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Semester -I A.Y.2025-26 Sub.: - Artificial Intelligence Lab

Class: SE

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**Assignment 03:** Assignment and practice of ChatGPT and its usage

### Lab 1: Introduction to ChatGPT

**Objective:** Understand the basics of ChatGPT, its origin, capabilities, and real-world applications.

**Activities:**

- Explore the ChatGPT interface
- Study transformer architecture using visualization tools
- Identify use-cases in education, health, business, and creativity

**Output:** Submit a one-page summary of ChatGPT's working with real-world examples.

# Introduction to ChatGPT – Summary

## 1. How ChatGPT Works

- **Transformer Architecture:** At its core, ChatGPT uses a transformer neural network that processes text using “attention mechanisms.” This helps the model focus on important words in a sentence to understand context.
- **Training:** The model is pre-trained on a wide range of text (books, websites, articles) and then fine-tuned with human feedback to make responses safer and more useful.
- **Working:** When a user inputs a prompt (question or statement), ChatGPT predicts the most likely sequence of words to generate a coherent and context-aware answer.

## 2. Real-World Applications

- **Education:** Assisting students in learning complex subjects, generating practice questions, and explaining concepts in simple terms.  
*Example:* A student asks ChatGPT to explain “Fourier series” with real-life examples.
- **Healthcare:** Providing preliminary health information, symptom guidance, and mental health support (not as a replacement for doctors).  
*Example:* Offering lifestyle advice for managing chronic conditions.
- **Business:** Enhancing customer support with AI chatbots, writing reports, and analyzing data.  
*Example:* Automating responses to FAQs in e-commerce.
- **Creativity:** Helping in story writing, idea generation, and content creation.  
*Example:* Assisting a writer in generating dialogue for a novel.


## Output:

### 1. Instructional Prompts

These are direct instructions telling the model what to do.

#### Examples:

1. "Write a 200-word summary of renewable energy sources."Summarize the story of Cinderella in 3 sentences."
2. "Create a step-by-step recipe for chocolate chip cookies. Use numbered steps and include prep time, cook time, and servings.."
3. "Write a short story about a robot learning emotions. Make it exactly 150 words and include dialogue.."
4. "Explain the concept of machine learning to a 10-year-old using simple analogies and avoid technical jargon.."

 **Observation:** The model follows the given instruction step by step and produces structured output.

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### 2. Interrogative Prompts

These are question-based prompts, designed to seek specific information.

#### Examples:

1. "What are the main causes of climate change?"
2. "Who invented the telephone?"
3. "How does the transformer model work in AI?"
4. "What is the most important skill for success in the 21st century and why?"
5. "When was the internet invented?"

✓ **Observation:** The model gives informative, fact-like responses suitable for Q&A situations.

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### 3. Zero-shot Prompts

No prior examples are given; the model is expected to answer directly.

#### **Examples:**

1. "Classify this movie review as positive or negative: 'The film was boring and too long.'"
2. "Translate 'Good Morning' into Spanish."
3. "Explain blockchain technology in one paragraph."
4. "Give me a recipe for making pasta."
5. "Identify the emotion in this sentence: 'I am so happy today!'"

✓ **Observation:** The model uses its pre-trained knowledge and responds directly, but accuracy may vary for complex tasks.

**Prompt : Employee Data Extraction**

**Precision Prompt:**

Extract the employee information and format it as a markdown table with columns: Name | Position | Experience | Skills | Salary. Ensure proper alignment and formatting.

**Input Text:** "Our development team includes Ramesh Shelke (Senior Developer, 5 years experience, Python/Java), Neha Patil (Frontend Developer, 3 years experience, React/Vue), and Ravi Sharma (DevOps Engineer, 7 years experience, AWS/Docker). Ramesh earns \$95,000, Neha earns \$75,000, and Ravi earns \$105,000."

