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BATCH:26

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		**Assignment Type: Lab**	**Academic Year:**2025-2026
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	**Applicableto 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** • 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	Week2 - Wednesday

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

Lab Outcomes (LOs)
After completing this lab, students will be able to:

- 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 different prompting strategies

Task 1: Zero-Shot Prompting – Leap Year Check
Scenario
Zero-shot prompting involves giving instructions without providing examples.
Task Description
Use zero-shot prompting to instruct an AI tool to generate a Python function that:

- Accepts a year as input
- Checks whether the given year is a leap year
- Returns an appropriate result

Note: No input-output examples should be provided in the prompt.
Expected Output

- AI-generated leap year checking function
- Correct logical conditions
- Sample input and output
- Screenshot of AI-generated response (if required)

AI4.py > ...

```python
def is_leap_year(year):
    if year % 4 == 0:
        if year % 100 == 0:
            return year % 400 == 0
        return True
    return False


# Main program
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.")

```

```
PROBLEMS 86  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS

PS C:\Users\kruth\OneDrive\Desktop\java>  & 'c:\Users\kruth\AppData\L
win32-x64\bundled\libs\debugpy\launcher' '62946' '--' 'c:\Users\kruth
Enter a year: 2016
2016 is a leap year.
PS C:\Users\kruth\OneDrive\Desktop\java>
```

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Task 2: One-Shot Prompting – Centimeters to Inches Conversion

Scenario

One-shot prompting guides AI using a single example.

Task Description

Use one-shot prompting by providing one input-output example to generate a Python function that:

- Converts centimeters to inches
- Uses the correct mathematical formula

Example provided in prompt:

Input: 10 cm → Output: 3.94 inches

Expected Output

- Python function with correct conversion logic
- Accurate calculation
- Sample test cases and outputs

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Task 3: Few-Shot Prompting – Name Formatting

Scenario

Few-shot prompting improves accuracy by providing multiple examples.

Task Description

Use few-shot prompting with 2–3 examples to generate a Python function that:

- Accepts a full name as input
- Formats it as “Last, First”

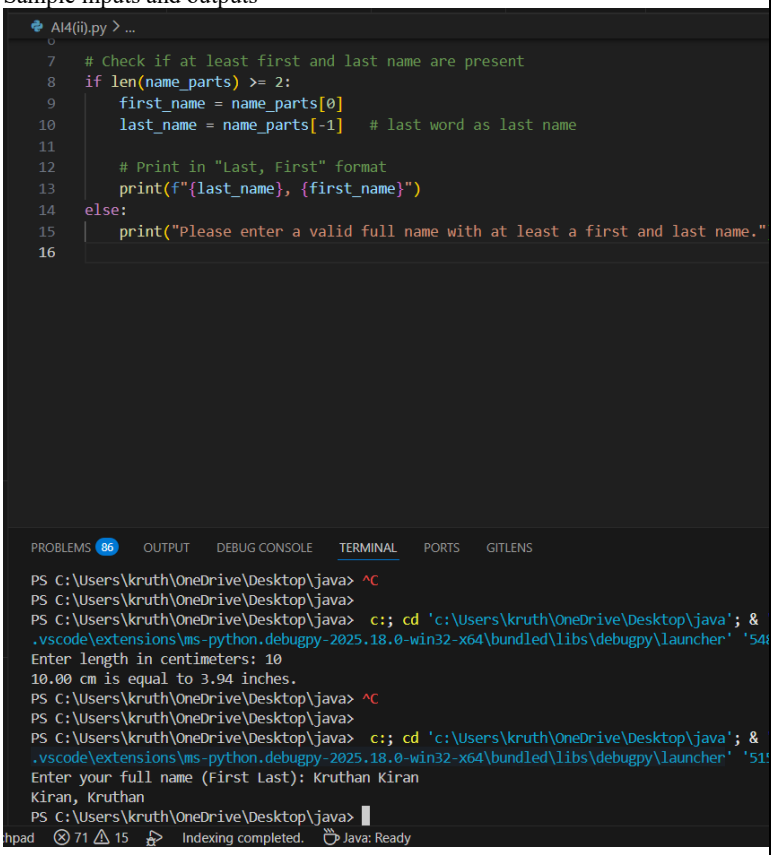
Example formats:

- "John Smith" → "Smith, John"

- "Anita Rao" → "Rao, Anita"

Expected Output

- Well-structured Python function
- Output strictly following example patterns
- Correct handling of names
- Sample inputs and outputs



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Task 4: Comparative Analysis – Zero-Shot vs Few-Shot

Scenario

Different prompt strategies may produce different code quality.

Task Description

- Use zero-shot prompting to generate a function that counts vowels in a string
- Use few-shot prompting for the same problem
- Compare both outputs based on:
  - Accuracy
  - Readability
  - Logical clarity

Expected Output

- Two vowel-counting functions
- Comparison table or short reflection paragraph
- Conclusion on prompt effectiveness

AI4(iii).py > ...

```python
# Function to count vowels in a string
def count_vowels(text):
    count = 0
    vowels = "aeiouAEIOU"

    for ch in text:
        if ch in vowels:
            count += 1

    return count


# Main program
user_input = input("Enter a string: ")

vowel_count = count_vowels(user_input)

print("Number of vowels in the given string:", vowel_count)

```

```
PROBLEMS 86  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS

PS C:\Users\kruth\OneDrive\Desktop\java> ^C
PS C:\Users\kruth\OneDrive\Desktop\java>
PS C:\Users\kruth\OneDrive\Desktop\java>  c:; cd 'c:\Users\kruth\OneDrive\Desktop\java';
.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher'
Enter your full name (First Last): Kruthan Kiran
Kiran, Kruthan
PS C:\Users\kruth\OneDrive\Desktop\java> ^C
PS C:\Users\kruth\OneDrive\Desktop\java>
PS C:\Users\kruth\OneDrive\Desktop\java>  c:; cd 'c:\Users\kruth\OneDrive\Desktop\java';
.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher'
Enter a string: once upon a time
Number of vowels in the given string: 7
PS C:\Users\kruth\OneDrive\Desktop\java>
npad  ⊗ 71 ⚠ 15  Indexing completed.  Java: Ready
```

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Task 5: Few-Shot Prompting – File Handling

Scenario

File processing requires clear logical understanding.

Task Description

Use few-shot prompting to generate a Python function that:

- Reads a .txt file
- Counts the number of lines in the file
- Returns the line count

Expected Output

- Working Python file-processing function
- Correct line count
- Sample .txt input and output
- AI-assisted logic explanation

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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.