


DEMO 2: ChatGPT Prompt Template



1st Principle – Giving Direction

- Describe the desired style in detail, or reference a relevant persona.
- Navie /Basic Prompt : Generating a list of ideas for product names



1st Principle – Prompt Engineering

- Prompt template gives reliably yields useful or desired results when generating a list of ideas for product names.

- **Prompt Template:**

*Brainstorm a list of product names for a {product_description}, **in the style of {famous inventor}**.*

Return the results as a comma separated list, in this format: Product description: A shoe that fits any foot size

Product names: [list of 3 product names]

- *##Examples*

{product_examples}

Please rate the product names based on their catchiness, uniqueness, and simplicity. Rate them on a scale from 1-5, with 5 being the highest score. Respond only with a table containing the results.

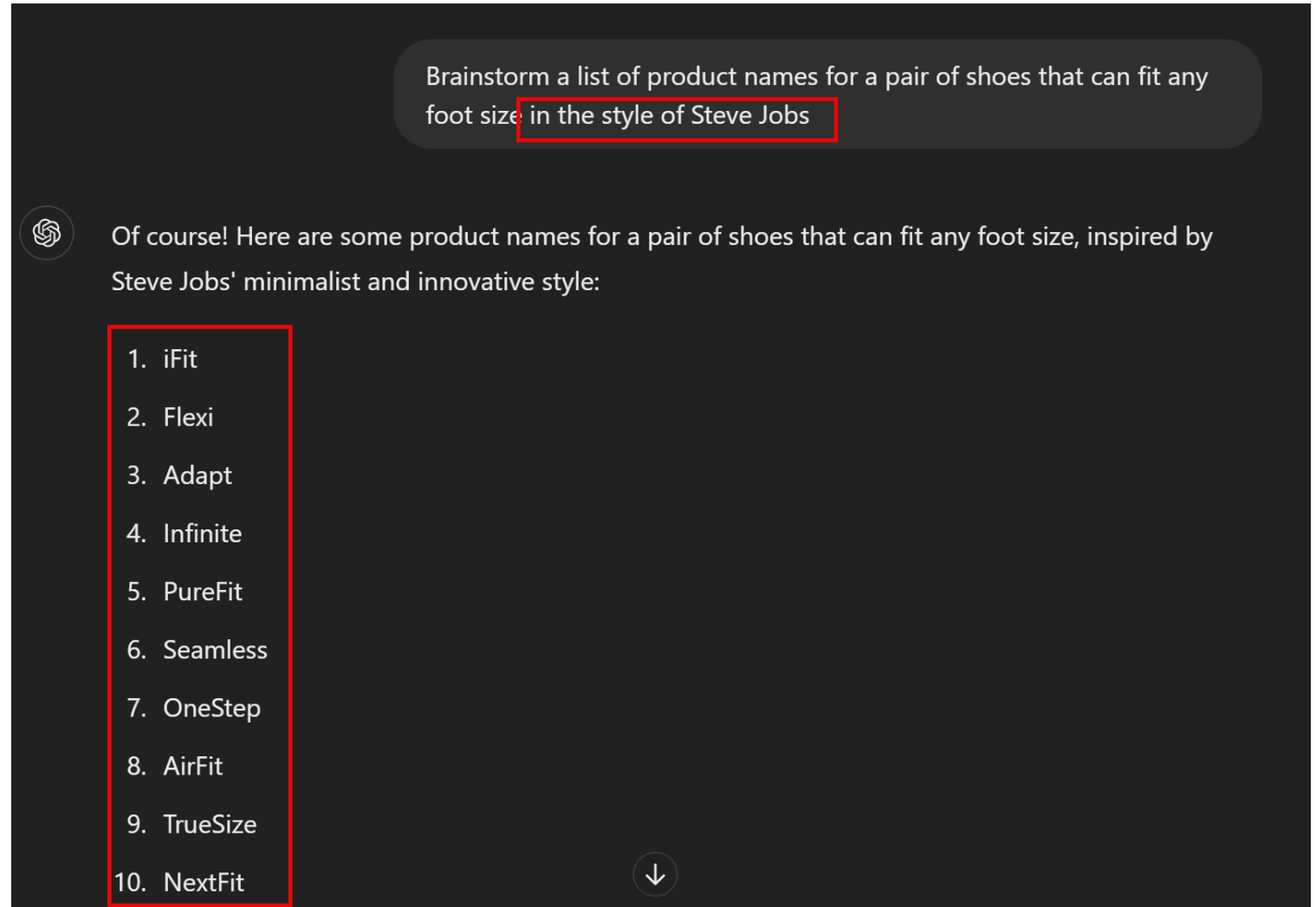


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1st Principle – Example

- Describe the desired style in detail, or reference a relevant persona.
- Identify what others are doing to decide what to copy and **where to innovate**.



