

## **Assignment 06: Assignment and practice of Prompt Engineering to craft effective prompts.**

### **Theory:**

#### **1.1 What is Prompt Engineering?**

Prompt engineering is the art and science of designing inputs (prompts) to get desired outputs from AI models. It involves using precise, structured, and contextually relevant instructions to achieve accurate, creative, or useful AI responses.

#### **1.2 Why is it Important?**

- Enhances productivity by effectively leveraging AI tools**

Using AI tools efficiently allows individuals and organizations to accomplish tasks faster and with less effort. Whether it's generating content, analyzing data, or automating routine work, knowing how to prompt and interact with AI correctly unlocks its full potential. This means more work can be done in less time, freeing up human creativity and problem-solving for higher-level challenges.

- Reduces misunderstandings and hallucinations generated by AI models**

AI models, especially language models, can sometimes produce incorrect or misleading information—known as hallucinations. By mastering prompt engineering and understanding the model's strengths and limitations, users can minimize these errors. This reduces the risk of spreading false information and increases the reliability of AI-generated outputs.

- Improves the quality of generated images, videos, and text**

AI systems generate content based on input prompts. Clear, precise, and well-structured prompts lead to more accurate, relevant, and high-quality results. This is crucial when creating visual media or textual content for professional or creative projects, where quality directly impacts user experience and effectiveness.

- Serves as a key skill in modern AI workflows, driving the benefits listed above**

As AI becomes more integrated into everyday tools and industries, the ability to communicate effectively with AI systems is a critical skill. It empowers users to harness AI's capabilities confidently and responsibly, enhancing outcomes across diverse fields such as marketing, design, research, and software development.

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### 1.3 Types of Prompts

#### Instructional Prompts

These are direct commands or requests to the AI to perform a specific task.

*Example:* "Summarize this article."

These prompts work well for getting concise, task-focused outputs.

#### Conversational Prompts

These mimic natural dialogue and are used when you want the AI to explain, discuss, or answer questions in a more interactive way.

*Example:* "Can you explain how solar panels work?"

They help create engaging, human-like conversations.

#### Visual Prompts (for DALL·E / SORA)

These prompts describe scenes or images that you want the AI to generate visually. Details like style, lighting, and mood are often included.

*Example:* "A medieval castle under the northern lights, cinematic lighting."

The more vivid and specific the description, the better the generated image.

#### Few-shot Prompts

These provide a few examples to the AI before asking it to generate a response.

This helps guide the model on the format, tone, or type of output expected.

*Example:* Showing two sample Q&A pairs before asking a new question.

This approach improves accuracy and consistency in complex tasks.

## 1.4 Techniques in Prompt Engineering

### Use clear and specific instructions

Ambiguity confuses AI models. Be direct about what you want to achieve. Instead of “Tell me about history,” say “Summarize the causes of World War II in 3 bullet points.”

### Define the tone, format, or audience

Specify how the response should sound or be structured, and who it’s for. For example, “Explain blockchain technology in simple terms for high school students” or “Write a formal business email.”

### Provide examples or constraints

Examples guide the AI on the expected style or content. Constraints like word limits or forbidden topics help keep the output focused and appropriate.

### Iterate and refine

Don’t expect a perfect result on the first try. Experiment with different wording or additional context to improve the output step-by-step.

### Use role-based framing

Assign a role or persona to the AI to influence the style and depth of the response. For instance, “You are a professor of biology explaining photosynthesis” or “You are a customer support agent handling complaints.”

## Task 1: Prompt Categorization

### 1. 'Generate a logo for a tech startup using neon colors.'

- **Category:** Visual
- **Reasoning:**

This prompt requests the generation of a visual design element—a logo. The focus is on creating a **visual artifact** rather than providing a textual explanation or having a

conversation. The specific reference to colors and design elements further solidifies this as a **visual** task.

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## 2. 'Explain blockchain to a 5-year-old.'

- **Category:** Instructional

- **Reasoning:**

This is an **educational prompt** that asks for a simplified explanation of a complex topic, tailored to a young audience. The user seeks to **learn or teach** through a clear, accessible breakdown—hallmarks of an **instructional** prompt.

