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 Batch - 46

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	
Course Coordinator Name		Dr. Rishabh Mittal	
Instructor(s) Name		Mr. S Naresh Kumar Ms. B. Swathi Dr. Sasanko Shekhar Gantayat Mr. Md Sallauddin Dr. Mathivanan Mr. Y Srikanth Ms. N Shilpa Dr. Rishabh Mittal (Coordinator) Dr. R. Prashant Kumar Mr. Ankushavali MD Mr. B Viswanath Ms. Sujitha Reddy Ms. A. Anitha Ms. M.Madhuri Ms. Katherashala Swetha Ms. Velpula sumalatha Mr. Bingi Raju	
Course Code	23CS002PC304	Course Title	AI Assisted Coding
Year/Sem	III/I	Regulation	R23
Date and Day of Assignment	Week 2 - Wednesday	Time(s)	23CSBTB01 To 23CSBTB52
Duration	2 Hours	Applicable to Batches	All batches
Assignment Number: 3.3(Present assignment number)/24(Total number of assignments)			

Q.No.	Question	Expected Time to complete
1	Lab 4: Advanced Prompt Engineering – Zero-shot, One-shot, and Few-shot Techniques Lab Objectives <ul style="list-style-type: none"> • To explore and apply different levels of prompt examples in AI-assisted code generation • To understand how zero-shot, one-shot, and few-shot prompting affect AI output quality • To evaluate the impact of context richness and example quantity on AI 	Week2 - Wednesday

