

AI Assisted Coding

Assignment 9.3

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Batch no: 19

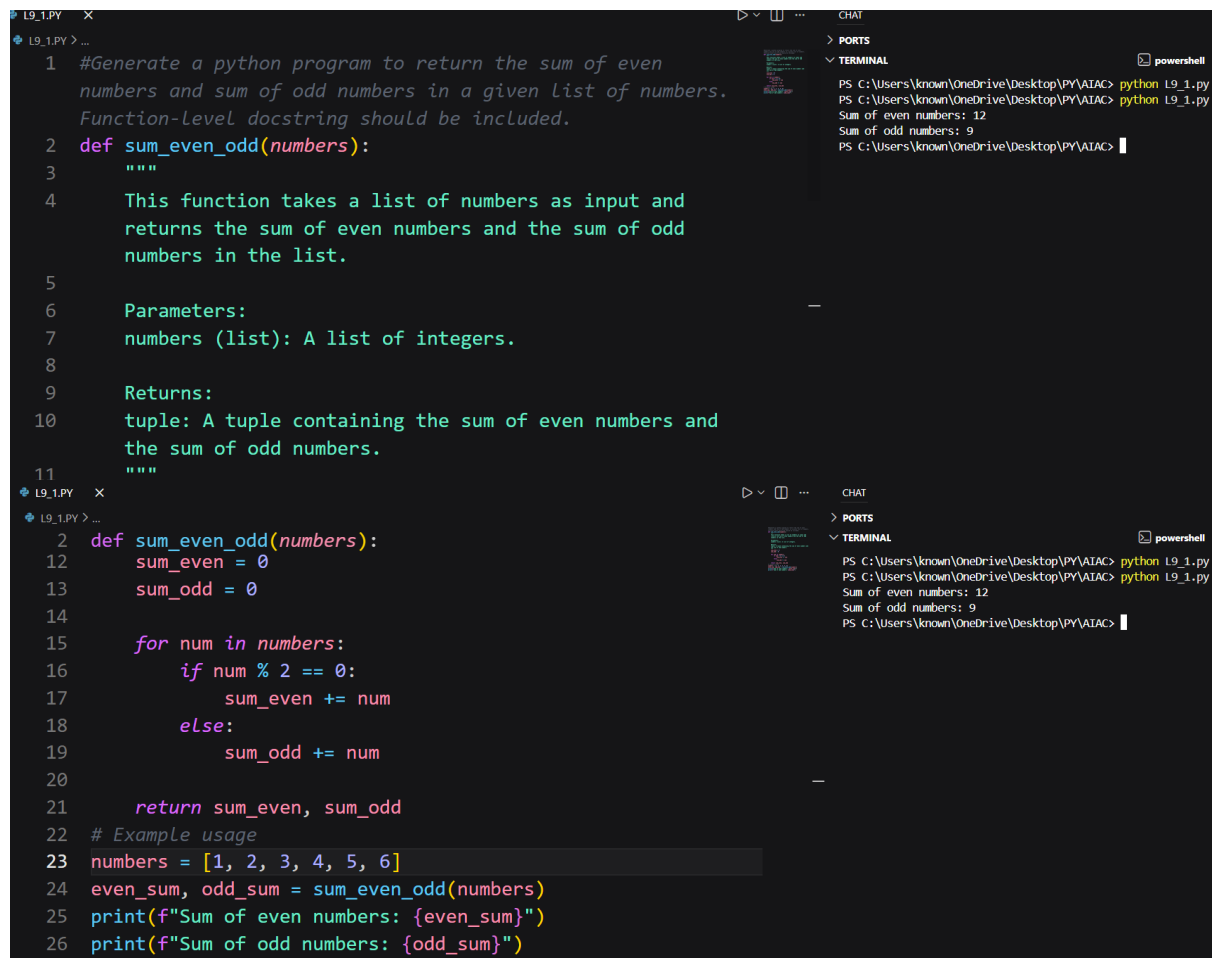
Task 1: Basic Docstring Generation

Prompt:

Write a Python function that returns the sum of even numbers and the sum of odd numbers in a given list.