1st Principle – Impact of results

Variable	Results
Elon Musk	ShoeX, MarsFit, The Shoe Company
Walt Disney	Enchanted Slippers, Magic Step, Whimsoles
Marc Jacobs	Morph by Marc, The Marc Jacobs Flexible Shoe, FlexForm Oxfords

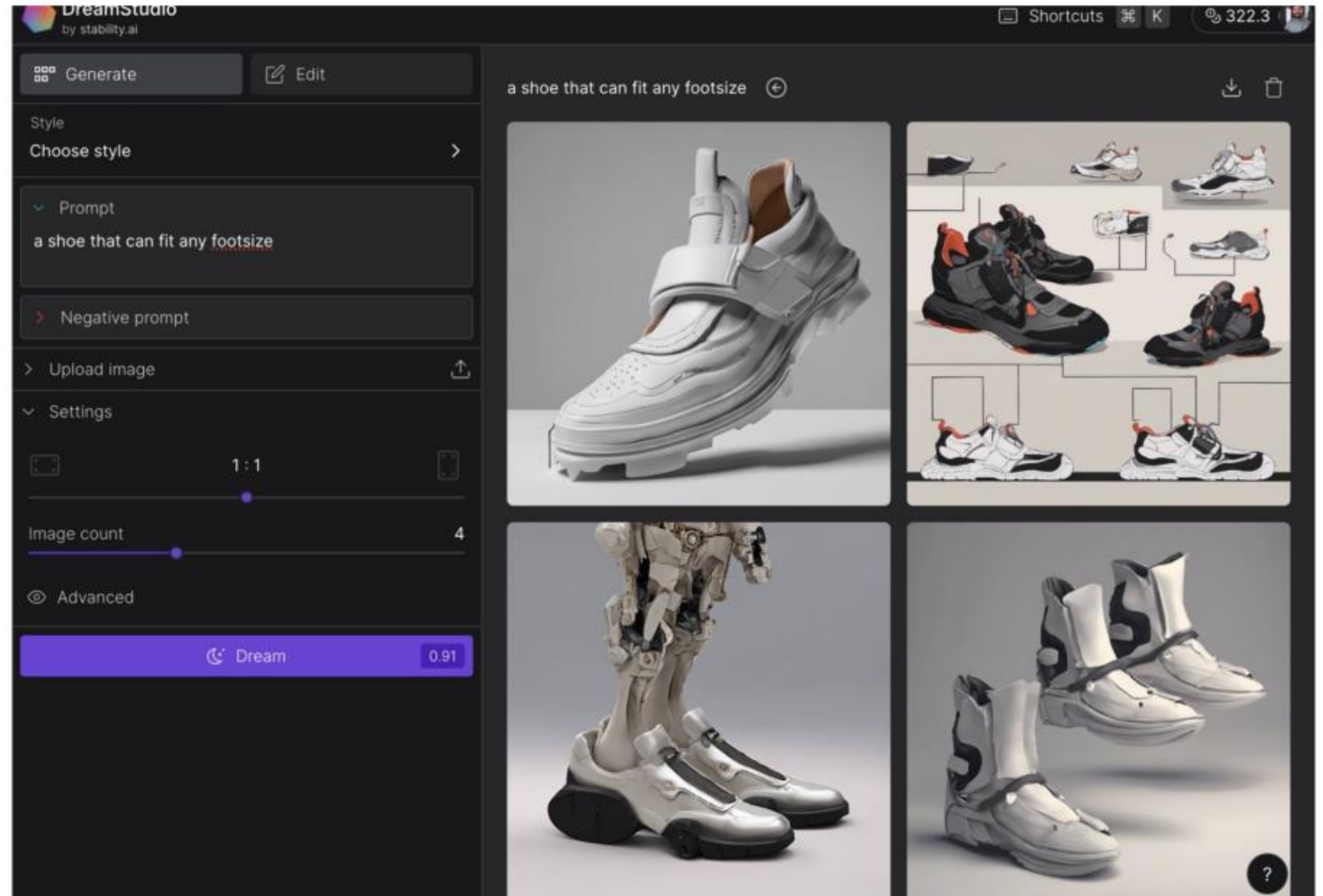


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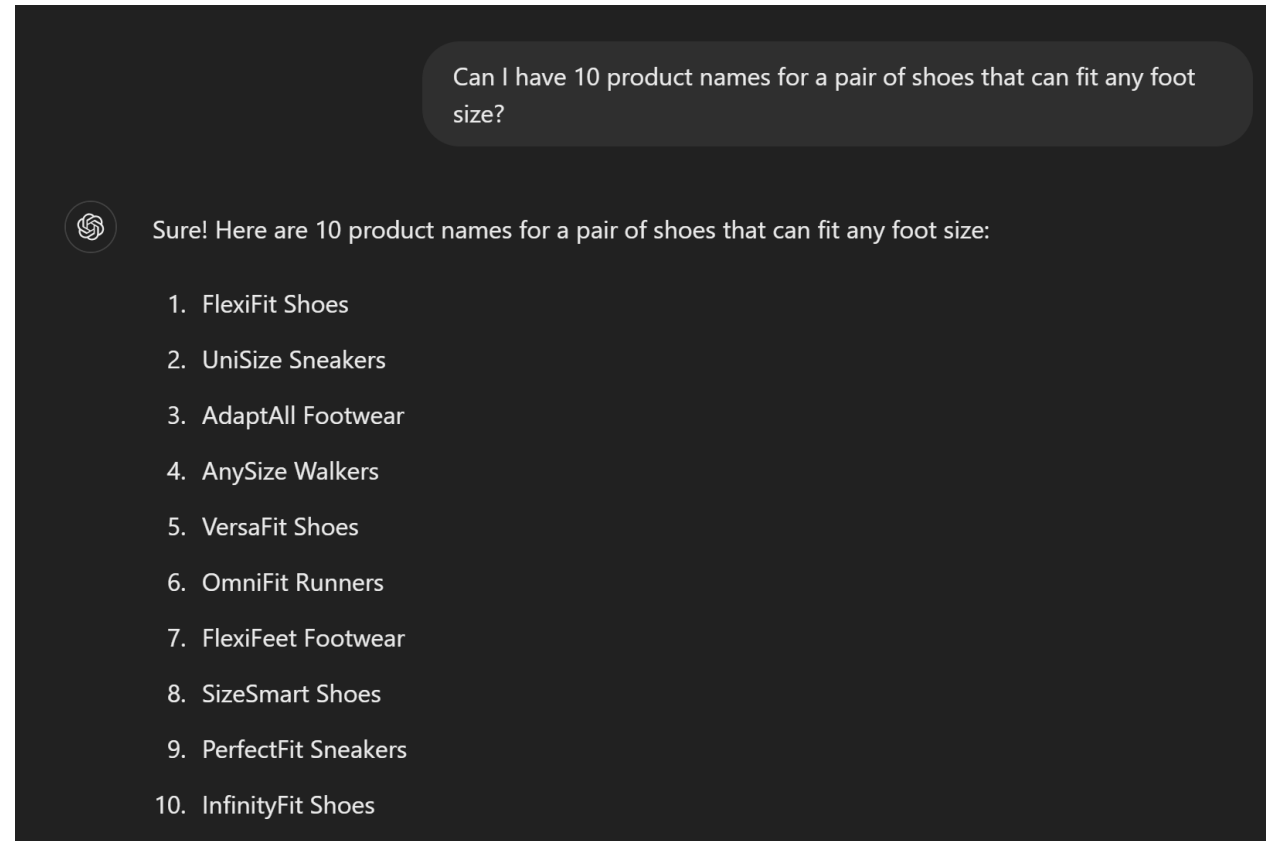
1st Principle – Image model

- This is a simple prompt we can use with **Stable Diffusion (Open Source)** when generating an image of a product idea.



2nd Principle – Specify Format

- Define what rules to follow, and the required structure of the response
- Navie /Basic Prompt :
Generating a list of ideas for product names



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2nd Principle – Prompt Engineering

- Prompt template gives reliably yields useful or desired results when generating a list of ideas for product names **at scale**

- **Prompt Template:**

Brainstorm a list of product names for a {product_description}, in the style of {famous_inventor}.

*Return the results as a **comma separated list, in this format:***

Product description: A shoe that fits any foot size

Product names: [list of 3 product names]

