TASK:

**What is the expected running time of the following C# code? Explain why. Assume the array's size is n.**

**long Compute(int[] arr)**

**{**

**long count = 0;**

**for (int i=0; i<arr.Length; i++)**

**{**

**int start = 0, end = arr.Length-1;**

**while (start < end)**

**if (arr[start] < arr[end])**

**{ start++; count++; }**

**else**

**end--;**

**}**

**return count;**

**}**

ANSWER:

The expected running time of the code is O(n\*(n-1)), but since we ignore constant numbers the answer is O(n\*n). We have two loops, depending on n. The first one iterates from 0 until n(the size of the matrix). The second one iterates from 0 until n-1 (it doesn’t matter if we’re increasing the variable start, or decreasing the variable end – we always make one step at a time.