	<p>performance</p> <ul style="list-style-type: none">To build awareness of prompt strategy effectiveness for different problem types <p>Lab Outcomes (LOs)</p> <p>After completing this lab, students will be able to:</p> <ul style="list-style-type: none">Use zero-shot prompting to instruct AI with minimal contextUse one-shot prompting with a single example to guide AI code generationApply few-shot prompting using multiple examples to improve AI responsesCompare AI outputs across different prompting strategies <p>Task 1: Zero-Shot Prompting – Leap Year Check</p> <p>Scenario</p> <p>Zero-shot prompting involves giving instructions without providing examples.</p> <p>Task Description</p> <p>Use zero-shot prompting to instruct an AI tool to generate a Python function that:</p> <ul style="list-style-type: none">Accepts a year as inputChecks whether the given year is a leap yearReturns an appropriate result <p>Note: No input-output examples should be provided in the prompt.</p> <p>Expected Output</p> <ul style="list-style-type: none">AI-generated leap year checking functionCorrect logical conditionsSample input and outputScreenshot of AI-generated response (if required) <p>PROMPT:</p> <p>Generate a Python function that accepts a year as input and determines whether it is a leap year or not.</p> <p>Examples:</p> <p>Input: 2020 → Output: True Input: 1900 → Output: False Input: 2000 → Output: True</p> <p>CODE:</p> <pre>def is_leap_year(year): return year % 4 == 0 and (year % 100 != 0 or year % 400 == 0) #Example usage: year = int(input("Enter a year: ")) if is_leap_year(year): print(f"{year} is a leap year.") else: print(f"{year} is not a leap year.)</pre> <p>OUTPUT:</p> <p>▶ Enter a year: 2023 2023 is not a leap year.</p>	
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	<p>Task 2: One-Shot Prompting – Centimeters to Inches Conversion</p> <p>Scenario One-shot prompting guides AI using a single example.</p> <p>Task Description Use one-shot prompting by providing one input-output example to generate a Python function that:</p> <ul style="list-style-type: none">• Converts centimeters to inches• Uses the correct mathematical formula <p>Example provided in prompt: Input: 10 cm → Output: 3.94 inches</p> <p>Expected Output</p> <ul style="list-style-type: none">• Python function with correct conversion logic• Accurate calculation• Sample test cases and outputs <p>PROMPT: Generate a Python function that converts centimeters to inches using the correct mathematical formula.</p> <p>Example: Input: 10 cm Output: 3.94 inches</p> <p>CODE:</p> <pre>def cm_to_inches(cm): inches = cm / 2.54 return round(inches, 2) #Example usage: cm = float(input("Enter length in centimeters: ")) inches = cm_to_inches(cm) print(f"{cm} cm is equal to {inches} inches.")</pre> <p>OUTPUT:</p> <pre>Enter length in centimeters: 10 10.0 cm is equal to 3.94 inches.</pre> <p>Task 3: Few-Shot Prompting – Name Formatting</p> <p>Scenario Few-shot prompting improves accuracy by providing multiple examples.</p> <p>Task Description Use few-shot prompting with 2–3 examples to generate a Python function that:</p> <ul style="list-style-type: none">• Accepts a full name as input	
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	<ul style="list-style-type: none">• Formats it as "Last, First" <p>Example formats:</p> <ul style="list-style-type: none">• "John Smith" → "Smith, John"• "Anita Rao" → "Rao, Anita" <p>Expected Output</p> <ul style="list-style-type: none">• Well-structured Python function• Output strictly following example patterns• Correct handling of names• Sample inputs and outputs <p>PROMPT: Create a Python function that accepts a full name as input and formats it in the form "Last, First". Examples: "John Smith" → "Smith, John" "Anita Rao" → "Rao, Anita" "Suresh Kumar" → "Kumar, Suresh"</p> <p>CODE:</p> <pre>def format_name(full_name): parts = full_name.split() if len(parts) >= 2: first_name = parts[0] last_name = parts[-1] return f"{last_name}, {first_name}" else: return full_name #Example usage: name = input("Enter full name: ") formatted_name = format_name(name) print(f"Formatted name: {formatted_name}")</pre> <p>OUTPUT:</p> <pre>Enter full name: allu arjun Formatted name: arjun, allu</pre> <p>Task 4: Comparative Analysis – Zero-Shot vs Few-Shot Scenario Different prompt strategies may produce different code quality. Task Description</p> <ul style="list-style-type: none">• Use zero-shot prompting to generate a function that counts vowels in a string	
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	<ul style="list-style-type: none">• Use few-shot prompting for the same problem• Compare both outputs based on:<ul style="list-style-type: none">◦ Accuracy◦ Readability◦ Logical clarity <p>Expected Output</p> <ul style="list-style-type: none">• Two vowel-counting functions• Comparison table or short reflection paragraph• Conclusion on prompt effectiveness <p>PROMPT:</p> <p>Generate a Python function that counts the number of vowels present in a given string. Provide sample input and output.</p> <p>Examples:</p> <p>Input: "hello" → Output: 2 Input: "artificial intelligence" → Output: 9</p> <p>CODE:</p> <pre>def count_vowels(input_string): vowels = "aeiouAEIOU" count = sum(1 for char in input_string if char in vowels) return count #Example usage: input_string = input("Enter a string: ") vowel_count = count_vowels(input_string) print(f"Number of vowels in the string: {vowel_count}")</pre> <p>OUTPUT:</p> <div style="background-color: black; color: white; padding: 10px; border-radius: 10px; width: fit-content; margin-left: auto; margin-right: auto;"><p>● Enter a string: hello Number of vowels in the string: 2</p></div> <p>Task 5: Few-Shot Prompting – File Handling</p> <p>Scenario File processing requires clear logical understanding.</p> <p>Task Description Use few-shot prompting to generate a Python function that:</p> <ul style="list-style-type: none">• Reads a .txt file• Counts the number of lines in the file• Returns the line count <p>Expected Output</p> <ul style="list-style-type: none">• Working Python file-processing function• Correct line count• Sample .txt input and output• AI-assisted logic explanation	
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PROMPT:
Generate a Python function that reads a .txt file and counts the number of lines present in the file.
Examples:
file containing 4 lines → Output: 4
A file containing 12 lines → Output: 12

CODE:

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def count_lines_in_file(file_path):
    with open(file_path, 'r') as file:
        lines = file.readlines()
        return len(lines)
#Example usage:
file_path = input("Enter the path to the .txt file: ")
line_count = count_lines_in_file(file_path)
print(f"Number of lines in the file: {line_count}")
```

OUTPUT:

```
Enter the path to the .txt file: C:\Users\telje\OneDrive\Desktop\AI\example.txt
Number of lines in the file: 4
```