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## 3. 'You are a UX designer. Suggest improvements to this app layout.'

- **Category:** Conversational / Instructional

- **Reasoning:**

This prompt places the AI in a **role-playing scenario** ("You are a UX designer") and seeks advice or critique, which involves **analysis and guidance**. This overlaps **instructional** (providing suggestions) and **conversational** (due to the role-play and tone), but if the intent is actionable advice, **instructional** is the stronger fit—though some may see the role-playing element as pushing it toward **conversational**.

### Task 2: Refinement Practice

#### 1. Original: "Write a story."

**Refined:** "Write a 500-word short story for middle school students about a lonely dragon who finds an unexpected friend in a forest. Include a moral about kindness."

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#### 2. Original: "Make a video."

**Refined:** "Create a 2-minute promotional video for a new eco-friendly water bottle brand. Include upbeat music, customer testimonials, and shots of people using the bottle outdoors."

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**3. Original:** "Draw something."

**Refined:** "Draw a black-and-white sketch of a futuristic cityscape with flying cars, tall glass buildings, and rooftop gardens."

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**4. Original:** "Design a website."

**Refined:** "Design a homepage for a bakery that specializes in gluten-free desserts. Use pastel colors, include a menu section, and add a contact form at the bottom."

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**5. Original:** "Do a presentation."

**Refined:** "Prepare a 5-slide presentation for 6th graders explaining how photosynthesis works. Use diagrams, animations, and simple language."

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## Task 3: Prompt Design Exercise

### 1. ChatGPT (Text-Based Prompt)

**Prompt:**

"Write a detailed narrative set in the year 2150, describing a typical day in the life of a citizen in a futuristic city. Include advancements in technology, changes in society, and how humans interact with the environment."

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### 2. DALL·E (Image-Based Prompt)

**Prompt:**

"Create a digital illustration of a futuristic library in the year 2125, with holographic books, robot assistants, and a floating glass reading lounge under a starry sky."

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### 3. SORA (Video-Based Prompt)

**Prompt:**

"Generate a 1-minute animated video explaining how solar panels convert sunlight into electricity. Include simple visuals, labeled diagrams, and a friendly voiceover suitable for grade 5 science students."

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## 4. Coding or Logic Prompt

**Prompt:**

*"Write a Python program that takes a list of student names and test scores, calculates the average, and outputs a message for each student: 'Pass' if the score is above average, 'Fail' otherwise."*

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## 5. Education or Training Prompt

**Prompt:**

*"Design a 30-minute training module for new retail employees focused on effective customer communication. Include real-life scenarios, role-play exercises, and a short quiz at the end."*

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### Practice Activity (Live Testing)

**Test your prompts using tools like:**

- ChatGPT (for text or logic)

### A Day in the Life: 2150

In the year 2150, the city of NeoTerra buzzes with quiet energy, a harmonious blend of technology and nature. As dawn breaks, Maya wakes in her apartment—a self-sustaining living space with walls that adjust transparency and temperature automatically. Her bed gently rises to an upright position, and a soft voice greets her, “Good morning, Maya. Today’s air quality is excellent, and your schedule is optimized for well-being.”

She steps onto the floor, which softly hums to guide her toward the kitchen. There, a nutrient synthesizer prepares her personalized breakfast, tailored to her DNA and current health metrics. Outside, autonomous drones hum past skyscrapers wrapped in vertical gardens that clean the air and provide fresh food.

Maya boards the maglev transit pod, which silently glides through the city’s network of elevated tracks. Commuters connect effortlessly using neural interfaces that project virtual workspaces directly into their mind’s eye. Human jobs have evolved; creativity and empathy are prized as AI handles routine tasks.

The city’s design reflects a profound respect for the environment. Parks stretch vertically, and rivers run crystal clear thanks to advanced purification tech. Humans and nature coexist—robotic pollinators assist real bees, and energy is harvested from the sun, wind, and even the kinetic motion of citizens moving through the city.

