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// BubbleSortTestClass.cs
// ITE365-Lab07

using System;

namespace BubbleSortTestApp
{
    class Program
    {
        public static void Main(string[] args)
        {
            int[] anArrayOfIntegers = { 9, 7, 4, 10, 48, 1, 3, 5, 7 };
            double[] anArrayOfDoubles = { 9.0, 7.0, 3.5, 8.9, 8.3, 3.14, 42.0 };
            string[] anArrayOfStrings = { "Tom", "Dick", "Harry", "James", "Sam" };

            Program bSortTestObj0 = new Program();
            bSortTestObj0.BubbleSortGeneric<int>(ref anArrayOfIntegers);
            bSortTestObj0.PrintArrayGeneric<int>(anArrayOfIntegers);

            Program bSortTestObj1 = new Program();
            bSortTestObj1.BubbleSortGeneric<double>(ref anArrayOfDoubles);
            bSortTestObj1.PrintArrayGeneric<double>(anArrayOfDoubles);

            Program bSortTestObj2 = new Program();
            bSortTestObj2.BubbleSortGeneric<string>(ref anArrayOfStrings);
            bSortTestObj2.PrintArrayGeneric<string>(anArrayOfStrings);

            Console.WriteLine("Press Enter");
            Console.ReadLine();
        }

        // PrintArrayGeneric<T>(T [])
        // Assumes: An array has been initialized
        // Result: Outputs the array
        // NOTE: Overloaded method
        public void PrintArrayGeneric<T>(T[] arr)
        {
            foreach (T elem in arr)
            {
                Console.Write("{0} ", elem);
            }
            Console.WriteLine();
        }

        // BubbleSortGeneric<T>
        // Assumes: The type T supports the IComparable interface (implements CompareTo())
        // Returns: Nothing, but the array arr is sorted as a side effect
        public void BubbleSortGeneric<T>(ref T[] arr) where T : IComparable<T>
        {
            int i;
            int j;
            for (i = (arr.Length - 1); i >= 0; i--)
            {
                int compareToResult = 0;
                for (j = 1; j <= i; j++)
                {
                    compareToResult = arr[j - 1].CompareTo(arr[j]);
                    if (compareToResult > 0)
                    {
                        T temp = arr[j - 1];
                        arr[j - 1] = arr[j];
                        arr[j] = temp;
                    }
                }
            }
        }
    }
}

1 3 4 5 7 7 9 10 48
3.14 3.5 7 8.3 8.9 9 42
Dick Harry James Sam Tom
Press Enter

Press any key to continue...
logout
Saving session...
...copying shared history...
...saving history...truncating history files...
...completed.

[Process completed]

```