

# AI Assisted Coding

## Assignment 9.3

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### **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:**

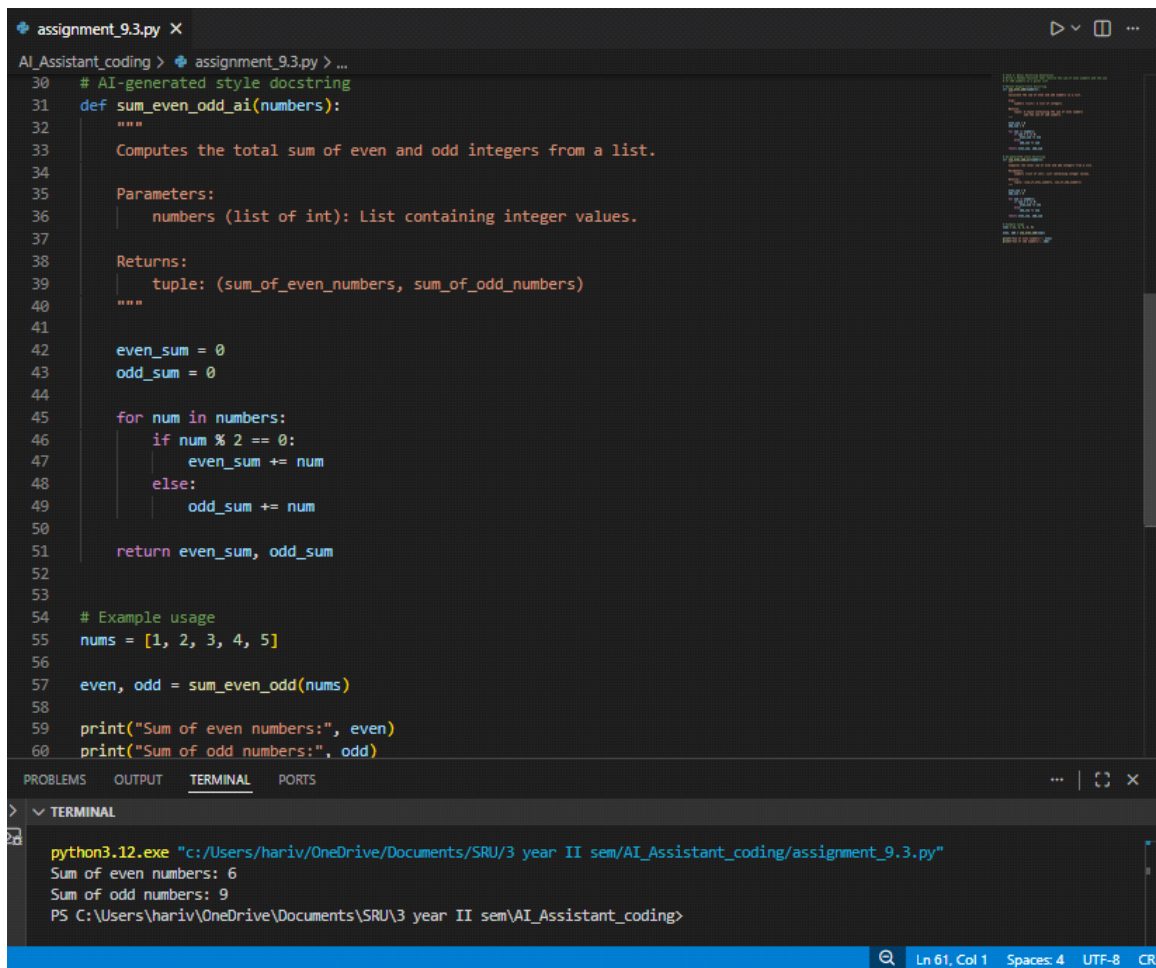
```
assignment_9.3.py X
AI_Assistant_coding > assignment_9.3.py > ...
1 # Task 1: Basic Docstring Generation
2 # Write a Python function that returns the sum of even numbers and the sum
3 # of odd numbers in a given list.
4
5 # Manual Google-style docstring
6 def sum_even_odd(numbers):
7     """
8     Calculate the sum of even and odd numbers in a list.
9
10    Args:
11        numbers (list): A list of integers.
12
13    Returns:
14        tuple: A tuple containing the sum of even numbers
15              and the sum of odd numbers.
16    """
17
18    even_sum = 0
19    odd_sum = 0
20
21    for num in numbers:
22        if num % 2 == 0:
23            even_sum += num
24        else:
25            odd_sum += num
26
27    return even_sum, odd_sum
28
29
30 # AI-generated style docstring
31 def sum_even_odd_ai(numbers):
```

PROBLEMS OUTPUT TERMINAL PORTS

TERMINAL

```
python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/assignment_9.3.py"
Sum of even numbers: 6
Sum of odd numbers: 9
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

Ln 61, Col 1 Spaces: 4 UTF-8 CRLF



The screenshot shows a code editor with a file named `assignment_9.3.py`. The code defines a function `sum_even_odd_ai(numbers)` with a docstring and example usage. The terminal output shows the execution of the script, displaying the sum of even and odd numbers for the input list `[1, 2, 3, 4, 5]`.

