Self-introduction

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Exercise 3-1

There are nine sites in the picture and we need to select three centers.

As we can see, in the picture if we select the red sites as the centers, we can get the optimal solutions, with r(C*) is the square root of two.

Compared to our Center Selection Algorithm, if we select the point in the lower left corner as the start point, and then we should select a site with the largest distance which is in the upper right corner, at last we should select the site in the middle. The r(C) is double square root of two.

But if we choose this as the first center, and then we get this and this center. The result is square root of two equal to the optimal condition.

Exercise 3-2

As for the first site selection algorithm, we caculate the sum of the distance of the nearest K points and the K equal to the round up the K divides N and Minus one, and we select the site with the shortest distance. For example, we calculate the sum_distance and the list the nearest sites. We can see the site nine has the smallest sum_distance, and if we choose the site two as the first site, we can get the selection as this picture. Although the r(C) is double square root of two, is not well as optimal condition, the sum distance is a little smaller than the random selection algorithm. We have avoided the worst results to a certain extent.

The weakness of this algorithm is high time complexity.