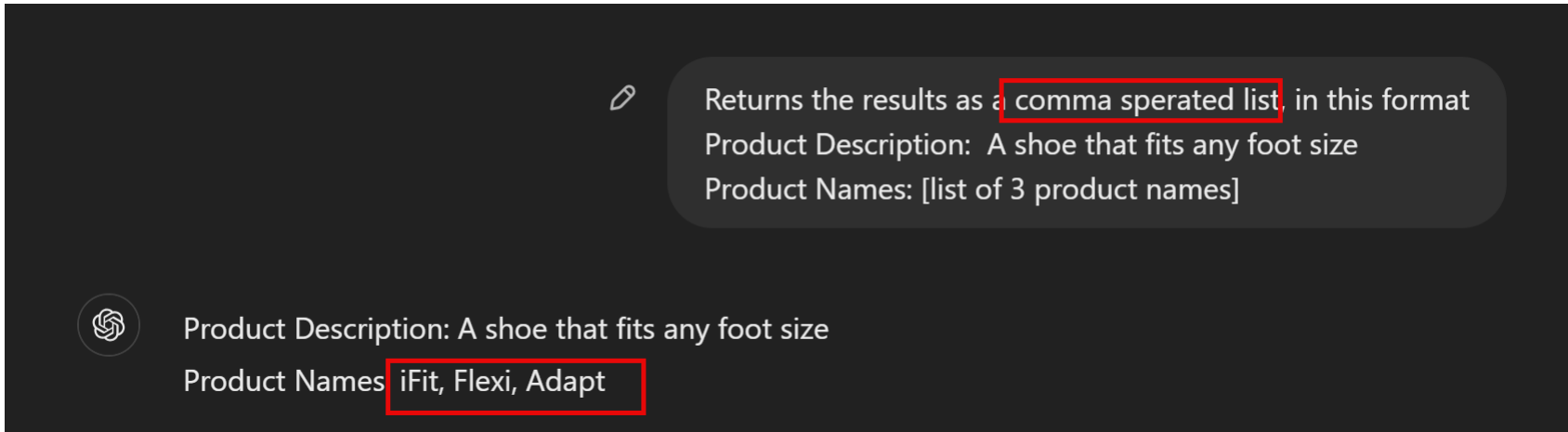
- *##Examples
{product_examples}*
- *Please rate the product names based on their catchiness, uniqueness, and simplicity. Rate them on a scale from 1-5, with 5 being the highest score. Respond only with a table containing the results.*



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2nd Principle – Example



- Define what rules to follow, and the **required structure of the response**.
- The response to a prompt may serve as the input to another task, **so consistency is key**



2nd Principle – Impact of results

Variable	Responses
Numbered List	Product names: 1. iFitShoe 2. iAdapt 3. iUniversalStep
JSON	<code>{"product_names": ["iFitShoe", "iAdapt", "iUniversalStep"]}</code>
YAML	<pre>product_names: - iFitShoe - iAdapt - iUniversalStep</pre>

