VIT - Vellore

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BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502354

VIT V_Structured and OOP_Lab 5_COD_Hard_Static data Members functions

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem statement

Alice is working on a program to manage multiple rectangles using a class named Rectangle. This class contains a static data member count to keep track of the total number of rectangle instances created and a static member function getCount() that returns the value of count. The class also has non-static member functions: setDimensions(int l, int w) to set the length and width of each rectangle and getArea() to calculate the area of the rectangle. Whenever a new rectangle is instantiated, the static member count is incremented.

Help Alice to retrieve the total number of rectangles created and calculate the area for each rectangle.

Formula:

Area = length * width

Answer

```
#include <iostream>

using namespace std;

class Rectangle {
   private:
   int length;
   int width;
   static int count;

   public:
   Rectangle() {
      count++;
   }

   void setDimensions(int l, int w) {
      length = l;
      width = w;
   }

   int getArea() {
      return length * width;
   }

   static int getCount() {
      return count;
   }
};

int Rectangle::count = 0;

int main() {
   int n;
   cin >> n;
```

```
    Rectangle rectangles[n];

    for (int i = 0; i < n; i++) {
        int l, w;
        cin >> l >> w;
        rectangles[i].setDimensions(l, w);
    }

    cout << "Total number of rectangles: " << Rectangle::getCount() << endl;

    for (int i = 0; i < n; i++) {
        cout << "Area of rectangle " << i + 1 << ": " << rectangles[i].getArea() << endl;
    }

    return 0;
}
```

Status : Correct **Marks : 10/10**