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	
		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 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	Week2 - Wednesday

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

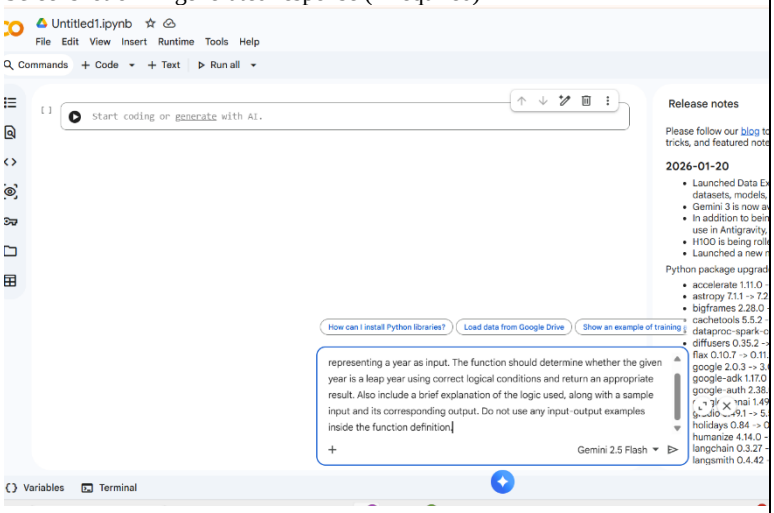
Use zero-shot prompting to instruct an AI tool to generate a Python function that:

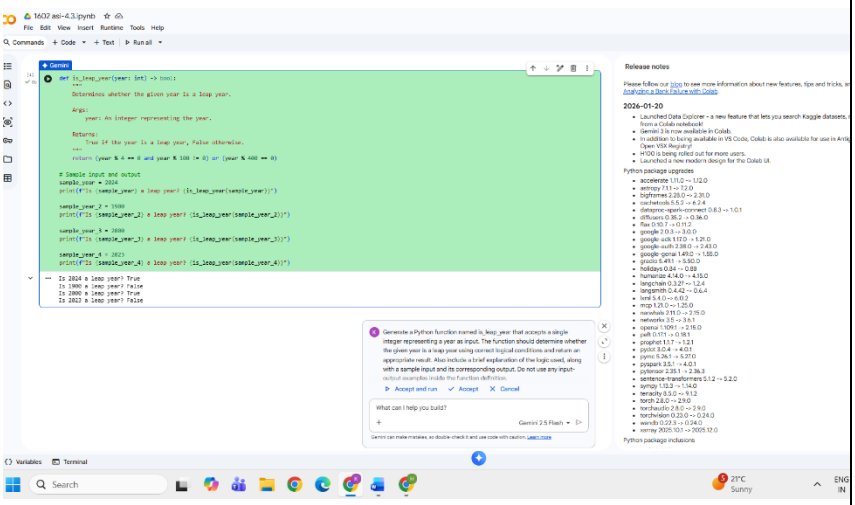
- Accepts a year as input
- Checks whether the given year is a leap year
- Returns an appropriate result

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)





CODE EXPLAINATION:

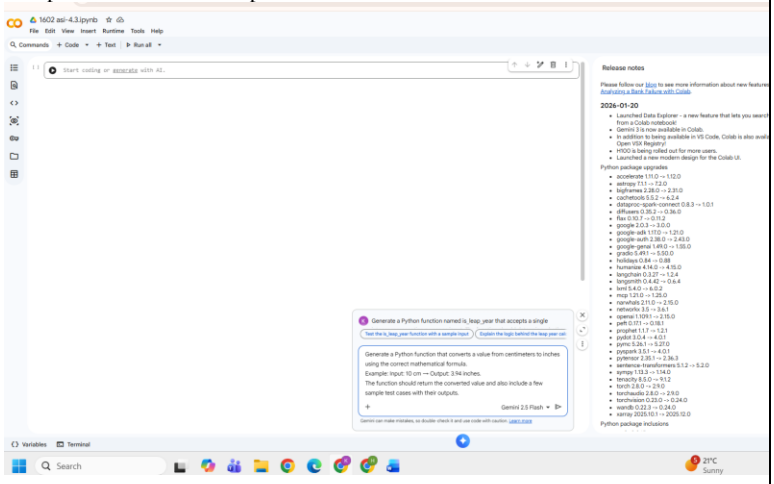
- A year is a leap year if:
  - It is divisible by 4 **and not** divisible by 100
  - OR divisible by 400
- Zero-shot prompting means **no examples were given in the prompt**