```
30 # AI-generated style docstring
31 def sum_even_odd_ai(numbers):
32     """
33     Computes the total sum of even and odd integers from a list.
34
35     Parameters:
36     | numbers (list of int): List containing integer values.
37
38     Returns:
39     | tuple: (sum_of_even_numbers, sum_of_odd_numbers)
40     """
41
42     even_sum = 0
43     odd_sum = 0
44
45     for num in numbers:
46         if num % 2 == 0:
47             even_sum += num
48         else:
49             odd_sum += num
50
51     return even_sum, odd_sum
52
53
54 # Example usage
55 nums = [1, 2, 3, 4, 5]
56
57 even, odd = sum_even_odd_ai(nums)
58
59 print("Sum of even numbers:", even)
60 print("Sum of odd numbers:", odd)
```

```
python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/assignment_9.3.py"
Sum of even numbers: 6
Sum of odd numbers: 9
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

## Explanation:

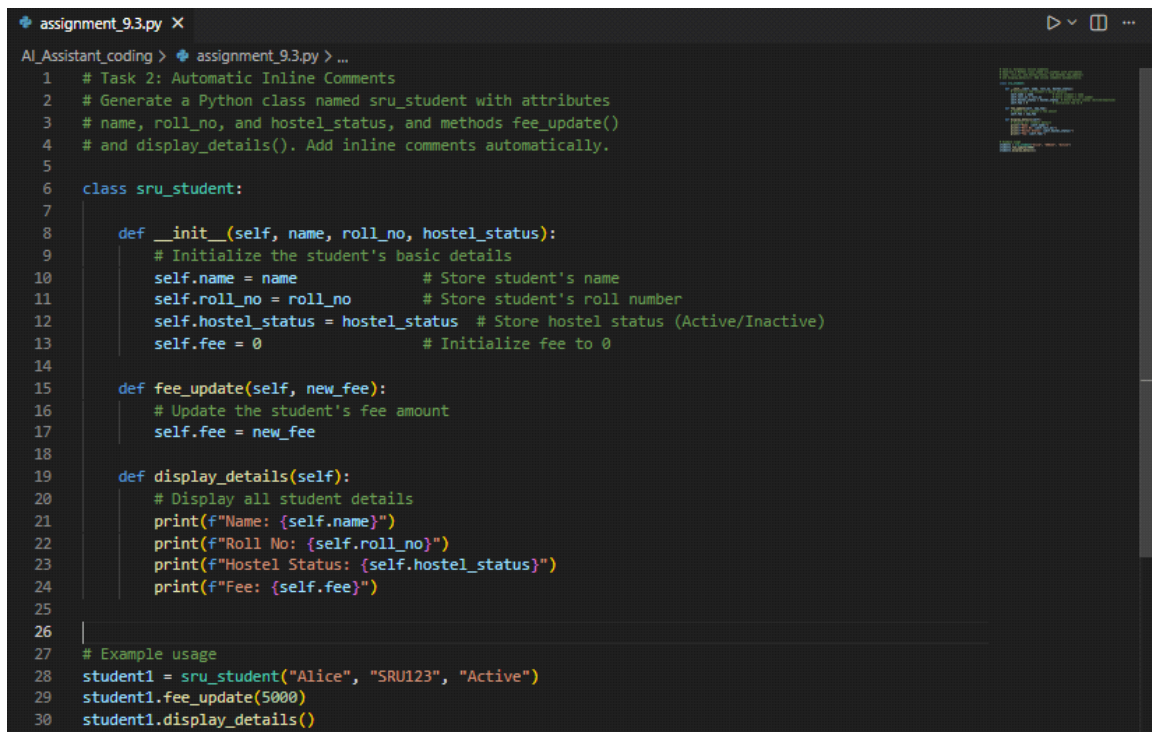
The manual docstring gives a clear and detailed explanation of the function's purpose and return value. The AI-generated version is shorter and accurate but less descriptive. This comparison shows that AI can create correct documentation, yet human refinement is needed to make it more complete and clear.

