C# .Net Programming Assignment 14

- **Create separate visual Studio project for each problem statement separately.**
- **For Business logic write separate class.**
- **Use Object Oriented concepts while writing the program.**

1. Design one generic class named as MarvellousArray which contains one characteristics as generic array.

Provide multiple generic methods as

1.Accept value from user and return frequency of that value from array.
2.Accept value from user and returns its first occurrence from array.
3.Accept value from user and returns its last occurrence from array.
4.Find out largest element from array.
5.Find out smallest element from array.

2. Create generic Delegate which can call all methods from below class

```
class Marvellous
{
  public int AddI(int val1, int val2)
   {
      int result;

      result = val1 + val2;

      return result;
   }

   public float AddF(float val1, float val2)
   {
      float result;

      result = val1 + val2;

      return result;
   }

   public double AddD(double val1, double val2)
   {
      double result;

      result = val1 + val2;

      return result;
   }

   public string AddS(string str1, string str2)
   {
      string result;
```

```
        result = val1 + val2;

        return result;
    }
}


class Infosystems
{
    static void Main(string[] args)
    {
                //      Create generic delegate and call all above methods
    }
}
```

3. Design one generic class named as MarvellousArray which contains one characteristics as generic array.

Provide multiple generic methods as

1. **Generic method to sort the elements using Bubble sort.**
2. **Generic method to sort the elements using Efficient Bubble sort.**
3. **Generic method to sort the elements using Insertion sort.**
4. **Generic method to sort the elements using Selection sort.**
5. **Generic method to search element using linear search.**
6. **Generic method to search element using binary search.**
7. **Generic method to search element using linear search by traversing elements from both direction.**

```
public class MarvellousArray<T>
{
        private T[] array;

        public MarvellousArray(int size)
        {
                array = new T[size + 1];
        }

        public void Accept()
        {
                // Accept elements from user
        }

        public void Display()
        {
                // Display elements from user
        }

        public void BubbleSort()
        {
                // Sort the elements using bubble sort
        }

        public void BubbleSortEfficient()
        {
                // Sort the elements using efficient bubble sort
        }

        public void SelectionSort()
        {
                // Sort the elements using selection sort
        }

        public void InsertionSort()
        {
                // Sort the elements using insertion sort
        }

        public int LinearSearch(T value)
        {
                // Search specific element using linear search
        }

        public int LinearSearchBidirectional(T value)
        {
                // Search specific element using linear search
                // Traverse the array from front and rear
        }

        public int BinarySearch(T value)
        {
                // Search specific element using binary search
        }
   }

public class Infosystems
{
        public int Main(String[] arr)
        {
                // Create objects of above class for different datatypes and call all methods

                MarvellousArray<int> intArray = new MarvellousArray<int>(5);

                // Call all methods
        }
}
```