AI ASSISTED CODING

S.Rishaak
2303A51125

BATCH – 03 23 – 01 – 2026

ASSIGNMENT – 3.5

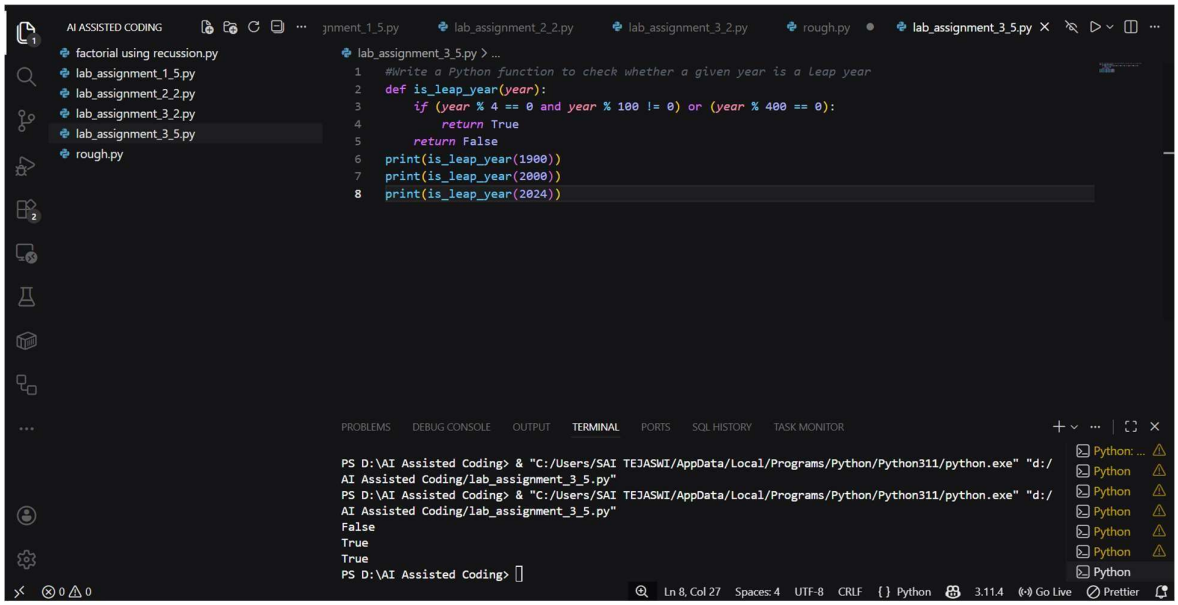
LAB-03:

TASK-01: Zero-Shot Prompting – Leap Year Check

- Record the AI-generated code.
- Test with years like 1900, 2000, 2024.
- Identify logical flaws or missing conditions.

Prompt: *Write a Python function to check whether a given year is a leap year*

Code:



Analysis

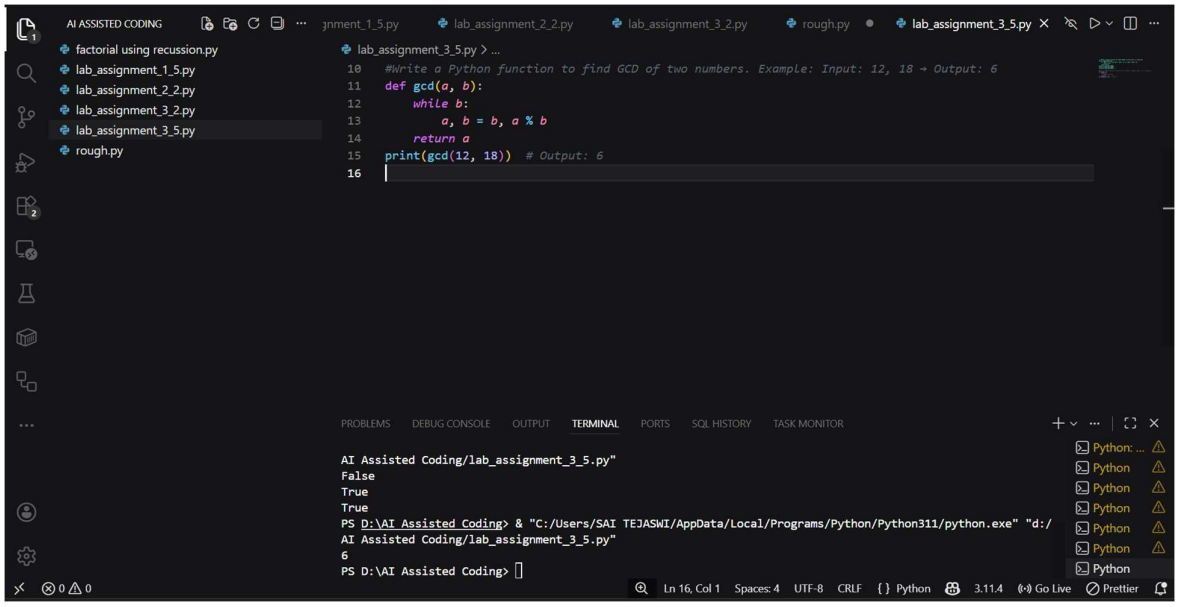
- The code incorrectly marks 1900 as a leap year.
- Missing century-year rule (divisible by 100 but not by 400).