## Task 2: Automatic Inline Comments

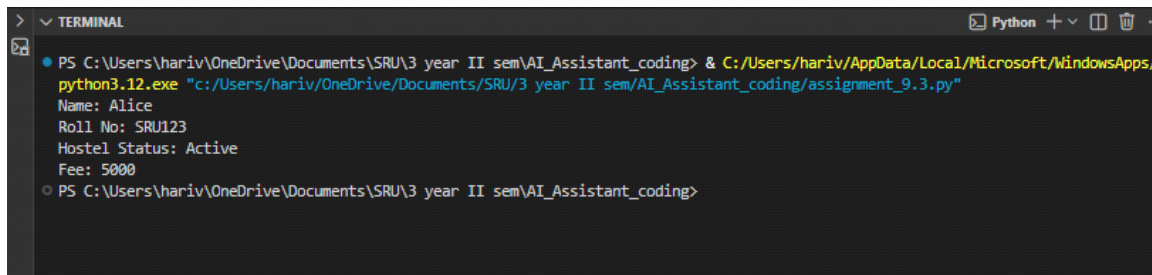
### Prompt:

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:



```
assignment_9.3.py X
AI_Assistant_coding > assignment_9.3.py > ...
1 # Task 2: Automatic Inline Comments
2 # Generate a Python class named sru_student with attributes
3 # name, roll_no, and hostel_status, and methods fee_update()
4 # and display_details(). Add inline comments automatically.
5
6 class sru_student:
7
8     def __init__(self, name, roll_no, hostel_status):
9         # Initialize the student's basic details
10        self.name = name # Store student's name
11        self.roll_no = roll_no # Store student's roll number
12        self.hostel_status = hostel_status # Store hostel status (Active/Inactive)
13        self.fee = 0 # Initialize fee to 0
14
15    def fee_update(self, new_fee):
16        # Update the student's fee amount
17        self.fee = new_fee
18
19    def display_details(self):
20        # Display all student details
21        print(f"Name: {self.name}")
22        print(f"Roll No: {self.roll_no}")
23        print(f"Hostel Status: {self.hostel_status}")
24        print(f"Fee: {self.fee}")
25
26
27 # Example usage
28 student1 = sru_student("Alice", "SRU123", "Active")
29 student1.fee_update(5000)
30 student1.display_details()
```



```
> TERMINAL Python + v
● PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/assignment_9.3.py"
Name: Alice
Roll No: SRU123
Hostel Status: Active
Fee: 5000
○ PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

## Explanation:

Manual comments are clear, specific, and reflect the developer's intent. AI-generated comments are accurate but tend to be more general and sometimes explain obvious code lines. This shows that while AI can speed up

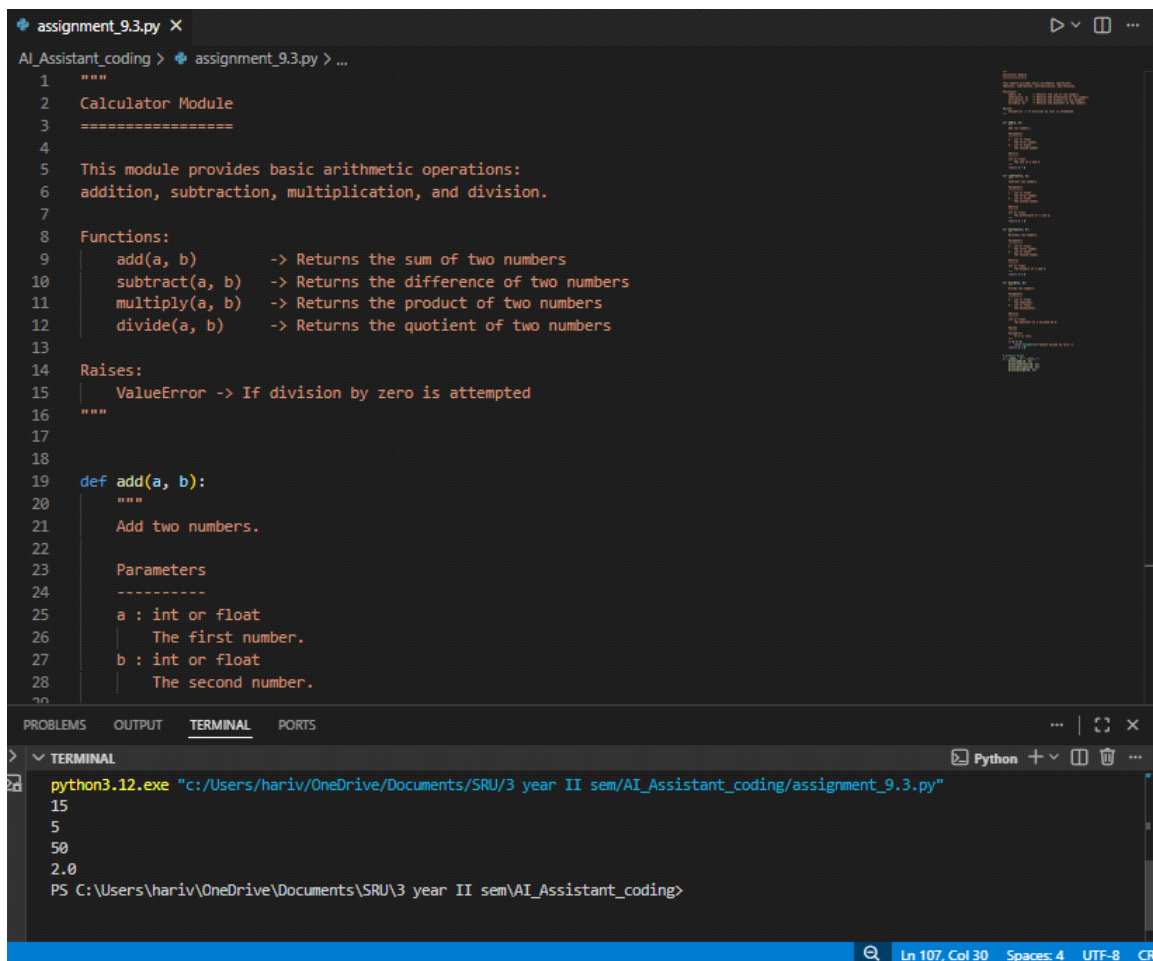
documentation, human review is important to ensure the comments are meaningful and not repetitive.

## Task 3: Module-Level and Function-Level Documentation

### Prompt:

Generate a Python calculator module with functions add, subtract, multiply, and divide. Add NumPy-style docstrings manually and then generate module-level and function-level documentation using AI assistance.

### Code & Output:



```
assignment_9.3.py X
AI_Assistant_coding > assignment_9.3.py > ...
1  """
2  Calculator Module
3  =====
4
5  This module provides basic arithmetic operations:
6  addition, subtraction, multiplication, and division.
7
8  Functions:
9      add(a, b)      -> Returns the sum of two numbers
10     subtract(a, b)  -> Returns the difference of two numbers
11     multiply(a, b)   -> Returns the product of two numbers
12     divide(a, b)     -> Returns the quotient of two numbers
13
14  Raises:
15      ValueError -> If division by zero is attempted
16  """
17
18
19  def add(a, b):
20      """
21      Add two numbers.
22
23      Parameters
24      -----
25      a : int or float
26          The first number.
27      b : int or float
28          The second number.
29  """
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assignment_9.3.py X
AI_Assistant_coding > assignment_9.3.py > ...
19 def add(a, b):
20     """
21     Returns
22     -----
23     int or float
24     | The sum of a and b.
25     """
26     return a + b
27
28 def subtract(a, b):
29     """
30     Subtract two numbers.
31
32     Parameters
33     -----
34     a : int or float
35     | The first number.
36     b : int or float
37     | The second number.
38
39     Returns
40     -----
41     int or float
42     | The difference of a and b.
43     """
44     return a - b
45
46 def multiply(a, b):
47     """
48     Multiply two numbers.
49
50     Parameters
51     -----
52     a : int or float
53     | The first number.
54     b : int or float
55     | The second number.
56     """
57     return a * b
58
59 def divide(a, b):
60     """
61     Divide two numbers.
62
63     Parameters
64     -----
65     a : int or float
66     | The first number.
67     b : int or float
68     | The second number.
69
70     Returns
71     -----
72     int or float
73     | The result of a divided by b.
74     """
75     return a / b
76
77 def power(a, b):
78     """
79     Raise a to the power of b.
80
81     Parameters
82     -----
83     a : int or float
84     | The base.
85     b : int or float
86     | The exponent.
87
88     Returns
89     -----
90     int or float
91     | The result of a raised to the power of b.
92     """
93     return a ** b
94
95 def modulo(a, b):
96     """
97     Find the remainder of a divided by b.
98
99     Parameters
100    -----
101    a : int or float
102    | The dividend.
103    b : int or float
104    | The divisor.
105
106    Returns
107    -----
108    int or float
109    | The remainder of a divided by b.
110    """
111    return a % b
112
113 def floor_divide(a, b):
114     """
115     Floor divide a by b.
116
117     Parameters
118     -----
119     a : int or float
120     | The dividend.
121     b : int or float
122     | The divisor.
123
124     Returns
125     -----
126     int or float
127     | The result of a floor divided by b.
128     """
129     return a // b
130
131 def remainder(a, b):
132     """
133     Find the remainder of a divided by b.
134
135     Parameters
136     -----
137     a : int or float
138     | The dividend.
139     b : int or float
140     | The divisor.
141
142     Returns
143     -----
144     int or float
145     | The remainder of a divided by b.
146     """
147     return a % b
148
149 def power_mod(a, b, c):
150     """
151     Raise a to the power of b modulo c.
152
153     Parameters
154     -----
155     a : int or float
156     | The base.
157     b : int or float
158     | The exponent.
159     c : int or float
160     | The modulus.
161
162     Returns
163     -----
164     int or float
165     | The result of a raised to the power of b modulo c.
166     """
167     return a ** b % c