As Maya works on a collaborative project with colleagues across the globe, she reflects on how far society has come—technology no longer isolates people but enriches connections, while a shared commitment to sustainability ensures Earth remains vibrant for generations to come.

When evening falls, Maya returns home to meditate in her personal wellness pod, a quiet sanctuary where AI-guided programs help balance mind and body. As she drifts to sleep, the city outside glows softly, a testament to human ingenuity and harmony in 2150.

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**- DALL·E (for image generation)**



- Canva AI or other visual tools



- Analyze the results and refine if necessary
- ChatGPT (for text or logic)

#### **Original Prompt:**

*"Write a detailed narrative set in the year 2150, describing a typical day in the life of a citizen in a futuristic city. Include advancements in technology, changes in society, and how humans interact with the environment."*

## **Analysis of the Generated Narrative:**

**Strengths:**

- The story paints a vivid picture of futuristic technology (self-adjusting walls, nutrient synthesizers, maglev transit).
- It touches on societal changes like the value of creativity and empathy, and AI handling routine jobs.
- The environmental interaction is well illustrated with vertical gardens, robotic pollinators, and sustainable energy sources.
- The tone is optimistic and immersive, helping the reader visualize the world easily.

**Areas to Improve:**

- The narrative is a bit broad; it covers many aspects but only briefly.
- It could include more personal details about Maya's emotions or challenges to make the story more engaging.
- Adding some sensory descriptions (sounds, smells, tactile experiences) could deepen immersion.
- Introducing some conflict or tension—even minor—can make the day feel more dynamic.

## **Refined Prompt Suggestion:**

*"Write a vivid, immersive narrative set in the year 2150, following a citizen named Maya through a typical day in a futuristic city. Focus on detailed descriptions of advanced technologies, daily routines, and environmental interactions. Include sensory details and explore Maya's feelings about living in this world. Add a minor personal challenge or moment of reflection to add depth."*

## **Why This Refinement Helps:**

- Focus on a specific character (Maya) helps anchor the story emotionally.
- Sensory details enrich the reader's experience, making the future feel tangible.
- Adding a personal challenge or reflection introduces narrative tension, keeping readers engaged.
- Maintaining the core elements (technology, society, environment) keeps the prompt aligned with your original goals.

## **DALL-E (Image Generation)**

### **(Dark, Immersive, Floating Books)**

**Strengths:**

- Strong futuristic mood (dark blue holographic theme).

- Floating books = very sci-fi, magical feeling.
- Human in a floating glass pod adds depth.

#### **Weaknesses:**

- Library shelves are less visible, so it feels more like “sci-fi art” than a structured library.
- Very dark tones may hide details.
- Focus is on atmosphere, less on usability of the space.

#### **Refinement Prompt Idea:**

“Futuristic library in 2125 with glowing holographic bookshelves, robots assisting humans, bright futuristic lighting, ultra-detailed environment, cinematic but slightly brighter tones.”

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## **Canva AI (Bright, Structured, High-Tech Library)**

#### **Strengths:**

- Very clear **library architecture** (circular design, shelves, reading space).
- Bright and futuristic = looks functional.
- Robots appear as assistants, very “organized library vibe.”

#### **Weaknesses:**

- Less “magical” or atmospheric compared to Image 1.
- Missing the floating, holographic book element.
- Looks more like a **high-tech research center** than a visionary 2125 library.

#### **Refinement Prompt Idea:**

“Futuristic library in 2125 with holographic floating books, glass reading pods suspended in the air, starry sky ceiling, and robots assisting readers in a bright circular structure.”

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## **Next Step: Combine the Best of Both**

If you want a **refined next generation**, merge both styles:

*Dark atmospheric holograms + structured bright architecture.*

#### Suggested Combined Prompt:

“A futuristic library in the year 2125, blending immersive sci-fi atmosphere with functional architecture. Circular glass structure with glowing bookshelves, floating holographic books drifting through the air, humans reading in suspended glass pods, and robots assisting visitors under a starry digital ceiling.”

