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Batch : 51

Lab 4: Advanced Prompt Engineering – Zero-shot, One-shot, and Few-shot Techniques

Task 1: Zero-shot Prompting

Prompt:

Write a Python function to determine whether a given number is prime.

Code :

AI-4.2.py

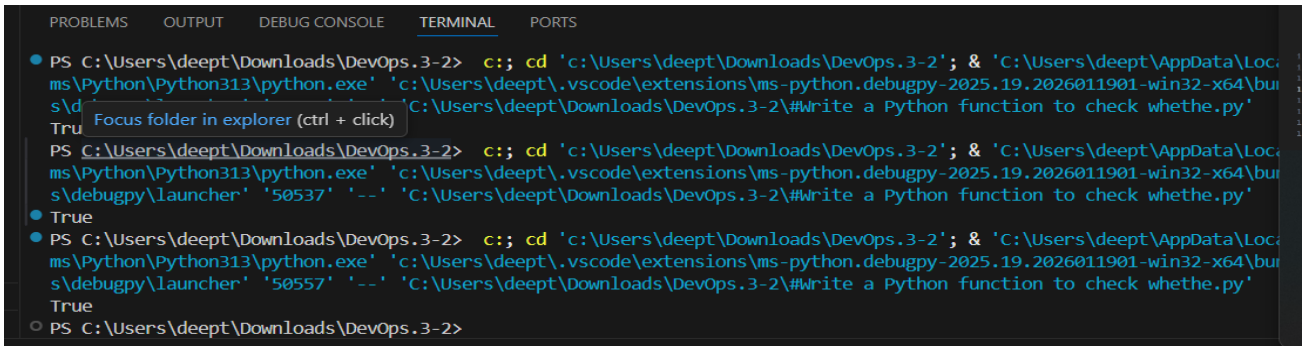
AI-4.2.py > is_prime

```python
#Write a Python function to determine whether a given number is prime.
def is_prime(n):
    """Check if a number is prime.
    Args:
        n (int): The number to check.
    Returns:
        bool: True if n is prime, False otherwise.
    """
    if n <= 1:
        return False
    for i in range(2, int(n**0.5) + 1):
        if n % i == 0:
            return False
    return True
# Example usage:
print(is_prime(17))  # Output: True
print(is_prime(15))  # Output: False
```

Explanation

- Uses only instruction, no examples.
- Checks divisibility up to √n.
- Correctly handles non-prime cases.

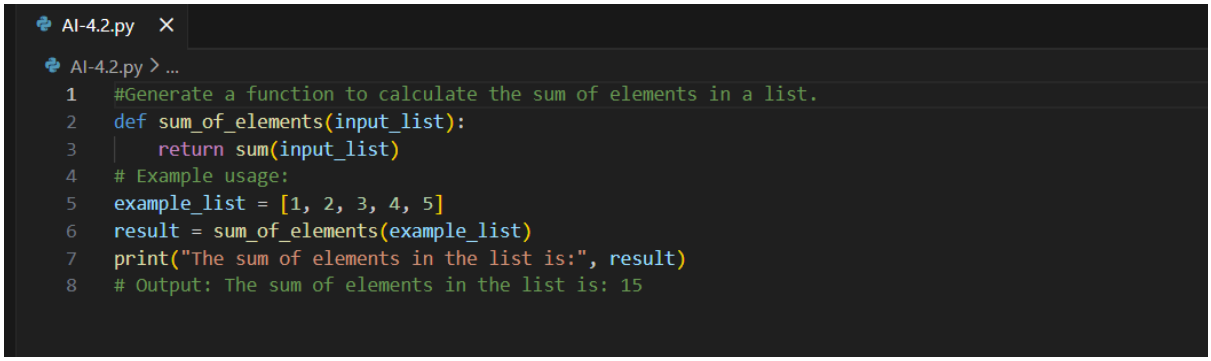
Output :



Task 2: One-shot Prompting

Prompt:
Generate a function to calculate the sum of elements in a list.

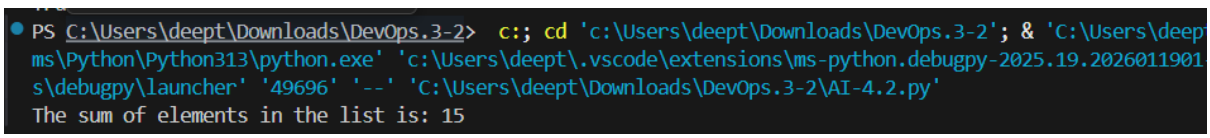
Code :



Explanation

- Single example guides the logic.
- Iterates through list and adds elements.

