The algorithm works by dividing the data down into 2 sets of three or fewer. From here it finds the closest points in these sets and their distance. It then takes the minimum distance and draws a box with it around either the beginning or ending point of one of the two arrays, capturing any points inside of this box and finding the distance between them. From here it returns the two closest points. When these are recursively called on top of each other, each set is compared and the distance between each set is checked to find the closet points from in each recursive call.

T(n):

Line #:

7-13: C1

15: log(n)

20: n

21-26: c2 \*n

43-50: C2

51: log(n)

63-126: n

127-134: c3

T(n):

O(n):

Yes, the sorted and recursive have similar runtimes due to having the same complexity.

|  |  |  |  |
| --- | --- | --- | --- |
| n | Brute Force | Sorted | Recursive |
| 100 | Screen%20Shot%202018-02-26%20at%2010.30.02%20AM.png | Screen%20Shot%202018-02-26%20at%2010.30.12%20AM.png | /Users/michaelwatts/Desktop/Screen Shot 2018-02-26 at 11.38.21 AM.png |
| 1000 | Screen%20Shot%202018-02-26%20at%2010.30.52%20AM.png | Screen%20Shot%202018-02-26%20at%2010.31.06%20AM.png | /Users/michaelwatts/Desktop/Screen Shot 2018-02-26 at 11.38.55 AM.png |
| 10000 | Screen%20Shot%202018-02-26%20at%2010.45.35%20AM.png | Screen%20Shot%202018-02-26%20at%2010.45.44%20AM.png | /Users/michaelwatts/Desktop/Screen Shot 2018-02-26 at 11.39.31 AM.png |