**Expected Table Output:**

Name	Position	Experience	Skills	Salary
Ramesh Shelke	Senior Developer	5 years	Python/Java	\$95,000
Neha Patil	Frontend Developer	3 years	React/Vue	\$75,000
Ravi Sharma	DevOps Engineer	7 years	AWS/Docker	\$105,000

**Output:** Summary and transformation report with original vs output.

### Example 1: News Article Summarization

- **Original (Excerpt):**  
"The Reserve Bank of India (RBI) has kept the repo rate unchanged at 6.5% in its latest monetary policy meeting, citing inflation concerns and global economic uncertainty. Analysts predict that the move will provide stability for borrowers but could slow down economic growth if inflation persists."
  - **Output (Summary):**  
RBI has maintained the repo rate at 6.5% due to inflation risks and global uncertainty. Experts believe this ensures stability for borrowers but may limit growth if inflation continues.
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### Example 2: Research Abstract Summarization

- **Original (Excerpt):**  
"This study investigates the role of machine learning in predicting stock market trends. By applying deep neural networks to historical financial data, the model achieved an accuracy of 82%. The findings highlight the potential of AI in financial forecasting but also stress the risks of overfitting and market volatility."
  - **Output (Summary):**  
Research shows machine learning, particularly deep neural networks, can predict stock market trends with 82% accuracy, though challenges like overfitting and volatility remain.
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### Example 3: Email Rewriting (Tone Transformation)

- **Original (Formal):**  
"Dear Professor, I am writing to request an extension for the project deadline due to unforeseen health issues. I assure you that I will submit the project at the earliest possible date. Thank you for your understanding."
- **Output (Informal):**  
"Hi Professor, I've been unwell and couldn't keep up with the project. Could I get a bit more time to finish it? I'll send it over as soon as I can. Thanks a lot!"

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- **Original (Informal):**

"Hey, I can't make it to the meeting tomorrow. Something came up. Let's do it another day."

- **Output (Formal):**

"Dear [Recipient], Unfortunately, I will not be able to attend tomorrow's meeting due to an urgent matter. I kindly request that we reschedule at your convenience. Best regards."

## Output :

### Prompt 1:

👉 "Write a Python program to check whether a number is prime or not."

```
def is_prime(n):
```

```
    if n <= 1:
```

```
        return False
```

```
    for i in range(2, int(n**0.5) + 1):
```

```
        if n % i == 0:
```

```
            return False
```

```
    return True
```

```
num = int(input("Enter a number: "))
```

```
if is_prime(num):
```

```
    print(num, "is Prime")
```

```
else:
```

```
    print(num, "is Not Prime")
```

### ✅ Expected Output:

- Input: 7 → Output: 7 is Prime
- Input: 8 → Output: 8 is Not Prime



```
Go Run ... ← → Artificial_Intelligence_Lab_SE_B_25
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
9 is Not Prime
PS C:\Users\HP\Artificial_Intelligence_Lab_SE_B_25> python -u "c:\Users\HP\Artificial_Intelligence_Lab_SE_B_25\prime.py"
Enter a number: 5
5 is Prime
PS C:\Users\HP\Artificial_Intelligence_Lab_SE_B_25>
```



## 2. Debugging with ChatGPT

### Faulty Python Code:

```
num = input("Enter a number: ")  
for i in range(2, num):  
    if num % i == 0:  
        print("Not Prime")  
        break  
else:  
    print("Prime")
```

### ChatGPT Debugged Code:

```
num = int(input("Enter a number: "))  
for i in range(2, num):  
    if num % i == 0:  
        print("Not Prime")  
        break  
else:  
    print("Prime")
```

## Topic : Educational Quiz Generation

### Prompt Design




*"Generate 5 multiple-choice questions (MCQs) on the topic 'Python Basics' with 4 options each and indicate the correct answer."*

### ChatGPT Output

1. Which of the following is the correct way to print in Python?  
a) `echo "Hello"`  
b) `print("Hello")` ✓  
c) `printf("Hello")`  
d) `cout << "Hello"`
2. What is the output of `len("ChatGPT")`?  
a) 5  
b) 6  
c) 7 ✓  
d) 8
3. Which symbol is used for comments in Python?  
a) `//`  
b) `<!-- -->`  
c) `#` ✓  
d) `/* */`
4. Which data type is mutable in Python?  
a) Tuple  
b) String  
c) List ✓  
d) Integer
5. What will `2 ** 3` return in Python?  
a) 6  
b) 8 ✓  
c) 9  
d) 5

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### Evaluation

-  Accuracy: All answers are correct.
-  Clarity: Options are clear and unambiguous.
-  Usefulness: Can be used directly in quizzes or exams.

**Conclusion:**

ChatGPT successfully generated high-quality, domain-specific educational quiz content that is accurate and ready to use in a classroom or self-study setting