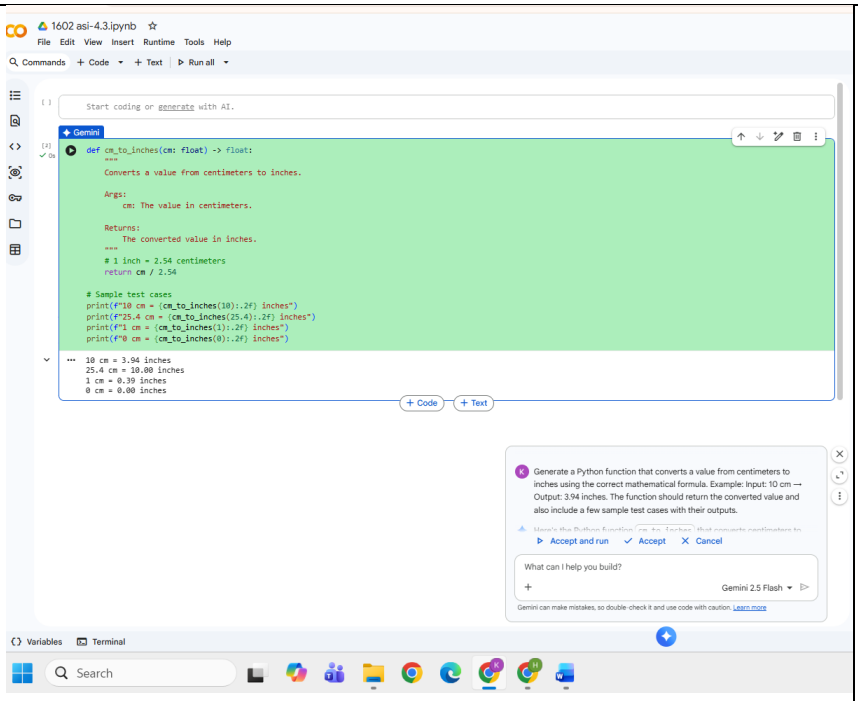
Task 2: One-Shot Prompting – Centimeters to Inches Conversion
Scenario
One-shot prompting guides AI using a single example.
Task Description
Use one-shot prompting by providing one input-output example to generate a Python function that:

- 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





CODE EXPLAINATION:

- Formula used:
  1 inch = 2.54 cm
- One-shot prompting uses **one example** (10 cm → 3.94 inches)

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:

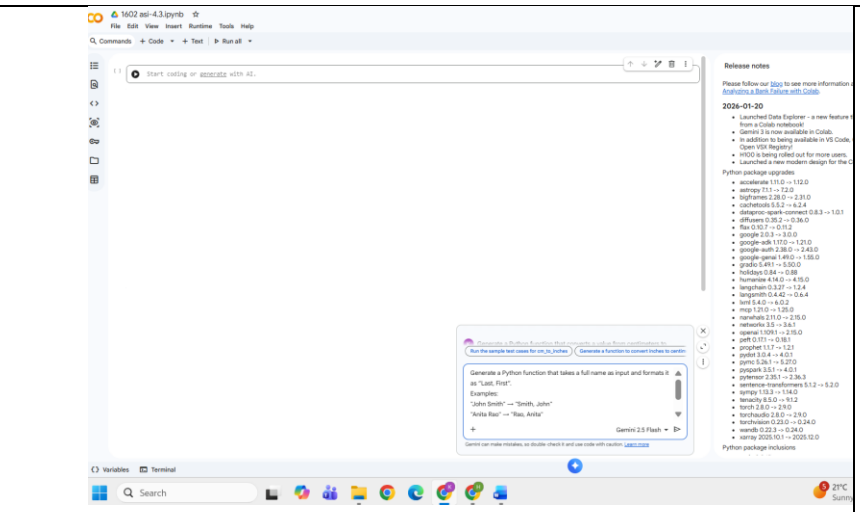
- Accepts a full name as input
- Formats it as "Last, First"

