Consider a worst-case scenario where the list is completely reversed. We will run “double” bubble sort on type of list and see the number of operations that it must perform before it terminates. The figure below demonstrates that scenario.



The list above contains an array A through G where the indices of the array is reversed. Starting from left to right a series of 6 switches are performed where G ends up in the right. The last index is then locked off. We then move from right to left with a smaller array (6) and A goes to the left. The array becomes incrementally smaller until we approach the center where only one switch is made and the list is fully sorted. We performed 6 switches in the first iteration 5 in the second and so on. We can generalize this concept to say that in a reversed list of length n,

Oprations = **=(n-1)+(n-2)+(n-3)……+1= n\*(n-1)/2**

The equation above demonstrates that in the case of a fully reversed list, the total number of operations required is indeed of O(n^2)