

Batch-05

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SCHOOL OF COMPUTERS SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTERS SCIENCE ENGINEERING	
Program Name: B.Tech		Assignment Type: Lab	Academic Year: 2025-2026
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Course Code	24CS002PC215	Course Title	AI Assisted Coding
Year/Sem	II/I	Regulation	R24
Date and Day of Assignment	Week 2 - Wednesday	Time(s)	
Duration	2 Hours	Applicable to Batches	
Assignment Number: 2.3 (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. 	Week 2 - Wednesday	

	<ul style="list-style-type: none">• 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 performance.• To build awareness of prompt strategy effectiveness for different problem types. <p>Lab Outcomes (LOs): 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 context.• Use one-shot prompting with a single example to guide AI code generation.• Apply few-shot prompting using multiple examples to improve AI responses.• Compare AI outputs across the three prompting strategies. <p>Task Description#1</p> <ul style="list-style-type: none">• Zero-shot: Prompt AI to write a function that checks whether a given year is a leap year. <p>Prompt:</p> <pre>write a function that checks whether a given year is a leap year with taking year input</pre> <p>Code:</p> <pre>def is_leap_year(year): """ Returns True if the given year is a leap year, False otherwise. """ return (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0) def check_leap_year(): 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.") check_leap_year()</pre> <p>Output:</p> <pre>PS C:\Users\allur\Desktop\B.Tech\2-1> Enter a year: 1995 1995 is not a leap year. PS C:\Users\allur\Desktop\B.Tech\2-1> Enter a year: 2024 2024 is a leap year.</pre> <p>Expected Output#1</p> <ul style="list-style-type: none">• AI-generated function with no examples provided <p>Task Description#2</p> <ul style="list-style-type: none">• One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches. <p>Prompt:</p>	
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writing a function that converts centimeters to inches.
and call the function and take input and call the function

Code:

```
def cm_to_inches(cm):  
    """  
    Converts centimeters to inches.  
    """  
    return cm / 2.54  
  
def convert_cm_to_inches():  
    cm = float(input("Enter length in centimeters: "))  
    inches = cm_to_inches(cm)  
    print(f"{cm} cm is equal to {inches:.2f} inches.")  
  
convert_cm_to_inches()
```

Output:

```
Enter length in centimeters: 59  
59.0 cm is equal to 23.23 inches.  
PS C:\Users\allur\Desktop\B.Tech\2-1> p  
Enter length in centimeters: 546  
546.0 cm is equal to 214.96 inches.  
PS C:\Users\allur\Desktop\B.Tech\2-1>
```

ExpectedOutput#2

- Functionwithcorrectconversionlogic

TaskDescription#3

- Few-shot:Provide2–3 examplestogenerateafunctionthatformatsfullnamesas
“Last,First”.

ExpectedOutput#3

- Well-structuredfunctionrespectingthe examples

Prompt:

generate a python code that formats full names as “Last,
First” using functions

Code:

```

def format_name(first, last):
    """
    Formats the full name as 'Last, First'.
    """
    return f"{last}, {first}"

def get_and_format_name():
    first = input("Enter first name: ")
    last = input("Enter last name: ")
    formatted = format_name(first, last)
    print(f"Formatted name: {formatted}")

# Example usage
get_and_format_name()

```

Output:

```

Enter first name: allu
Enter last name: kyath
Formatted name: kyath, allu
PS C:\Users\allur\Desktop\B.Tech\
Enter first name: miss
Enter last name: sri
Formatted name: sri, miss

```

TaskDescription#4

- Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string.

ExpectedOutput#4

- Functional output and comparative reflection

Prompt:

```

generate a python code that counts the number of
vowels in a string using a function

```

Code:

```
def count_vowels(s):  
    """  
    Counts the number of vowels in the given string.  
    """  
    vowels = "aeiouAEIOU"  
    count = 0  
    for char in s:  
        if char in vowels:  
            count += 1  
    return count  
  
def get_string_and_count_vowels():  
    s = input("Enter a string: ")  
    num_vowels = count_vowels(s)  
    print(f"Number of vowels in the string: {num_vowels}")  
  
get_string_and_count_vowels()
```

Output:

```
PS C:\Users\allur\Desktop\B.Tech\2-1> python -u "c:\U  
Enter a string: ashgfyi7sdbsnamvdas  
Number of vowels in the string: 4  
PS C:\Users\allur\Desktop\B.Tech\2-1> python -u "c:\U  
Enter a string: jshgdjyadtyastdjwevdmewd  
Number of vowels in the string: 4  
PS C:\Users\allur\Desktop\B.Tech\2-1> python -u "c:\U  
Enter a string: aaaaaaaaaaaaaa  
Number of vowels in the string: 16  
PS C:\Users\allur\Desktop\B.Tech\2-1> python -u "c:\U  
Enter a string: aeiouwggcvdka  
Number of vowels in the string: 6  
PS C:\Users\allur\Desktop\B.Tech\2-1> █
```

TaskDescription#5

- Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines.

ExpectedOutput#5

- Working file-processing function with AI-guided logic

Prompt:

```
generate a python code that creates, inserts text reads a  
.txt file and returns the number of lines using functions
```

Code:

```
def create_and_write_file(filename, text):
    """
    Creates a .txt file and writes the given text to it.
    """
    with open(filename, 'w') as f:
        f.write(text)

def read_file_and_count_lines(filename):
    """
    Reads the file and returns the number of lines.
    """
    with open(filename, 'r') as f:
        lines = f.readlines()
    return len(lines)

def file_operations():
    filename = "sample.txt"
    text = input("Enter text to write to the file (use \\n for new lines):\\n")
    # Replace literal \n with actual newlines
    text = text.replace("\\n", "\n")
    create_and_write_file(filename, text)
    num_lines = read_file_and_count_lines(filename)
    print(f"Number of lines in '{filename}': {num_lines}")
```

Output:

```
Number of lines in 'sample.txt': 1
```

Note: Report should be submitted as a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots

Evaluation Criteria:

Criteria	Max Marks
ZeroShot(Task#1)	0.5
OneShot (Task#2)	0.5
FewShot(Task#3&Task#5)	1.0
Comparison(Task#4)	0.5
Total	2.5 Marks