A sample class application:

To Do: Implement a **class Box** and test it.

Objective: To understand the following Object-Oriented Programming concepts**:**

- **i.** class scope, class, object, method (member function), data member (attribute)
- **ii.** constructor
- **iii.** static member (static data member, static method)

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1. Implement a class called **Box** to represent a cubic box with the following 3 data members: **color, length** and **volume.** Color indicates the color of the box, length indicates the length (in cm) of an edge of the cubic box, and volume indicates the volume (in cm^3) of the box.

2. Define constructors of the class.

Default constructor (No-argument constructor): Define a constructor without parameters.

Parameterized constructor: Define a constructor with parameters that initialize the data members.

3. Define **set**/**get** methods for color and length. While implementing the **set** method for length, use a proper **validation** mechanism on the input data.

4. Define a method **calculateVolume()** that calculates volume of the box. Call this method in both default and parameterized constructors to automatically set the volume. Also, define a **get** method to return the volume value.

5. Add an extra **private static** data member called **numberOfBoxes** to count the number of Box objects in the memory. Make sure that you initialize **numberOfBoxes** as 0 and increment it in the constructors. Define also a **public static get** method to return the value of **numberOfBoxes**.

6. Define a method that prints color, length and volume members of a Box object.

7. Implement a class called **Test** to contain the method **main**. In **main**, create an array of 5 Box references. Illustrate the use of both constructors to instantiate new Box objects. Before and after creating a new Box object to be stored in the array, print the number of boxes in the memory. Ask user to enter the **color** and **length** for the contents in the array. Then, print out the data (information) of the contents of the array. Finally, print out the information of each object with a volume value greater than 8 cm^3.