9. Given a set of n integer items stored in array, write two different algorithms in Java of different time complexities that find the closest pair(s) in an array. The array contains integer (both positive and negative) You can use methods defined in previous exercise in this exam to answer this question OR implement your own sorting algorithm. You are not allowed to use the pre-built sorting method in Java.
Specify and explain the running time of each algorithm (30pts)

The first algorithm findPair() has a running time of O(n^2). The two for loops each have a time complexity of O(n), and the two nested for loop creates a running time total of the product of these two, therefore O(n^2).

The second algorithm binaryPair() used the previously written mergeSort. The running time of this algorithm is O(nlog(n)). The outside while loop has a time complexity of O(n), and the mergeSort method has a time complexity of O(nlog(n)). We take the worse case scenario, so the time complexity is O(nlog(n)).