TASK-02: One-Shot Prompting (GCD of Two Numbers)

- Compare with a zero-shot solution.
- Analyse algorithm efficiency.

Prompt: Write a Python function to find the GCD of two numbers.
Example: Input: 12, 18 → Output: 6

CODE:



Zero-Shot Comparison
Zero-shot solutions often use brute-force loops, whereas this uses the efficient Euclidean algorithm.

Efficiency Analysis

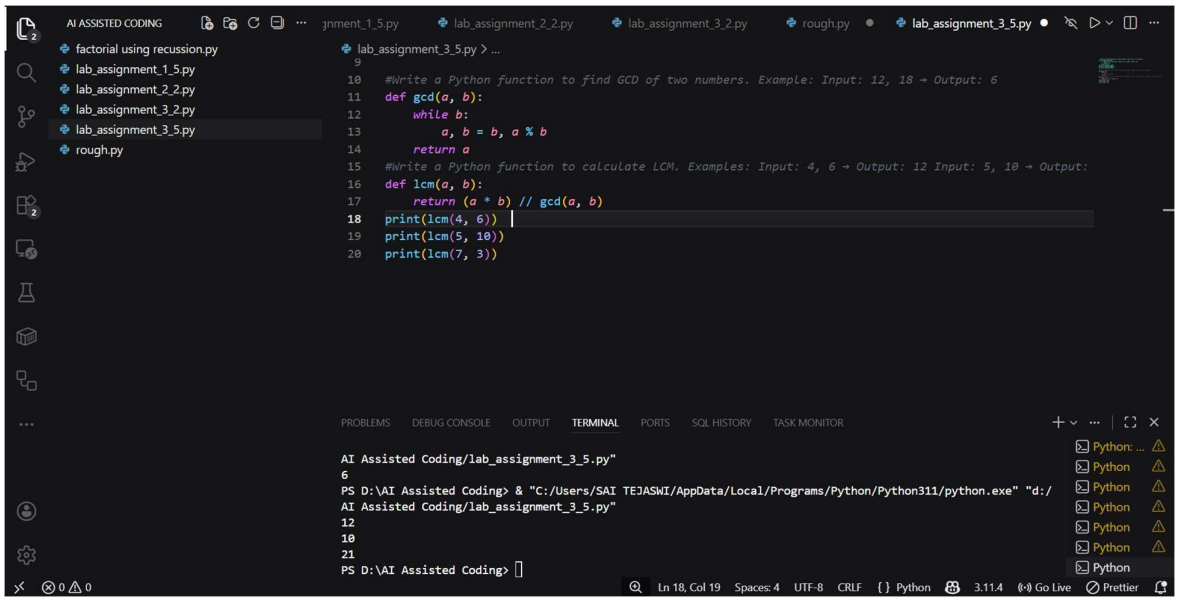
- Time Complexity: O(log min(a, b))
- More efficient than trial division.

TASK-03: Few-Shot Prompting (LCM Calculation)

- Examine how examples guide formula selection.
- Test edge cases.

