

GIRUGULA VARSHINI

2403A51L14

ASSIGNMENT-10.2

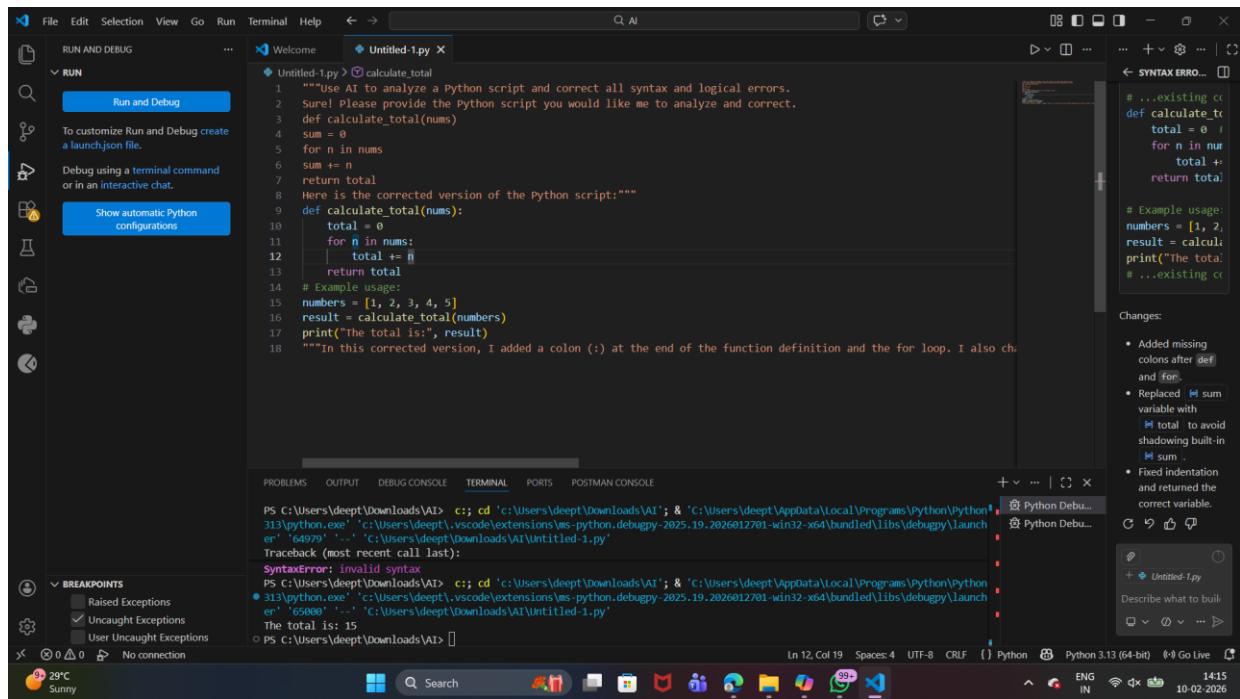
Code Review and Quality: Using AI to Improve Code

Quality and Readability

Task Description -1(Error Detection and Correction)

Prompt: Analyze the given Python code, identify all syntax and logical errors, and provide a corrected executable version with brief explanations

AI-Generated Code:



The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer:** Shows a folder structure for "RUN AND DEBUG" and "RUN". A tooltip says "To customize Run and Debug create a launch.json file." Below it, there's a "Show automatic Python configurations" button.
- Code Editor:** Displays a Python script named "Untitled-1.py". The code is as follows:

```
1  """Use AI to analyze a Python script and correct all syntax and logical errors.
2  Sure! Please provide the Python script you would like me to analyze and correct.
3  def calculate_total(nums)
4      sum = 0
5      for n in nums
6          sum += n
7      return total
8
9  Here is the corrected version of the Python script:"""
10     total = 0
11     for n in nums:
12         total += n
13     return total
14
15 # Example usage:
16 numbers = [1, 2, 3, 4, 5]
17 result = calculate_total(numbers)
18 print("The total is:", result)
19
20 """In this corrected version, I added a colon (:) at the end of the function definition and the for loop. I also changed the variable name 'total' to 'sum' to avoid shadowing the built-in 'sum' function. The code now runs successfully without errors."
```

