

C++ Static Keyword - Questions

1 Static Variable in Function

Task: Write a function `counter()` that counts how many times it has been called using a `static` variable.

Sample Input: Call the function three times.

Expected Output:

```
Function called 1 times
Function called 2 times
Function called 3 times
```

2 Static Member in Class

Task: Create a class `Car` with a static member `totalCars`. Every time a new car object is created, increment `totalCars`. Display the car name and totalCars.

Sample Input:

```
Car c1("BMW");
Car c2("Audi");
Car c3("Tesla");
```

Expected Output:

```
Car: BMW, Total Cars: 1
Car: Audi, Total Cars: 2
Car: Tesla, Total Cars: 3
```

3 Static Decrement

Task: Create a function that starts a static counter from 5 and decrements it on each call. Print the counter each time.

Sample Input: Call function 3 times.

Expected Output:

```
Counter: 5  
Counter: 4  
Counter: 3
```

4 Mix of Static & Normal Variables

Task: Create a function with both a static and a normal variable. Print both each call to show the difference.

Expected Output (3 calls):

```
Normal = 1, Static = 1  
Normal = 1, Static = 2  
Normal = 1, Static = 3
```

Explanation: Normal variable is recreated every time, static variable retains value.

5 Static Member Function

Task: Create a class **Student** with a static data member **count**. Use a static member function to display the total number of students created.

Sample Input:

```
Student s1, s2, s3;  
Student::displayCount();
```

Expected Output:

```
Total Students: 3
```

6 Static Array Counter

Task: Write a function that maintains a static array of 5 elements. Each call inserts a new value and prints the array content so far.

Sample Input: Insert values 10, 20, 30 sequentially.

Expected Output:

```
Array: 10  
Array: 10 20
```

```
Array: 10 20 30
```

7 Static Object Counter

Task: Create a class **Book** with a static member to count the total number of books created. Print the total inside the constructor each time.

Sample Input:

```
Book b1, b2;
```

Expected Output:

```
Total Books: 1  
Total Books: 2
```