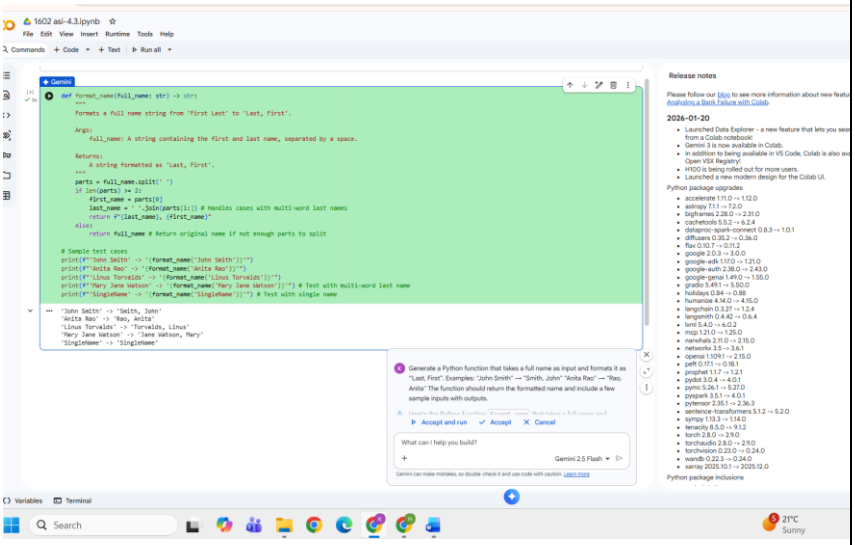
Example formats:

- "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





CODE EXPLAINATION:

- The name is split into first and last parts
- Output follows the pattern: **Last, First**
- Few-shot prompting provides **multiple examples**

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

Scenario

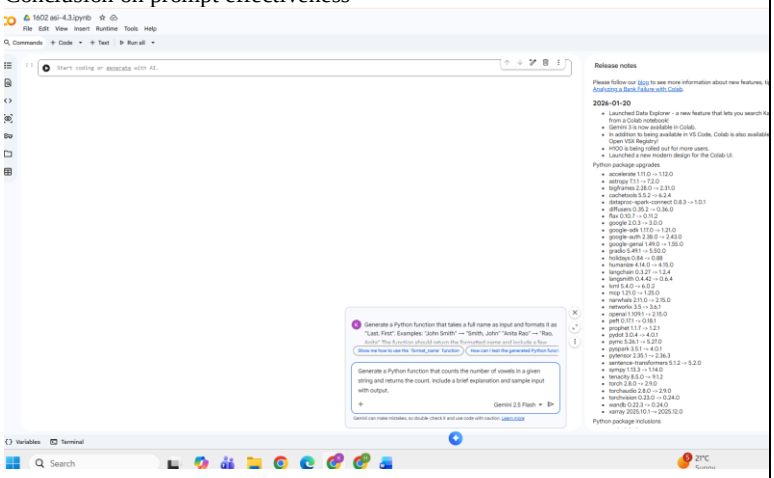
Different prompt strategies may produce different code quality.