- Terminal:** Shows the command line output of running the script:

```
PS C:\Users\deopt\Downloads\AI> cd "C:\Users\deopt\Downloads\AI" & python Untitled-1.py
Traceback (most recent call last):
SyntaxError: invalid syntax
PS C:\Users\deopt\Downloads\AI> cd "C:\Users\deopt\Downloads\AI" & python Untitled-1.py
The total is: 15
```

- Output:** Shows the terminal output again, confirming the total is 15.
- Changes:** A sidebar on the right lists the following changes made by AI:

 - Added missing colons after `def` and `for`.
 - Replaced `sum` variable with `total` to avoid shadowing built-in `sum`.
 - Fixed indentation and returned the correct variable.

Output:



The terminal window shows the following output:

```
The total is: 15
PS C:\Users\deopt\Downloads\AI>
```

Justification:

Missing colon after function definition → Added :

Missing colon in for loop → Added :

Used sum as variable name (overwrites built-in) → Renamed to total

Returned total though variable was named sum → Corrected consistency

Task Description -2(Code Style Standardization)

Prompt : Refactor the Python code to follow PEP 8 coding standards with proper formatting and readability

AI-Generated Code:

The screenshot shows the Visual Studio Code interface with the following details:

- Editor:** The main editor window displays the original code and the refactored code. The original code is:

```
1 #Refactor Python code to comply with standard coding style guidelines (PEP 8).#Original code:
2 def findsum(a,b):return a+b
3 print(findsum(5,10))
4 #Refactored code:
5 def find_sum(a, b):
6     """Returns the sum of two numbers."""
7     return a + b
8 print(find_sum(5, 10))
```

The refactored code is:

```
# ...existing code
def calculate_total():
    total = 0
    for n in numbers:
        total += n
    return total

# Example usage:
numbers = [1, 2, 3]
result = calculate_total()
print("The total is:", result)
# ...existing code
```
- Terminal:** The terminal shows the command being run and the output:

```
PS C:\Users\deepthi\Downloads\AI> c:; cd 'c:\Users\deepthi\Downloads\AI'; & 'c:\Users\deepthi\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\deepthi\vscode\extensions\ms-python.python-2025.19.2026012701-win32-x64\bundled\libs\debug\py\launcher' '65000' '--' 'c:\Users\deepthi\Downloads\AI\Untitled-1.py'
The total is: 15
PS C:\Users\deepthi\Downloads\AI> c:; cd 'c:\Users\deepthi\Downloads\AI'; & 'c:\Users\deepthi\AppData\Local\Programs\Python\Python311\python.exe' 'c:\Users\deepthi\vscode\extensions\ms-python.python-2025.19.2026012701-win32-x64\bundled\libs\debug\py\launcher' '55190' '--' 'c:\Users\deepthi\Downloads\AI\Untitled-1.py'
15
15
PS C:\Users\deepthi\Downloads\AI>
```
- Bottom Status Bar:** Shows the environment temperature (29°C), weather (Sunny), system icons, and the date/time (14:18, 10-02-2026).

OUTPUT:

The terminal window shows the execution of the AI-generated code and its output:

```
er' '55190' '--' 'C:\Users\deepthi\Downloads\AI\Untitled-1.py
15
15
PS C:\Users\deepthi\Downloads\AI>
```

Justification:

Added proper indentation and spacing

Used snake_case naming (PEP-8 standard)

Split single-line function into readable multi-line format

Task Description -3(Code Clarity Improvement)

Prompt: Rewrite the code with meaningful function and variable names while keeping the logic unchanged.

