

**School of Computer Science and Artificial
Intelligence**
LabAssignment-10.2

Course Title : AI Assisted Coding

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Lab 10 – Code Review and Quality: Using AI to Improve Code Quality and Readability

Lab Objectives

- Use AI for automated code review and quality enhancement.
- Identify and fix syntax, logical, performance, and security issues in Python code.
- Improve readability and maintainability through structured Week5 - Tuesday refactoring and comments.
- Apply prompt engineering for targeted improvements.
- Evaluate AI-generated suggestions against PEP 8 standards and software engineering best practices

Task 1 – Error Detection and Correction Issues in Given Code

- Missing colon : after function definition.
- Wrong indentation.
- Missing colon in for loop.
- Variable total not defined (should return sum).
- Avoid using built-in name sum as a variable.

The screenshot shows a Jupyter Notebook cell with the following content:

```
[1] ✓ 0s
def calculate_total(nums):
    total = 0
    for n in nums:
        total += n
    return total

# Example usage
numbers = [1, 2, 3, 4]
print(calculate_total(numbers))
```

The output of the cell is:

```
10
```

Fix Summary

- Added missing : symbols.
- Corrected indentation.
- Replaced undefined variable.

- Used total instead of built-in sum.

Task 2 – Code Style Standardization (PEP 8)

Refactored Code

```
[2] ✓ 0s ➔ def find_sum(a, b):
    """Return the sum of two numbers."""
    return a + b

    result = find_sum(5, 10)
    print(result)

... 15
```

Improvements

- Function name changed to snake_case.
- Added docstring.
- Proper spacing and formatting.

Task 3 – Code Clarity Improvement

Refactored Code

```
[3] ✓ 0s ➔ def calculate_adjusted_value(number, multiplier):
    """Subtract twice the multiplier from the number."""
    return number - (multiplier * 2)

    result = calculate_adjusted_value(10, 3)
    print(result)

... 4
```

Improvements

- Meaningful function and variable names.
- Added explanation through docstring.
- Improved readability.

Task 4 – Structural Refactoring (Reusable Functions)

Refactored Code

```
[4] 0s   def greet(name):
        """Print a greeting message for the given name."""
        print(f"Hello {name}")

    names = ["Ram", "Sita", "Ravi"]

    for name in names:
        greet(name)

...
Hello Ram
Hello Sita
Hello Ravi
```

Improvements

- Removed repetition.
- Created reusable function.
- Used loop for scalability.

Task 5 – Efficiency Enhancement

Optimized Code

```
▶ # Using list comprehension (faster than loop + append)
numbers = [i * i for i in range(1, 500000)]

print(len(numbers))

...
499999
```

[+ Code](#) [+ Text](#)

Why Faster?

- List comprehensions are optimized in Python.
 - Avoids repeated method calls (append).
 - Cleaner and more memory-efficient.
-

Conclusion (For Lab Submission)

Using AI-assisted review helped to:

- Fix syntax and logical errors.
- Improve code readability and structure.
- Ensure compliance with **PEP 8**.
- Reduce redundancy through modular design.
- Optimize performance using Python best practices.