AI ASSISTANT CODING

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B-40
LAB ASSIGNMENT-10.1

//CODE

```
# Task1 - Syntax Error Correction
def calc_average(marks):
    total = 0
    for m in marks:
        total += m
    average = total / len(marks)
    return average # Average syntax error
marks = [85, 90, 78, 92]
print("Average Score is ", calc_average(marks))
```

```
Average Score is  86.25
```

```
#Task2 – PEP 8 Compliance
def area_of_rect(length, breadth):
    """Return the area of a rectangle."""
    return length * breadth
print(area_of_rect(10, 20))
```

```
200
```

```
# Task 3 Readability Enhancement
def calculate_percentage(value, percentage):
#Calculate the given percentage of a value.
    return (value * percentage) / 100
# Given values
principal_amount = 200
interest_rate = 15
# Calculate result
result = calculate_percentage(principal_amount, interest_rate)
print(result)
```

```
30.0
```

```python
#Task 4 Refactoring for Maintainability
def welcome_students(student_list):
#Print a welcome message for each student.
    for student in student_list:
        print("Welcome", student)
students = ["Alice", "Bob", "Charlie"]
welcome_students(students)
```

```
Welcome Alice
Welcome Bob
Welcome Charlie
```

```python
#Task5 - Performance Optimization
# Optimized version using list comprehension
nums = [i for i in range(1, 1000000)]
squares = [n**2 for n in nums]
print(len(squares))
```

```
999999
```

```python
#Task6 – Complexity Reduction
# simplified version using elif or dictionary mapping
def grade(score):
    if score >= 90:
        return "A"
    elif score >= 80:
        return "B"
    elif score >= 70:
        return "C"
    elif score >= 60:
        return "D"
    else:
        return "F"
```

```python
#using dictionary mapping
def grade(score):
    grade_mapping = {
        (90, 100): "A",
        (80, 89): "B",
        (70, 79): "C",
        (60, 69): "D",
        (0, 59): "F"
    }
    for range_tuple, grade in grade_mapping.items():
        if range_tuple[0] <= score <= range_tuple[1]:
            return grade
    return "Invalid Score"
# Example usage
print(grade(95))  # Output: A
print(grade(85))  # Output: B
print(grade(75))  # Output: C
print(grade(65))  # Output: D
print(grade(55))  # Output: F
```

```
A
B
C
D
F
```