Lab Assignment 10.2

Program	: B. Tech (CSE)
Course Title	: AI Assisted Coding
Course Code	: 23CS002PC304
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Task 1:

Code:

```python
def calculate_total(nums)
    sum = 0
for n in nums
    sum += n
return total
```

Prompt: Find all the syntax errors and logical errors in the code and correct them.

Corrected Code:

```python
def calculate_total(nums):
    sum = 0
    for n in nums:
        sum += n
    return sum
nums = [1, 2, 3, 4, 5]
total = calculate_total(nums)
print("The total is:", total)
```

Output:

```
The total is: 15
```

Explanation:

The errors in the first code are:

- The function definition was missing a colon at the end of the line.
- The for loop was missing a colon at the end of the line.
- The variable 'total' was not defined before being returned. It should be 'sum' instead.

Task 2:

Code:

```python
def findSum(a,b):return a+b
print(findSum(5,10))
```

Prompt: Write a refactored python code to comply with standard coding style guidelines.

Corrected Code:

```python
def find_sum(a, b):
    return a + b
print(find_sum(5, 10))
```

Output:

```
15
```

Explanation:

- Changed the function name from 'findSum' to 'find_sum'.
- Added spaces around the '+' operator

Task 3:

Code:

```python
def f(x,y):
return x-y*2
print(f(10,3))
```

Prompt: Rewrite the code to improve code readability without changing its functionality.

Corrected Code:

```python
def calculate_difference(x, y):
    return x - y * 2
print(calculate_difference(10, 3))
```

Output:

```
4
```

Explanation:

- Renamed the function from 'f' to 'calculate_difference'
- Added proper indentation to the function body.
- Added spaces around the operators in the return statement.

Task 4:

Code:

```python
print("Hello Ram")
print("Hello Sita")
print("Hello Ravi")
```

Prompt: Refractor the repeated code into reusable function

Corrected Code:

```python
def greet(name):
    print("Hello", name)
greet("Ram")
greet("Sita")
greet("Ravi")
```

Output:

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

Explanation:

- Created a function called 'greet' that takes a name as an argument and prints a greeting message. This eliminates the need to repeat the print statement for each name.
- By using a function, we can easily greet any name by simply calling the 'greet' function with the desired name as an argument.

Task 5:

Code:

```python
numbers = [ ]
for i in range(1, 500000):
    numbers.append(i * i)
print(len(numbers))
```

Prompt: Write a optimize python code.

Corrected Code:

```python
numbers = [i * i for i in range(1, 500000)]
print(len(numbers))
```

Output:

```
499999
```

Explanation:

Used list comprehension to create the list of squared numbers. List comprehensions are generally faster than using a for loop with the append method because they are optimized for performance and can be executed in a single line of code.