ESO207 theo assignment-02

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1   Problem 2)

Idea : Main idea to first sort the array in O(nlog(n)) time and then apply double pointer technique, i.e. one pointer at left(l) and other at right(r).
   Pseudo code :

```
int stronglyDominatedPairs(array A) {
    sort(A) //this step takes O(nlog(n)) time
    l <- 0, r <- A.length() - 1;
    pairs <- 0;

    while(l < r) {
        if (A[l] <= 2*A[r]) l++;
        else {
            r--;
            pairs++;
        }
    }
    return pairs;
}
```

2   Problem 3)

In order to find out the resultant point p_k, we join the points 's' and 't' and the point which is nearest to the line(perpendicular distance) will be the resultant point. As worst case time for building data structure is O(nlog(n)) and searching is O(logn), therefore data structure used is AVL trees.