Prompt: Write a Python function to calculate LCM. Examples: Input: 4, 6 → Output: 12 Input: 5, 10 → Output: 10 Input: 7, 3 → Output: 21

CODE:



Observation

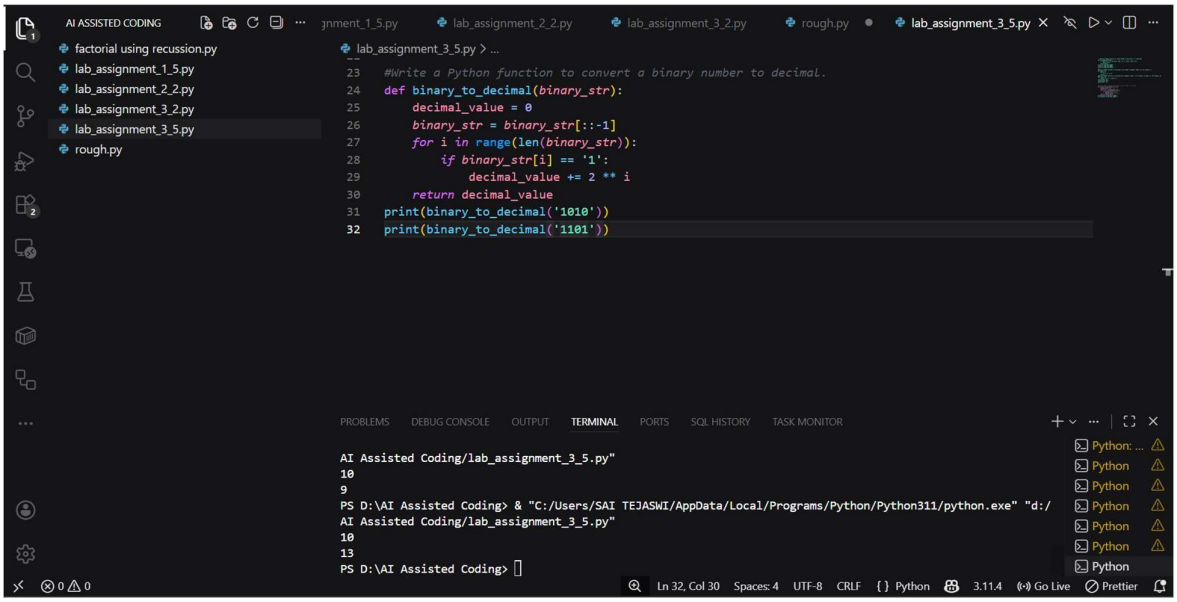
- Formula-based approach chosen due to examples.
- Needs handling when either input is zero.

TASK-04: Zero-Shot Prompting – Binary to Decimal Conversion

- Test with valid and invalid binary inputs.
- Identify missing validation logic.

PROMPT: Write a Python function to convert a binary number to decimal.

CODE:



Analysis

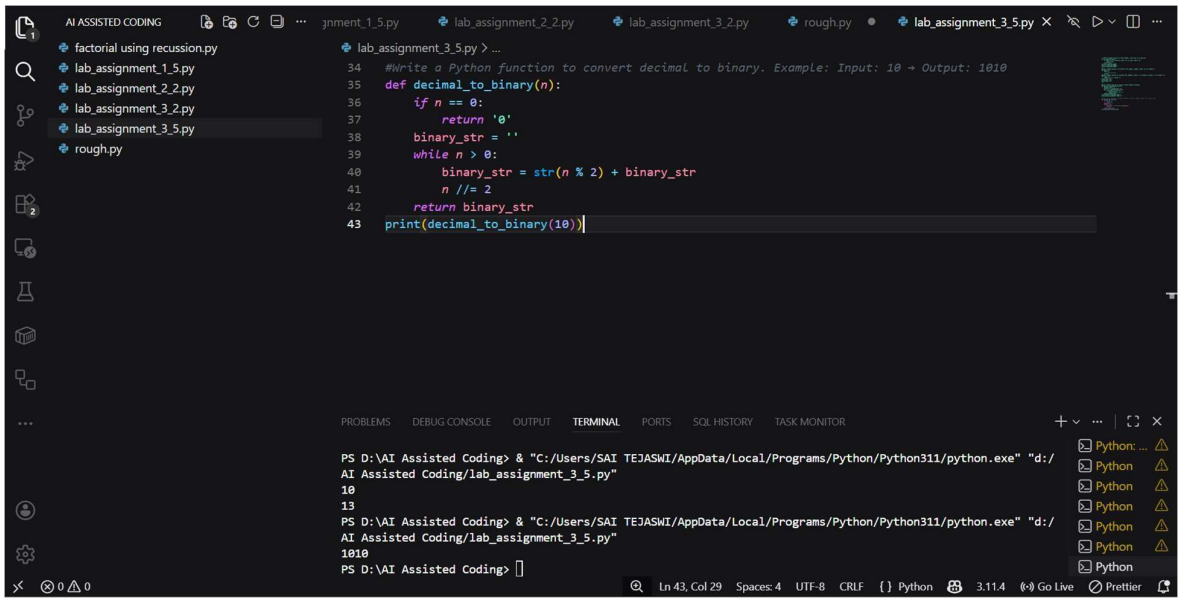
- No validation for invalid binary digits.
- Error occurs for invalid input.