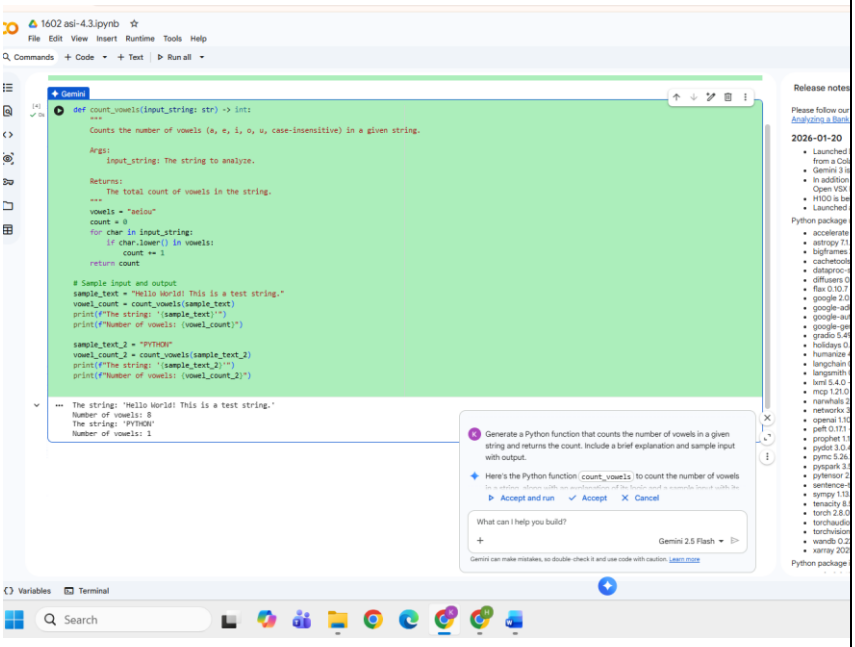
Task Description

- 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





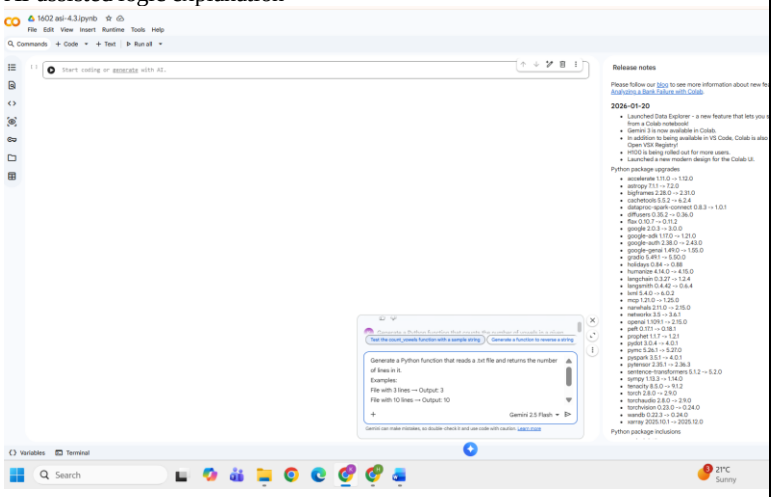
CODE EXPLAINATION:

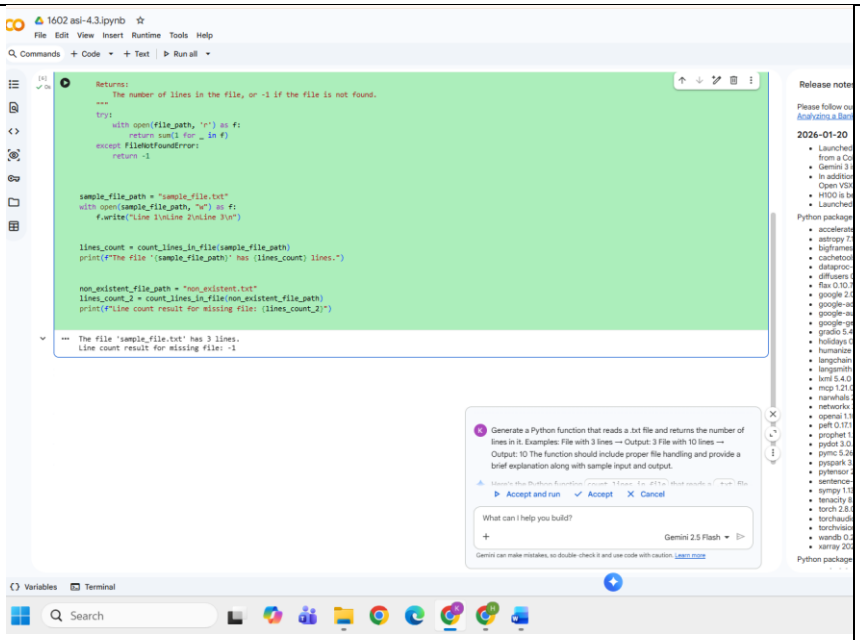
Task 5: Few-Shot Prompting – File Handling
Scenario
File processing requires clear logical understanding.
Task Description
Use few-shot prompting to generate a Python function that:

- 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





CODE EXPLANATION:

- Opens the file in read mode
- Counts lines using sum(1 for _ in f)
- Returns -1 if file does not exist
- Few-shot prompting uses **multiple example outputs**

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.