Output :



Task 3: Few-shot Prompting

Prompt :

Write a Python function that takes an alphanumeric string and returns only the digits.

Code :

```python
#write a Python function that takes an alphanumeric string and returns only the digits.
def extract_digits(alphanumeric_string):
    digits = ''.join(filter(str.isdigit, alphanumeric_string))
    return digits
# Example usage:
input_string = "a1b2c3d4e5"
result = extract_digits(input_string)
print(result)  # Output: 12345
```

Explanation

- Multiple examples clarify pattern.
- Extracts only numeric characters.

Output :

```
ms\Python\Python313\python.exe' 'c:\Users\deept\.vscode\extensions\ms-python.debugpy-2025.19.2026011901-win32-x64\bun
s\debugpy\launcher' '51269' '--' 'C:\Users\deept\Downloads\DevOps.3-2\AI-4.2.py'
12345
```

Task 4: Zero-shot vs Few-shot Comparison (Vowel Count)

Prompt :

Write a Python function to count the number of vowels in a given string.

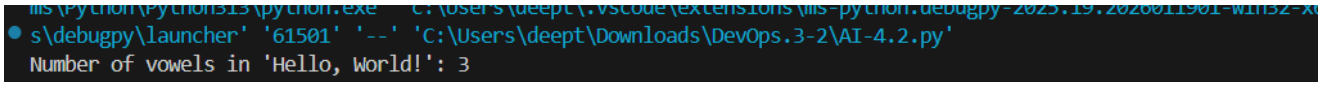
Code :

```python
#Write a Python function to count the number of vowels in a given string.
def count_vowels(input_string):
    vowels = "aeiouAEIOU"
    count = 0
    for char in input_string:
        if char in vowels:
            count += 1
    return count
# Example usage:
input_str = "Hello, World!"
print(f"Number of vowels in '{input_str}': {count_vowels(input_str)}")
# Output: Number of vowels in 'Hello, World!': 3
```

Comparison Explanation

- **Zero-shot**: Basic and longer logic.
- **Few-shot**: More optimized and concise.
- Examples help AI improve clarity and efficiency.

Output :

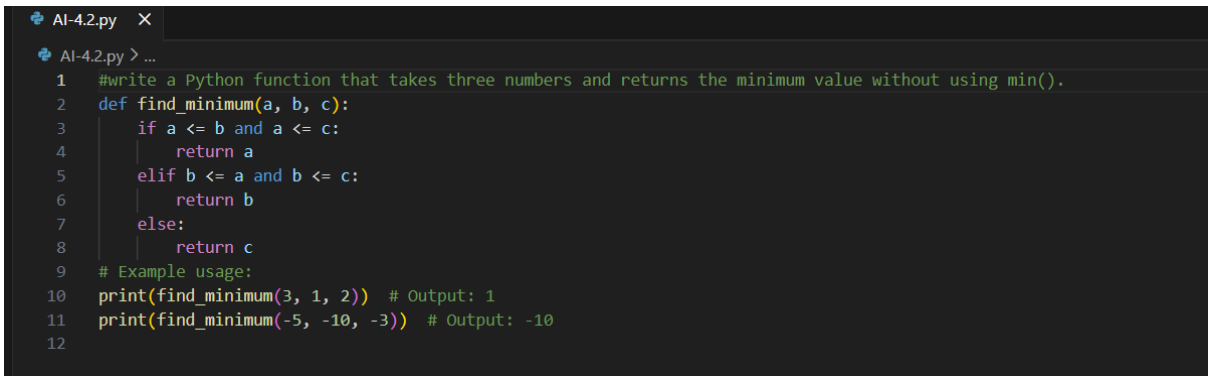


Task 5: Few-shot Prompting (Minimum of Three Numbers)

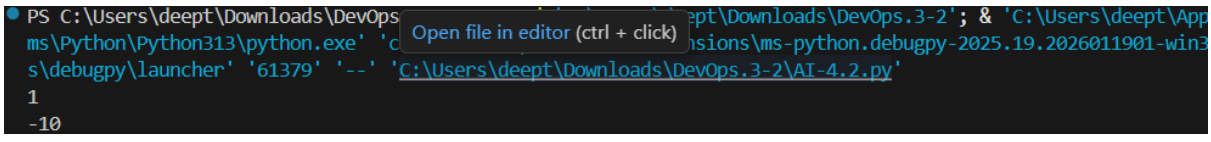
Prompt :

write a Python function that takes three numbers and returns the minimum value without using min().

Code :



Explanation

- Uses conditional logic.
- Does not use built-in `min()`.
- Covers all comparison cases.

Output :