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Programming Methodology 1

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Lab 9

<u>Exercise 1</u>

```
samirvarma@Samirs-MacBook-Pro-2 ex1 % ./student_test
=== Checkpoint 1: Class Definition with Access Modifiers ===
Student ID: 12345
Student Name: John Doe
Student GPA: 3.7

=== Checkpoint 2: Constructors and Initialization ===
Default student: , ID: 0, GPA: 0
Student 2: Jane Smith, ID: 67890, GPA: 3.9

=== Checkpoint 3: Method Implementation ===
Student: Alice Johnson, ID: 54321, GPA: 3.5
Alice Johnson is eligible for a scholarship.
Updated student: Alice Johnson, ID: 54321, GPA: 3.2
Alice Johnson is not eligible for a scholarship.
samirvarma@Samirs-MacBook-Pro-2 ex1 %
```

<u>Exercise 2</u>

```
samirvarma@Samirs-MacBook-Pro-2 ex2 % g++ counter.cpp main.cpp -o counter_program
samirvarma@Samirs-MacBook-Pro-2 ex2 % ./counter_program
Starting program. Total counters: 0
Created c1. Total counters: 1
c1 value: 0
c1 after incrementing twice: 2
Created c2. Total counters: 2
c2 value: 10
After block, total counters: 0
Created dynamic counter. Total counters: 1
Dynamic counter value: 5
Dynamic counter after decrementing: 4
Deleted dynamic counter. Total counters: 0
=== TEST 1: OBJECT CREATION AND DESTRUCTION ===
Total counters: 0
After creating c1, total counters: 1
After creating c2, total counters: 2
After c2 goes out of scope, total counters: 1
After all counters go out of scope, total counters: 0

=== TEST 2: MEMBER METHODS AND VARIABLES ===
Initial value: 0
After incrementing twice: 2
After decrementing once: 1
c2 initial value: 5

=== TEST 3: DYNAMIC OBJECT CREATION ===
Total counters before dynamic creation: 0
After dynamic creation, total counters: 1
Dynamic counter value: 3
After incrementing dynamic counter: 5
After deleting dynamic counter, total counters: 0
samirvarma@Samirs-MacBook-Pro-2 ex2 %
```

Exercise 3

```
=== TEST 1: CALCULATOR NAMESPACE IMPLEMENTATION ===

Testing with values: a = 10.5, b = 5.25
10.50 + 5.25 = 15.75
10.50 - 5.25 = 5.25
10.50 * 5.25 = 55.12
10.50 / 5.25 = 2.00

Testing division by zero:
Error: Division by zero!

=== TEST 3: I/O MANIPULATORS ===

Default: 3.14
Fixed with 2 decimal places: 3.14
Scientific: 3.14e+00
Width of 10, right-aligned: |   3.14159|
Width of 10, left-aligned: |3.14159   |
Width of 10, filled with *: |***3.14159|
Boolean (default): 1
Boolean (as text): true
Decimal: 255
Hexadecimal: ff
Octal: 377

=== TEST 2: USING STD NAMESPACE AND IOSTREAM ===

Enter two numbers: 3
4
Sum: 7.00
**Number 1**Number 2
******3.00******4.00
samirvarma@Samirs-MacBook-Pro-2 ex3 %
```

```
samirvarma@Samirs-MacBook-Pro-2 ex3 % ./calculator_program
Welcome to the Calculator Program!
==================================
Enter first number: 3
Enter second number: 4
3.00 + 4.00 = 7.00
3.00 - 4.00 = -1.00
3.00 * 4.00 = 12.00
3.00 / 4.00 = 0.75

Formatting Examples:
====================
Scientific notation: 7.00e+00
Fixed notation (3 decimals): 7.000
Right-aligned in field of width 15: |          7.000|
Left-aligned in field of width 15: |7.000          |
samirvarma@Samirs-MacBook-Pro-2 ex3 %
```