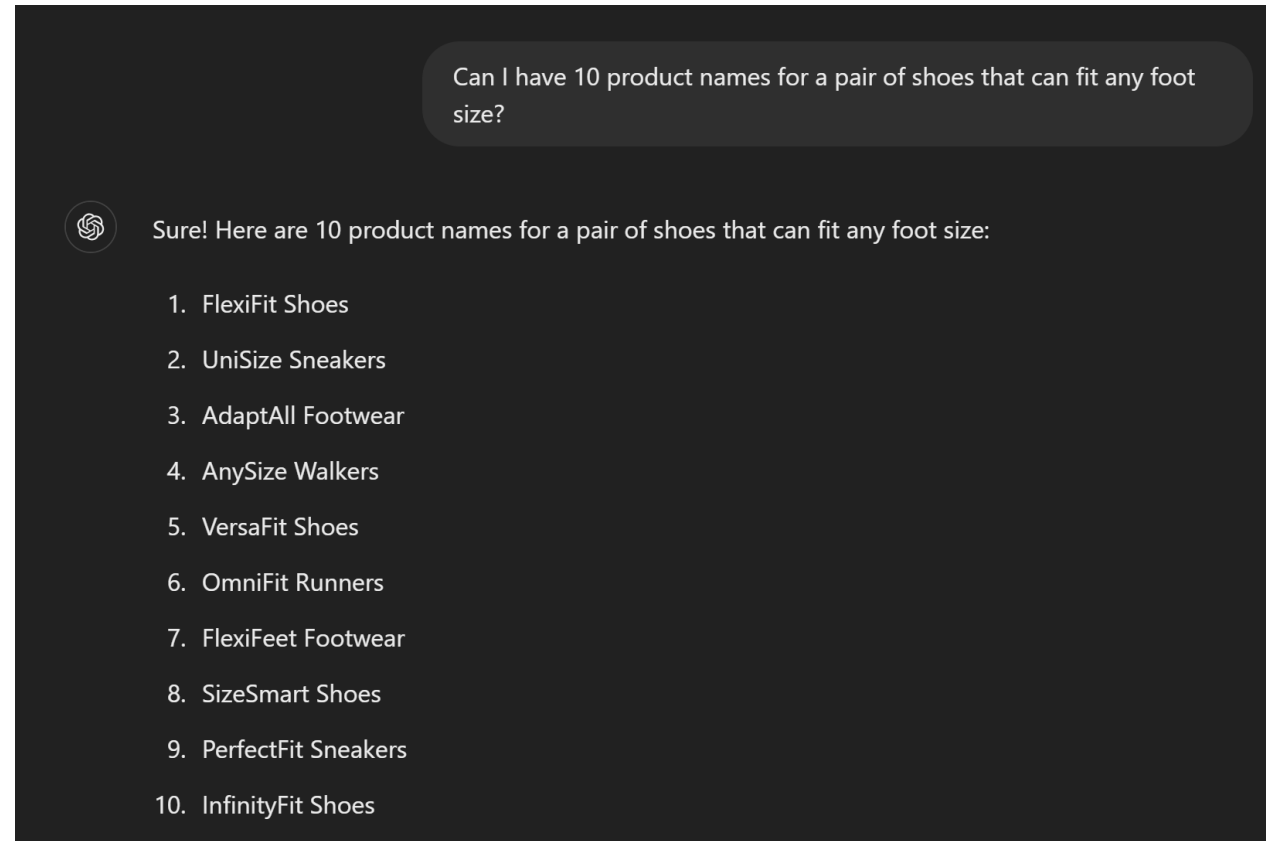


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3rd Principle – Provide example

- Insert a diverse set of test cases where the task was done correctly
- Navie /Basic Prompt :
Generating a list of ideas for product names



3rd Principle – Prompt Engineering

- Prompt template gives reliably yields useful or desired results when generating a list of ideas for product names **at scale**

- **Prompt Template:**

Brainstorm a list of product names for a {product_description}, in the style of {famous_inventor}.

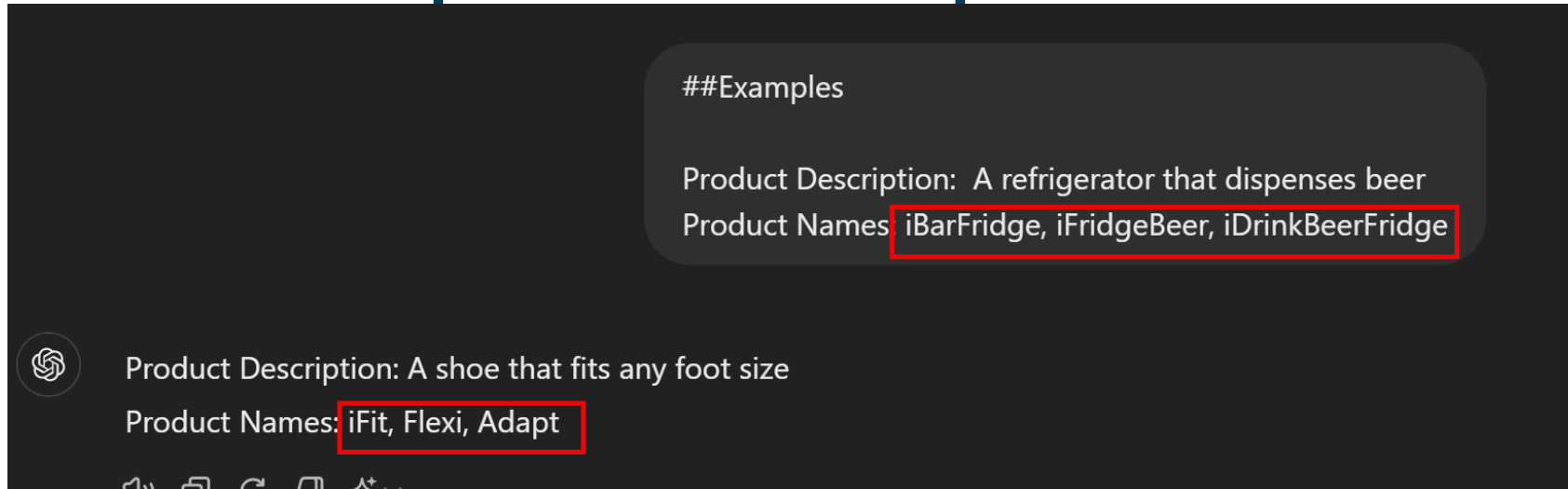
- *Return the results as a comma separated list, in this format:
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- **##Examples**
{product_examples}
- *Please rate the product names based on their catchiness, uniqueness, and simplicity. Rate them on a scale from 1-5, with 5 being the highest score. Respond only with a table containing the results.*



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3rd Principle – Example



- Insert a diverse set of test cases where the task was done correctly.
- Adding **examples improves reliability**, but too many examples can **constrain creativity**.



