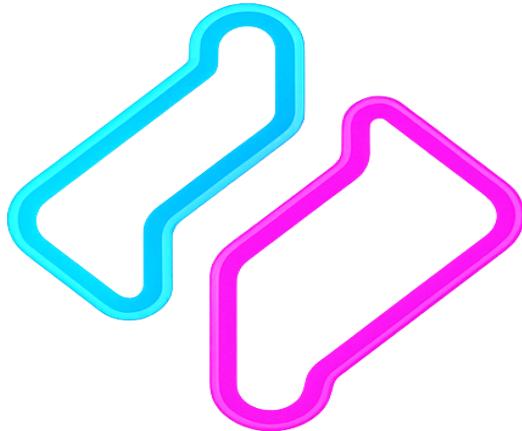


## **Assignment 06: Assignment and practice of Prompt Engineering to craft effective prompts.**

### **Task 1: Prompt Categorization**

Categorize the following prompts into types (Instructional, Conversational, Visual, etc.) and explain your reasoning:

- 'Generate a logo for a tech startup using neon colors.'
- 'Explain blockchain to a 5-year-old.'
- 'You are a UX designer. Suggest improvements to this app layout.'



# **TECHSTARTUP**

### **Task 2: Refinement Practice**

Given vague prompts, refine them to be more effective. Example:

Original: 'Make a poster.' → Refined: 'Create a poster for a school science fair with a blue background, cartoon robots, and bold text saying SCIENCE EXPO 2025.'



## **Task 3:** Prompt Design Exercise

Design 5 original prompts for different domains:

- One for ChatGPT (text-based)
- One for DALL·E (image-based)
- One for SORA (video-based)
- One for coding or logic
- One for education or training

### **ChatGPT Prompt (Text-based)**

*"You are a career counselor. Write a detailed guide for college students on how to prepare for their first job interview. Include: (a) 5 common interview questions with sample answers, (b) tips for body language and confidence, and (c) a checklist of things to carry on the interview day. Keep the tone practical and encouraging."*

### **DALL·E Prompt (Image-based)**

*"Create a vibrant poster-style illustration of a futuristic classroom where students are learning with holographic screens and AI robots as assistants. Show diverse students seated at glowing desks, a teacher guiding them, and a large digital board displaying scientific diagrams. Style: colorful, semi-realistic, with a bright and inspiring atmosphere."*



### 3) SORA (Video-based)

Video link

<blob:https://www.imagine.art/dc842bbc-765d-4a2e-b2d7-893ded07cd68>

### 4) Coding / Logic

#### Problem Statement

Write a Python program that takes a list of integers and returns the second largest unique number. Handle edge cases such as:

- List with all identical numbers
- List with only one element

- Lists containing negative numbers

```
def second_largest_unique(nums):
    """
    Returns the second largest unique number in a list of integers.
    Handles edge cases such as duplicates, single element, or all
    identical numbers.
    """
    unique_nums = list(set(nums)) # remove duplicates
    if len(unique_nums) < 2:
        return None # not enough unique numbers for a second largest
    unique_nums.sort(reverse=True)
    return unique_nums[1]

# Test cases
test_cases = {
    "normal_case": [10, 20, 4, 45, 99, 99, 67], # expected 67
    "all_identical": [5, 5, 5, 5], # expected None
    "single_element": [42], # expected None
    "with_negatives": [-1, -2, -3, -4, -5], # expected -2
    "mixed_case": [3, 1, 2, 2, 4, 5], # expected 4
}

results = {case: second_largest_unique(values) for case, values in
test_cases.items()}
print(results)
```

## Output

```
{
'normal_case': 67,
```

```
'all_identical': None,  
'single_element': None,  
'with_negatives': -2,  
'mixed_case': 4  
}
```

## 5) Education / Training

### Quiz: Basic Electric Circuits

*(For First-Year Engineering Students)*

#### Q1. (Easy)

**Ohm's law states that:**

- a) Current = Resistance × Voltage
- b) Voltage = Current × Resistance
- c) Resistance = Current ÷ Voltage
- d) Power = Voltage ÷ Current

 **Answer:** b) Voltage = Current × Resistance

**Explanation:** Ohm's law:  $V = I \times R$ .

#### Q2.

**If a  $10\ \Omega$  resistor has 2 A current flowing through it, what is the voltage across it?**

- a) 5 V
- b) 10 V
- c) 20 V
- d) 25 V

 **Answer: c) 20 V**

**Explanation:**  $V = I \times R = 2 \times 10 = 20 \text{ V}$ .

**Q3.**

**Which of the following is the unit of electrical power?**

- a) Volt
- b) Ampere
- c) Watt
- d) Ohm

 **Answer: c) Watt**

**Explanation:** Power ( $P = V \times I$ ). Unit = Watt.

**Q4.**

**In a series circuit, the total resistance is:**

- a) The smallest resistor value
- b) The sum of all resistors
- c) Product of all resistors
- d) Always less than smallest resistor

 **Answer: b) The sum of all resistors**

**Explanation:**  $R_{\text{total}} = R_1 + R_2 + \dots$

**Q5.**

**If three resistors  $2 \Omega$ ,  $3 \Omega$ , and  $6 \Omega$  are connected in parallel, the equivalent resistance is:**

- a)  $1 \Omega$
- b)  $2 \Omega$
- c)  $3 \Omega$
- d)  $11 \Omega$

 **Answer:** a)  $1 \Omega$

**Explanation:**  $1/\text{Req} = 1/2 + 1/3 + 1/6 = 1 \rightarrow \text{Req} = 1 \Omega$ .

**What happens to current in a parallel circuit when more branches are added?**

- a) Decreases
- b) Increases
- c) Stays the same
- d) Becomes zero

 **Answer:** b) Increases

**Explanation:** More branches  $\rightarrow$  lower resistance  $\rightarrow$  higher current.

**Q7.**

**A 60 W bulb and a 100 W bulb are connected to the same voltage. Which has more resistance?**

- a) 60 W bulb
- b) 100 W bulb
- c) Both equal
- d) Cannot be determined

 **Answer:** a) 60 W bulb

**Explanation:**  $R = V^2 / P \rightarrow$  smaller  $P =$  higher resistance.

**Q8.**

**Kirchhoff's Current Law (KCL) states:**

- a) Algebraic sum of currents at a junction = 0
- b) Algebraic sum of voltages in a loop = 0
- c) Resistance cannot be negative
- d) Power is conserved

 **Answer:** a) Algebraic sum of currents at a junction = 0

**Explanation:** KCL → conservation of charge.

**Q9.**

**In an RLC circuit, the current lags voltage in:**

- a) Pure resistance
- b) Pure inductance
- c) Pure capacitance
- d) None

 **Answer:** b) Pure inductance

**Explanation:** In an inductor, voltage leads current by 90°.

**Q10. (Advanced)**

**Two resistors  $4\ \Omega$  and  $6\ \Omega$  are connected in series across a  $20\ V$  source. What is the power consumed by the  $6\ \Omega$  resistor?**

- a)  $12\ W$
- b)  $24\ W$
- c)  $10\ W$
- d)  $6\ W$

 **Answer:** b)  $24\ W$

**Explanation:**  $R_{\text{total}} = 10\ \Omega$ . Current =  $20 \div 10 = 2\ A$ .

$$\text{Power} = I^2 \times R = (2^2)(6) = 24\ W.$$