168
169 def gcd(a, b):
170     """
171     Find the greatest common divisor of a and b.
172
173     Parameters
174     -----
175     a : int or float
176     | The first number.
177     b : int or float
178     | The second number.
179
180     Returns
181     -----
182     int or float
183     | The greatest common divisor of a and b.
184     """
185     return math.gcd(a, b)
186
187 def lcm(a, b):
188     """
189     Find the least common multiple of a and b.
190
191     Parameters
192     -----
193     a : int or float
194     | The first number.
195     b : int or float
196     | The second number.
197
198     Returns
199     -----
200     int or float
201     | The least common multiple of a and b.
202     """
203     return math.lcm(a, b)
204
205 def is_prime(n):
206     """
207     Check if a number is prime.
208
209     Parameters
210     -----
211     n : int or float
212     | The number to check.
213
214     Returns
215     -----
216     bool
217     | True if n is prime, False otherwise.
218     """
219     return math.isprime(n)
220
221 def is_perfect_square(n):
222     """
223     Check if a number is a perfect square.
224
225     Parameters
226     -----
227     n : int or float
228     | The number to check.
229
230     Returns
231     -----
232     bool
233     | True if n is a perfect square, False otherwise.
234     """
235     return math.isqrt(n) ** 2 == n
236
237 def is_palindrome(s):
238     """
239     Check if a string is a palindrome.
240
241     Parameters
242     -----
243     s : str
244     | The string to check.
245
246     Returns
247     -----
248     bool
249     | True if s is a palindrome, False otherwise.
250     """
251     return s == s[::-1]
252
253 def is_anagram(s1, s2):
254     """
255     Check if two strings are anagrams.
256
257     Parameters
258     -----
259     s1 : str
260     | The first string.
261     s2 : str
262     | The second string.
263
264     Returns
265     -----
266     bool
267     | True if s1 and s2 are anagrams, False otherwise.
268     """
269     return sorted(s1) == sorted(s2)
270
271 def is_substring(s1, s2):
272     """
273     Check if s1 is a substring of s2.
274
275     Parameters
276     -----
277     s1 : str
278     | The substring.
279     s2 : str
280     | The string.
281
282     Returns
283     -----
284     bool
285     | True if s1 is a substring of s2, False otherwise.
286     """
287     return s1 in s2
288
270
```

```
assignment_93.py X
AL_Assistant_coding > assignment_93.py > _
57 def multiply(a, b):
58     """
59     Returns
60     -----
61     int or float
62     | The product of a and b.
63     """
64     return a * b
65
66 def divide(a, b):
67     """
68     Divide two numbers.
69
70     Parameters
71     -----
72     a : int or float
73     | The numerator.
74     b : int or float
75     | The denominator.
76
77     Returns
78     -----
79     int or float
80     | The quotient of a divided by b.
81
82     Raises
83     -----
84     ValueError
85     | If b is zero.
86     """
87     if b == 0:
88         raise ValueError("Cannot divide by zero.")
89     return a / b
90
91 # Example Usage
92 if __name__ == "__main__":
93     print(add(10, 5))
94     print(subtract(10, 5))
95     print(multiply(10, 5))
96     print(divide(10, 5))
97
98
```

## Explanation:

Manual NumPy-style docstrings follow a well-structured scientific format with clear sections for parameters and return values. The AI-generated version is concise and useful for general overviews but does not provide detailed parameter-level explanations. While AI is strong at summarizing, manual documentation offers better technical depth and clarity.