Question 6:

Aim:

     The aim of this program is to demonstrate how to use operator overloading for vector addition in C#. The program allows the user to input two vectors and adds them using the overloaded + operator.

PROGRAM:

```csharp
using System;

class Vector
{
    // Data members to store the vector components
    public int X { get; set; }
    public int Y { get; set; }

    // Constructor to initialize vector components
    public Vector(int x, int y)
    {
        X = x;
        Y = y;
    }

    // Overload the '+' operator for vector addition
    public static Vector operator +(Vector v1, Vector v2)
    {
        return new Vector(v1.X + v2.X, v1.Y + v2.Y);
    }

    // Method to display the vector
    public void Display()
    {
        Console.WriteLine($"Vector: ({X}, {Y})");
    }
}

class Program
{
    static void Main(string[] args)
    {
        // Get first vector input from the user
        Console.Write("Enter X component of first vector: ");
        int x1 = int.Parse(Console.ReadLine());
        Console.Write("Enter Y component of first vector: ");
        int y1 = int.Parse(Console.ReadLine());

        // Get second vector input from the user
        Console.Write("Enter X component of second vector: ");
        int x2 = int.Parse(Console.ReadLine());
        Console.Write("Enter Y component of second vector: ");
        int y2 = int.Parse(Console.ReadLine());
```

```csharp
        // Create two vector objects
        Vector v1 = new Vector(x1, y1);
        Vector v2 = new Vector(x2, y2);

        // Add vectors using overloaded '+' operator
        Vector sum = v1 + v2;

        // Display the result
        Console.WriteLine("\nThe sum of the two vectors is:");
        sum.Display();
    }
}
```

Input:

```
Enter X component of first vector: 3
Enter Y component of first vector: 4
Enter X component of second vector: 1
Enter Y component of second vector: 2
```

Output:

```
The sum of the two vectors is:
Vector: (4, 6)
```


Main.cs

```csharp
31     Console.Write("Enter total bills paid:  ");
32     TotalBillsPaid = double.Parse(Console.ReadLine());
33  }
34
35  // Method to display patient details
36  public void DisplayPatientInfo()
37  {
38      Console.WriteLine("\n--- Patient Details ---");
39      Console.WriteLine($"Name: {Name}");
40      Console.WriteLine($"Date of Admission: {DateOfAdmission
            .ToShortDateString()}");
41      Console.WriteLine($"Age: {Age}");
42      Console.WriteLine($"Disease: {Disease}");
43      Console.WriteLine($"Date of Discharge: {DateOfDischarge
            .ToShortDateString()}");
44      Console.WriteLine($"Total Bills Paid: {TotalBillsPaid:C}");
45  }
46  }
47
48  class Hospital
49  {
50      static void Main(string[] args)
51      {
52          // Create an instance of the Patient class
53          Patient patient = new Patient();
54
55          // Call the method to get patient information
56          patient.GetPatientInfo();
57
58          // Call the method to display patient information
59          patient.DisplayPatientInfo();
60      }
61  }
62  |
```

Output

```
mono /tmp/2QUA2UghBO.exe
Enter patient name: John Doe
Enter date of admission (yyyy-mm-dd): 2023-08-15
Enter age of patient: 45
Enter disease: Hypertension
Enter date of discharge (yyyy-mm-dd): 2023-09-01
Enter total bills paid:  1500.751500.75

--- Patient Details ---
Name: John Doe
Date of Admission: 08/15/2023
Age: 45
Disease: Hypertension
Date of Discharge: 09/01/2023
Total Bills Paid: ?1,500.75

=== Code Execution Successful ===
```