#### **LAB - 1**

### 1. Exploring the ChatGPT Interface

ChatGPT, developed by OpenAI, provides a clean and interactive interface for users to communicate with an advanced AI model. The interface includes a chat box, response area, sidebar for saved chats, and options to upload files or choose different AI models. I experimented with various prompts, such as questions, commands, and code requests. It allows for structured outputs (tables, JSON), context-aware answers, and tone modifications. The simplicity and responsiveness of the interface make it accessible for tasks ranging from casual conversations to technical problem-solving.

#### 2. Studying Transformer Architecture

The core technology behind ChatGPT is the transformer architecture, introduced by Vaswani et al. It utilizes a mechanism called self-attention, which helps the model understand relationships between words in a sentence, regardless of order. I studied this using visual tools such as The Illustrated Transformer and Hugging Face's attention viewer. Concepts like multi-head attention, positional encoding, and encoder-decoder blocks were clearly demonstrated. These visuals helped me understand how ChatGPT processes and generates human-like text with high accuracy and context awareness.

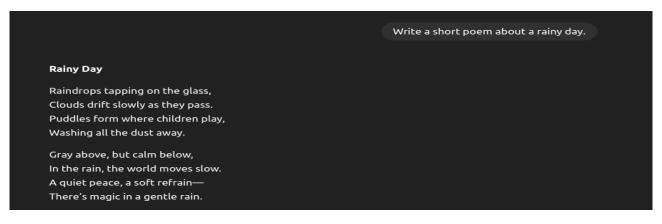
#### 3. Real-World Applications of ChatGPT

ChatGPT has powerful applications across various sectors:

Education: Generating quizzes, summarizing notes, explaining complex concepts in simple terms.

Healthcare: Simulating a medical assistant chatbot, summarizing patient records or articles. Business: Writing professional emails, generating business reports, drafting marketing content. Creativity: Writing poetry, stories, social media captions, and brainstorming content ideas.

## 1. Instructional Prompts



Translate this sentence into French: I love learning.

The French translation of "I love learning" is:

J'aime apprendre.

```
Solve 3 + 5
3 + 5 = 8 ✓
```

```
Generate a Python program to check whether given number is even or odd

Sure! Here's a simple Python program to check whether a given number is even or odd:

python

© Copy >> Edit

# Program to check if a number is even or odd

# Get input from the user
number = int(input("Enter a number: "))

# Check if the number is even or odd

if number % 2 == 0:
    print(f"(number) is even.")

else:
    print(f"(number) is odd.")
```

# 2. Interrogative Prompts

	What is the capital of USA?	
The capital of the USA is <b>Washington, D.C.</b>		
	who discovered gravity	
Isaac Newton		
	Why do we see different phases of the moon?	
We see different phases of the Moon because of its <b>orbit</b> on it.	around the Earth and the way sunlight shines	
	When was the first computer invented?	
The first computer was invented in the <b>1940s</b> .		
	Who is the president of India?	
The <b>President of India</b> is <b>Smt. Droupadi (Draupadi) Murmu</b> , who has been serving since <b>25 July 2022</b> as the 15th President of India (Wikipedia +10).		

# 3. Zero-shot Prompts

The topic was explained by the teacher.

	Write a motivational quote.	
"Believe in yourself. Every great journey begins with a single step fueled by courage." 🌞		
	List three benefits of meditation.	
Here are three key benefits of meditation		
<ol> <li>Reduces Stress – Meditation helps calm the mind and lowers cortisol levels, reducing anxiety and tension.</li> <li>Improves Focus – Regular practice enhances attention span and concentration.</li> </ol>		
3. Boosts Emotional Health – It promotes self-awareness, emotional balance, and a more positive outlook on life.		
	Summarize this sentence: The cat sat on the mat.	
A cat was sitting on a mat.		
	Convert this to passive voice: The teacher explained the topic.	

# 4. Few-shot Prompts

Example: Translate 'Hello' to French → Bonjour. Now translate 'Goodbye'. Translate 'Goodbye' to French → Au revoir. Example: Summarize: 'Birds can fly.' → 'Birds fly.' Now summarize: 'The sun shines brightly.' The sun shines. Example: Convert to past tense: 'He walks.' → 'He walked.' Now: 'She dances. She danced. "Example: Turn into question: 'You are ready.'  $\rightarrow$  'Are you ready?' Now: 'She is coming.'" Is she coming? Example: Change tone from informal to formal: 'Hey, what's up?' → 'Good afternoon, how may I help you?' Now: 'Wanna hang out later? Would you like to spend some time together later?