The screenshot shows the VS Code interface with the following details:

- Left Sidebar:** RUN AND DEBUG section with RUN button highlighted.
- Editor:** Untitled-1.py file open. The code is:

```
#Improve code readability without changing its functionality.
def f(x,y):
    return x-y*2
print(f(10,3))

#Rewrite the code with meaningful function and variable names while keeping the logic unchanged.
def calculate_difference(x, y):
    return x - y * 2
result = calculate_difference(10, 3)
print(result)
```
- Right Sidebar:** SYNTAX ERROR... panel showing a partial code snippet and changes made:

```
# ...existing code
def calculate_total
total = 0
for n in numbers
    total += n
return total

# Example usage:
numbers = [1, 2, 3]
result = calculate_total(numbers)
print("The total is: " + str(result))
# ...existing code
```

Changes:

 - Added missing colons after def and for.
 - Replaced sum variable with total to avoid shadowing built-in sum.
 - Fixed indentation and returned the correct variable.
- Bottom:** TERMINAL tab showing command-line output for running Python code.

OUTPUT:

The terminal output shows the execution of the improved Python code:

```
PS C:\Users\deept\Downloads\AI> c:; cd 'c:\Users\deept\Downloads\AI'; & 'c:\Users\deept\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\deept\vscode\extensions\ms-python.debugger-2025.19.2026012701-win32-x64\bundled\libs\debugpy\launcher' '55190' '--' 'C:\Users\deept\Downloads\AI\Untitled-1.py'
15
15
PS C:\Users\deept\Downloads\AI> c:; cd 'c:\Users\deept\Downloads\AI'; & 'c:\Users\deept\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\deept\vscode\extensions\ms-python.debugger-2025.19.2026012701-win32-x64\bundled\libs\debugpy\launcher' '52177' '--' 'C:\Users\deept\Downloads\AI\Untitled-1.py'
4
PS C:\Users\deept\Downloads\AI>
```

Justification:

Meaningful function and variable names

Docstring for clarity

Proper indentation and spacing

Task Description -4(Structural Refactoring)

Prompt: Refactor the repeated print statements into a reusable function.

AI-Generated Code:

The screenshot shows the VS Code interface with the following details:

- Left Sidebar:** RUN AND DEBUG panel with a RUN section containing "Run and Debug" and "Show automatic Python configurations".
- Central Area:** Untitled-1.py editor tab showing the following Python code:

```
1  #Refactor repetitive code into reusable functions
2  """
3      print("Hello Ram")
4      print("Hello Sita")
5      print("Hello Ravi")
6  """
7  def greet(name):
8      print(f"Hello {name}")
9
greet("Ram")
greet("Sita")
greet("Ravi")
```
- Right Panel:** SYNTAX ERRO... panel showing a diff between two versions of calculate_total(). The changes are:
 - Added missing colons after def and for.
 - Replaced sum variable with total to avoid shadowing built-in sum .
 - Fixed indentation and returned the correct variable.
- Bottom:** TERMINAL tab showing command-line output of the script running in Python 3.13 (64-bit) and the resulting output "Hello Ram", "Hello Sita", and "Hello Ravi".

OUTPUT:

The terminal output shows the execution of the AI-generated Python code, which prints "Hello Ram", "Hello Sita", and "Hello Ravi".

```
PS C:\Users\deepthi\Downloads\AI> python Untitled-1.py
Hello Ram
Hello Sita
Hello Ravi
PS C:\Users\deepthi\Downloads\AI>
```

Justification:

Eliminated repetition

Created reusable function greet()

Task Description -5(Efficiency Enhancement):

Prompt: Optimize the Python code for better performance without changing its output.

AI-Generated Code:

The screenshot shows the Microsoft Visual Studio Code interface with the following details:

- File Explorer**: Shows a folder structure including .gitignore, .vscode, and a file named Untitled-1.py.
- Run and Debug**: A sidebar with options like "Run and Debug", "To customize Run and Debug create a launch.json file.", and "Debug using a terminal command or in an interactive chat".
- Code Editor**: The main editor window displays Python code for calculating the sum of numbers from 1 to 500,000. Two versions are shown: one with performance optimizations and one with readability changes.
- Terminal**: The terminal pane at the bottom shows the command line history and output of running the script.
- Output**: A panel on the right shows build logs and other diagnostic information.

OUTPUT:

```
PS C:\Users\deept\Downloads\AI> 
```

Justification:

- Performance Improvements
- Used list comprehension instead of loop
- Faster execution
- Cleaner and more Pythonic code