Team Number : 13

Team Name : Panthers

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Introduction

Linear programming is the process of using mathematical models to solve linear problems in order to maximize or minimize an objective function while keeping certain restrictions in mind.

Topic

Let's suppose that we are a very famous e-commerce platform. We have to introduce a new relay point in a city for the shipment of products. Only information we have is the coordinates of all the clients of the company in the city. We need to minimize the distance between each relay point and each client in the city

Method

Now, we are converting our problem into a mathematical expression.

We have the coordinates of the client in the city, so we can use Manhattan distance to approximate the distance of two points.

The distance between two points, let X and Y be written as the absolute value to the sum of the distance between each coordinates:

$$d(X, Y) = |A_y - A_x| + |B_y - B_x|$$

Now let's generalize the equation for client and relay point

$$\sum_{a=1}^{m}\sum_{b=1}^{n} d((w_a, x_a), (c_b, d_b))$$

Here m is the number of relay points, a is the total number of clients in the city, (wa,xa) is m coordinates of the wanted relay point, (cb,db) is n coordinates of all clients in the city.

References

https://www.mathscareers.org.uk/taxicab-geometry/