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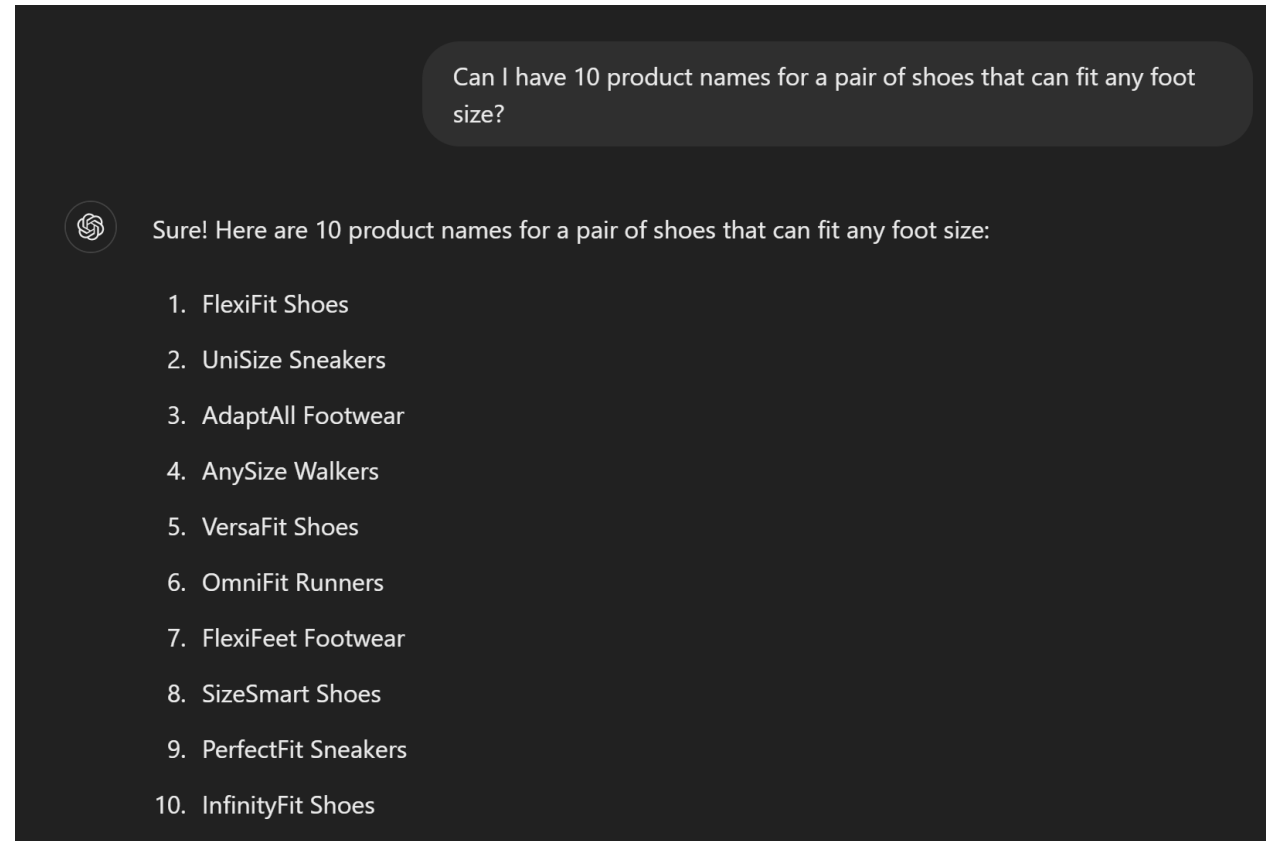
3rd Principle – Impact on results

Variable	Responses
Apple __	Apple UniFit, Apple FlexWalk, Apple OmniFit
__ Mini	iFit Mini, OmniSneak Mini, Flexform Mini
Air __	AirSnug, AirFit, AirSoleFlex



4th Principle – Evaluate Quality

- Identify **errors and rate responses**, testing what drives performance (better performance,)
- Navie /Basic Prompt :
Generating a list of ideas for product names



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4th Principle – Prompt Engineering

- Prompt template gives reliably yields useful or desired results when generating a list of ideas for product names **at scale**