Add a Google Style docstring manually and then generate a docstring using AI assistance for the same function.

Code & Output:



The screenshot displays a code editor with two files named 'L9_1.PY'. The top file contains a docstring generated by AI, which describes the function's purpose, parameters, and return value. The bottom file contains the actual Python code for the function, which iterates through a list of numbers, calculates the sum of even and odd numbers, and prints the results. A terminal window on the right shows the execution of the script, displaying the output: 'Sum of even numbers: 12' and 'Sum of odd numbers: 9'.

```
1 #Generate a python program to return the sum of even
  numbers and sum of odd numbers in a given List of numbers.
  Function-level docstring should be included.
2 def sum_even_odd(numbers):
3     """
4     This function takes a list of numbers as input and
5     returns the sum of even numbers and the sum of odd
6     numbers in the list.
7
8     Parameters:
9     numbers (list): A list of integers.
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11    Returns:
12    tuple: A tuple containing the sum of even numbers and
13    the sum of odd numbers.
14    """
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```

```
2 def sum_even_odd(numbers):
3     sum_even = 0
4     sum_odd = 0
5
6     for num in numbers:
7         if num % 2 == 0:
8             sum_even += num
9         else:
10            sum_odd += num
11
12    return sum_even, sum_odd
13
14 # Example usage
15 numbers = [1, 2, 3, 4, 5, 6]
16 even_sum, odd_sum = sum_even_odd(numbers)
17 print(f"Sum of even numbers: {even_sum}")
18 print(f"Sum of odd numbers: {odd_sum}")
```

Terminal Output:

```
PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
Sum of even numbers: 12
Sum of odd numbers: 9
PS C:\Users\known\OneDrive\Desktop\PY\AIAC>
```

The image displays three sequential screenshots of a code editor, illustrating the evolution of a Python function's docstring. Each screenshot shows a file named `L9_1.PY` and a terminal window on the right.

Top Screenshot: The function `sum_even_odd(numbers)` is defined with a basic docstring. The docstring includes a description of the function's purpose (calculating the sum of even and odd numbers) and its arguments (a list of integers). The terminal shows the function being executed with a list of integers, resulting in the output: "Sum of even numbers: 12" and "Sum of odd numbers: 9".

Middle Screenshot: The docstring is expanded to include a "Returns" section, specifying that the function returns a tuple containing the sum of even numbers and the sum of odd numbers. The terminal output remains the same.

Bottom Screenshot: The docstring is further refined to include a "Raises" section, indicating that a `TypeError` will be raised if the input is not a list of integers. An "Example" section is also added, showing the function being called with a list of integers and the resulting output. The terminal output remains the same.

Explanation:

The manual docstring provides a more descriptive explanation of the function's purpose and return structure. It clearly states the argument type and explains the output in sentence form. The AI-generated docstring is shorter and more concise but still correct. However, it lacks deeper descriptive clarity compared to the manual version. This comparison highlights that AI-generated documentation is accurate but sometimes less detailed, requiring human refinement for completeness.

Task 2: Automatic Inline Comments

Prompt:

Generate a Python class named `sru_student` with attributes `name`, `roll_no`, and `hostel_status`, and methods `fee_update()` and `display_details()`. Add inline comments automatically.

Code & Output:

```
L9_1.PY X
L9_1.PY > SRUStudentClass > display_details
1  #Generate a python program for sru_student_class,
   with attributes name,rollno,hostel_status and methods
   like fee_update and display_details.
2  class SRUStudentClass:
3      def __init__(self, name, rollno, hostel_status)
       :#Constructor to initialize the attributes
4          self.name = name
5          self.rollno = rollno
6          self.hostel_status = hostel_status
7          self.fee = 0
8
9      def fee_update(self, amount):#Method to update
       the fee
10         self.fee += amount
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```

```
L9_1.PY X
L9_1.PY > SRUStudentClass > display_details
2  class SRUStudentClass:
11      print(f"Fee updated. Current fee: {self.fee}")
12
13      def display_details(self):#Method to display the
       details of the student
14          print(f"Name: {self.name}")
15          print(f"Roll No: {self.rollno}")
16          print(f"Hostel Status: {self.hostel_status}")
17          print(f"Current Fee: {self.fee}")
18
19      # Example usage
20      student1 = SRUStudentClass("Alice", "12345", "Hostel")
21      student1.display_details()
22      student1.fee_update(5000)
23      student1.display_details()
```

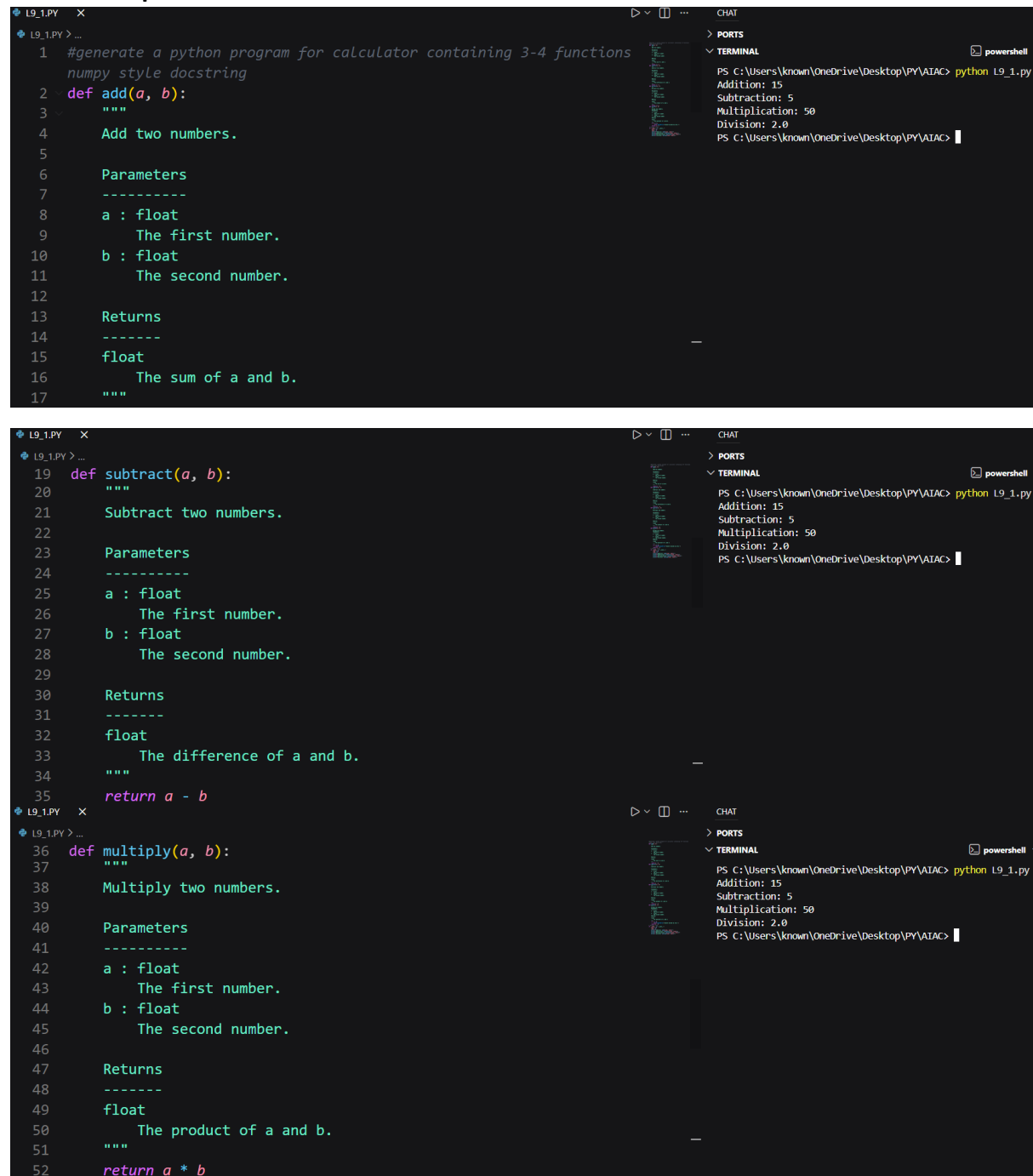
```
CHAT
PORTS
TERMINAL
PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
Name: Alice
Roll No: 12345
Hostel Status: Hostel
Current Fee: 0
Fee updated. Current fee: 5000
Name: Alice
Roll No: 12345
Hostel Status: Hostel
Current Fee: 5000
PS C:\Users\known\OneDrive\Desktop\PY\AIAC>

PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
Name: Alice
Roll No: 12345
Hostel Status: Hostel
Current Fee: 0
Fee updated. Current fee: 5000
Name: Alice
Roll No: 12345
Hostel Status: Hostel
Current Fee: 5000
PS C:\Users\known\OneDrive\Desktop\PY\AIAC>
```

```
L9_1.PY X
1 #Generate a python program for sru_student_class, with
  attributes name,rollno,hostel_status and methods like
  fee_update and display_details.
2 class SRUStudentClass:
3     def __init__(self, name, rollno, hostel_status):
4         :#Constructor to initialize the attributes of the
5         student class
6         self.name = name
7         self.rollno = rollno
8         self.hostel_status = hostel_status
9         self.fee = 0
10
11     def fee_update(self, amount):#Method to update the fee
12     of the student. It takes an amount as input and adds it
13     to the current fee.
14         self.fee += amount
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```

Code & Output:



```
1 #generate a python program for calculator containing 3-4 functions
2 #numpy style docstring
3
4 def add(a, b):
5     """
6     Add two numbers.
7
8     Parameters
9     -----
10    a : float
11        The first number.
12    b : float
13        The second number.
14
15    Returns
16    -----
17    float
18        The sum of a and b.
19    """
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Output:

```
PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
Addition: 15
Subtraction: 5
Multiplication: 50
Division: 2.0
PS C:\Users\known\OneDrive\Desktop\PY\AIAC>
```

```
L9_1.PY x
L9_1.PY > ...
53 def divide(a, b):
54     """
55     Divide two numbers.
56     Parameters
57     -----
58     a : float
59         The first number.
60     b : float
61         The second number.
62     Returns
63     -----
64     float
65         The quotient of a and b.
66     """
67     if b == 0:
68         raise ValueError("Cannot divide by zero.")
69     return a / b

L9_1.PY x
L9_1.PY > ...
70 # Example usage
71 if __name__ == "__main__":
72     num1 = 10
73     num2 = 5
74     print(f"Addition: {add(num1, num2)}")
75     print(f"Subtraction: {subtract(num1, num2)}")
76     print(f"Multiplication: {multiply(num1, num2)}")
77     print(f"Division: {divide(num1, num2)}")
78
```

PORTS

TERMINAL

```
PS C:\Users\known\OneDrive\Desktop\PY\AIAC> python L9_1.py
Addition: 15
Subtraction: 5
Multiplication: 50
Division: 2.0
PS C:\Users\known\OneDrive\Desktop\PY\AIAC>
```

Explanation:

Manual NumPy-style docstrings follow a structured scientific documentation format with sections for parameters and returns. AI-generated documentation is concise and suitable for module overviews but lacks deep parameter-level detailing. AI performs well in summarization, while manual documentation provides stronger technical clarity.

Final Conclusion:

This lab demonstrated the role of AI in generating documentation and comments automatically. AI-assisted tools significantly reduce documentation effort and improve consistency. However, human review remains essential to ensure clarity, correctness, and contextual relevance in software documentation.