

Assignment 3

February 3, 2017

1. Count the number of inversions in an array i.e count number of elements in the array with the following property : $a[i] > a[j]$ and $i < j$ The sequence 2, 4, 1, 3, 5 has three inversions (2, 1), (4, 1), (4, 3). Explain the average case complexity.
2. Let us denote the set of points by $P = p_1, \dots, p_n$, where p_i has coordinates (x_i, y_i) ; and for two points $p_i, p_j \in P$, we use $d(p_i, p_j)$ to denote the standard Euclidean distance between them. Design an algorithm to find a pair of points p_i, p_j that has minimum $d(p_i, p_j)$. Explain the average case complexity of your algorithm.