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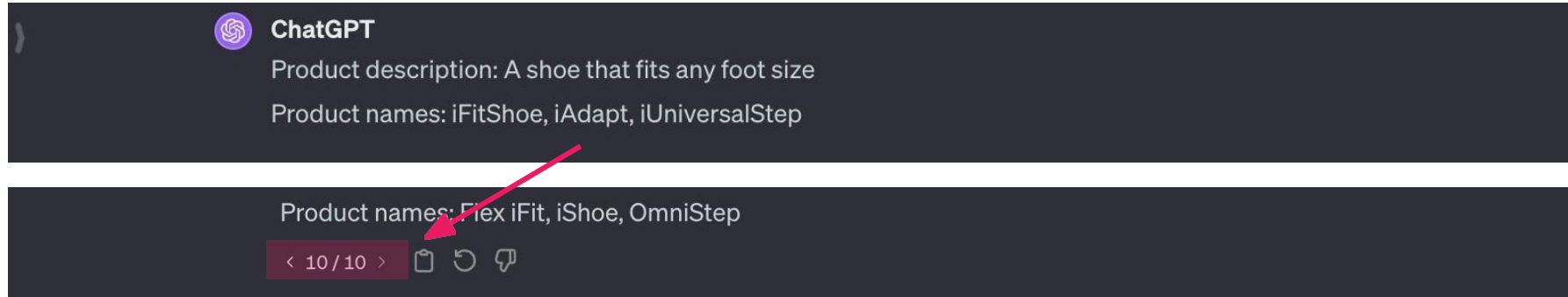
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- *Please rate the product names based on their catchiness, uniqueness, and simplicity. Rate them on a scale from 1-5, with 5 being the highest score. Respond only with a table containing the results.*



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4th Principle – Example



- Identify errors and rate responses, testing what drives performance.
- Try different combinations systematically to identify where it **fails and succeeds**.



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4th Principle – Impact on results

Variable	Responses
Quality	Flex iFit, iShoe, OmniStep
Length	iShoe, Adapt-a-Step iSneakers , iFlex
Format	<p>Product Description: A Pair of Shoes that Can Fit Any Foot Size</p> <p>Innovative and revolutionary, these shoes are designed to adapt to any foot size, no matter how large or small...</p>

