

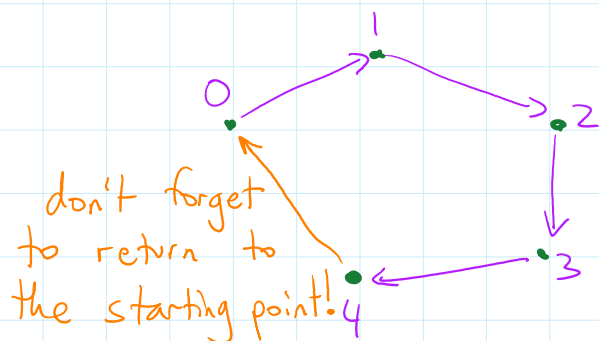
Traveling Salesperson Problem

1. Computing distances:

math. dist(a, b)

use distance formula:

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Data Structures:

points: matrix of the geographic coordinates of the points

x_0	y_0
x_1	y_1
\vdots	
x_{n-1}	y_{n-1}

fixed

i th point visited, $i \in \{0, 1, \dots, N-1\}$

has coordinates:

$$x = \text{points}[\text{tour}[i], 0]$$

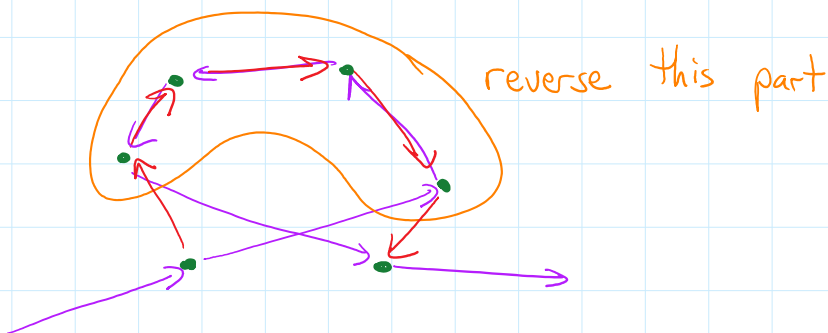
$$y = \text{points}[\text{tour}[i], 1]$$

tour: list that specifies the order in which the points are visited

e.g. $[6, 3, 2, 0, 1, 4, 5]$

2. How to modify the tour

Reversing part of the tour is more efficient than swapping indexes in the tour.



NOTES:

$tour[i:j:-1]$
 $i > j$

↑ step size of -1 creates
a reversed slice of a list

assigning a new
list to a
slice →

$tour[i:j] = \text{some new list}$