TASK-05: One-Shot Prompting – Decimal to Binary conversion

- Compare clarity with zero-shot output.
- Analyze handling of zero and negative numbers.

PROMPT: *Write a Python function to convert decimal to binary. Example: Input: 10 → Output: 1010*

CODE:



Analysis

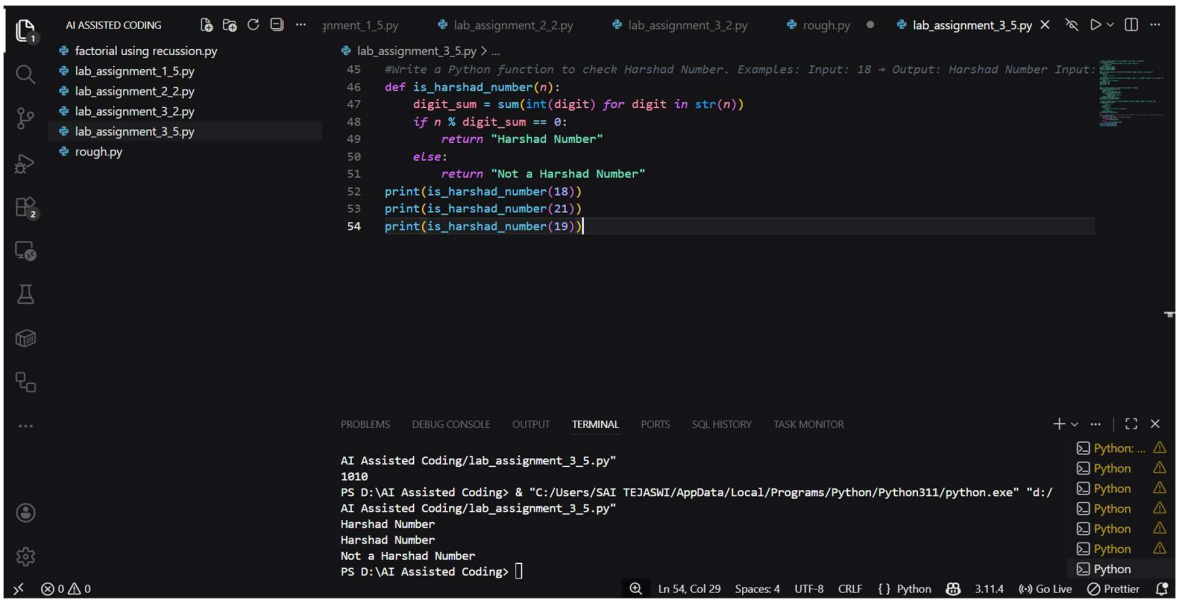
- Correct for positive numbers.
- For 0 returns '0'.
- Negative numbers return prefixed binary, needs clarification.

TASK-06: Few-Shot Prompting – Harshad Number Check

- Test boundary conditions.
- Evaluate robustness

PROMPT: Write a Python function to check Harshad Number. Examples: Input: 18 → Output: Harshad Number Input: 21 → Output: Harshad Number Input: 19 → Output: Not a Harshad Number

CODE:



Analysis

- Works correctly for positive integers.
- Division by zero occurs when input is 0.