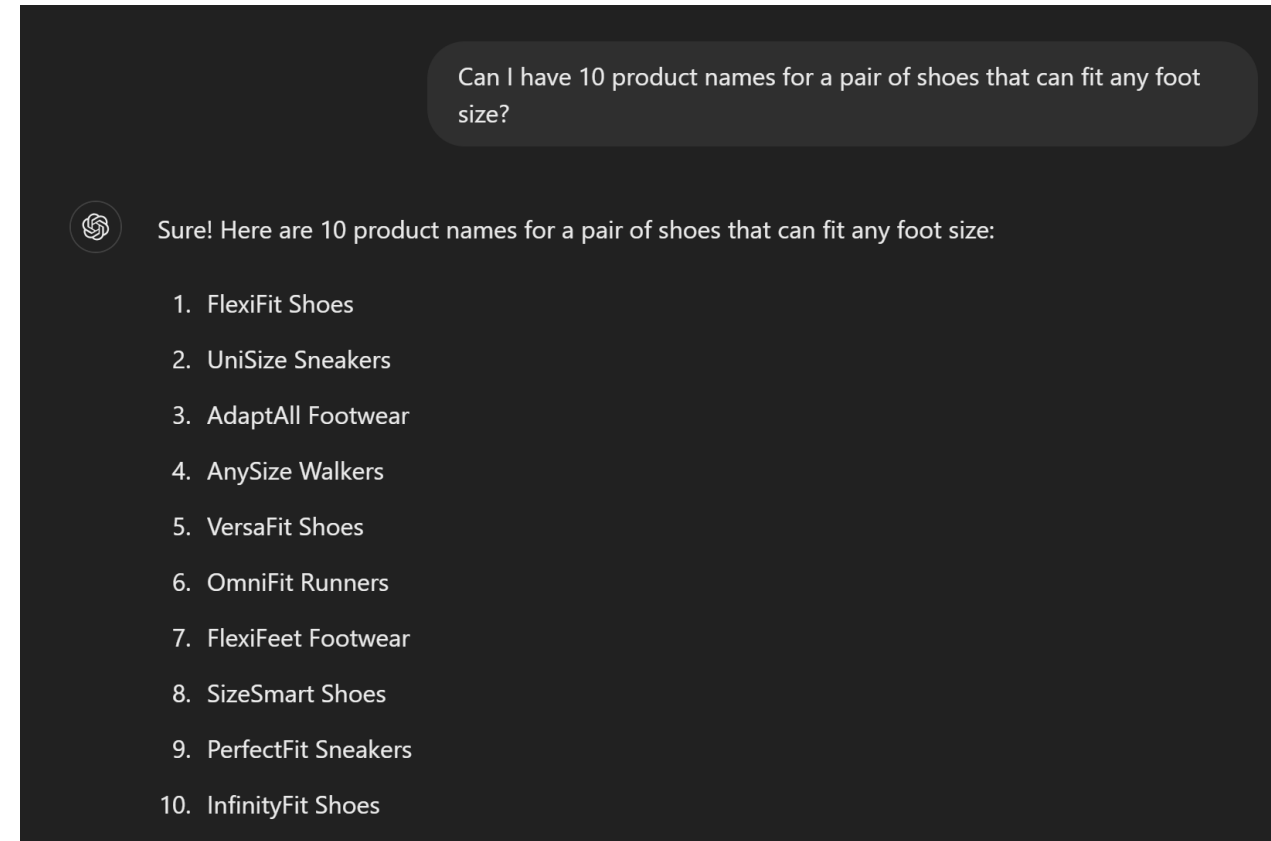


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5th Principle – Divide Labor

- **Split tasks** into multiple steps, **chained together** for complex goals
- Navie /Basic Prompt :
Generating a list of ideas for product names



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5th Principle – Prompt Engineering

- Prompt template gives reliably yields useful or desired results when generating a list of ideas for product names **at scale**
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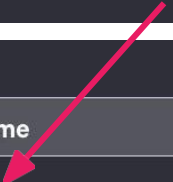
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5th Principle – Example

Product names: iFitShoe, iAdapt, iUniversalStep

 ChatGPT

Product Name	Catchiness	Uniqueness	Simplicity
iFitShoe	4	3	4
iAdapt	3	4	3




- Split tasks into multiple steps, chained together for complex goals.
- The response from **one prompt** can serve as the input **for another AI or human task**.



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5th Principle – Impact on results

Variable	Responses
Retrieval	List of Related Products: Nike ID, Zeba Stretchable Shoes, Reebok Adjustable Shoes, Dr. Comfort Orthopedic Shoes, Superfeet Shoe Inserts, Vibram FiveFingers Barefoot Shoes.
Function Calls	iFitShoe.com is available on GoDaddy!
Image Generation	




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ChatGPT vs Copilot


ChatGPT 4o

Can I have a list of product names for a pair of shoes that fit any shoe size?


 Sure! Here are some product name ideas for a pair of shoes that fit any shoe size:

1. FlexiFit Shoes
2. AllSize Comfort
3. Universal Sole
4. OmniFit Footwear
5. SizeFree Sneakers
6. Adaptable Step Shoes
7. VersaFit Kicks
8. AnyFit Runners
9. FitAll Footgear
10. OneSize Stompers
11. FlexStep Shoes
12. EZFit Walkers

 COPILOT  NOTEBOOK Try the app Aroh  


 **You**

Can I have a list of product names for a pair of shoes that fit any shoe size?

 **Copilot**

Certainly! While there isn't a specific pair of shoes that universally fits all shoe sizes, I can provide some resources to help you find the right fit across various brands:

1. **Sizely Shoe Size Recommender:** This tool covers over 400+ brands, including popular ones like Adidas, Nike, and Converse. It estimates the ideal fit based on material, brand, shoe type, and design. You can convert your current size to different international metrics (US, UK, EU) for specific brands ¹.
2. **The List:** Explore shoe stores and brands that cater to smaller feet or run narrow. While not a universal fit, these options may offer better sizing for specific needs ².
3. **Sizerunner:** Another online tool that covers popular brands like Nike, Adidas, and Puma. It helps you find your right shoe size based on the brand's specific size charts ³.

Remember that individual preferences and foot shapes vary, so trying shoes in person or checking brand-specific sizing guides is essential. Happy shoe hunting! 



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DEMO 3: Apply 5 Principles

Prompt Engineering Worksheet



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Demo 3:

- Apply 5 Principles Prompt Engineering Worksheet



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Tokens

- One of the important parts in **ChatGPT is token**
- Crucial for understanding the way ChatGPT works



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Tokens

- ChatGPT works **with text**
- Needs a way to **represent the text**
- Uses special encoding method
- Text is encoded into Tokens



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Tokens

Numeric representation of text

A single word can be encoded to multiple tokens

ChatGPT has a 4096 token limit
(prompt+response)

Used as a billing unit



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DEMO 5: Tokenizer



References

1. Udemy Course

<https://www.udemy.com/course/prompt-engineering-for-ai/?couponCode=KEEPLEARNING>

By Mark Taylor and James Phoenix

2. Google AI Essentials

<https://www.coursera.org/learn/google-ai-essentials?>

By Google



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Thank You!



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