# Lab task

You have been given a file which contains 20 two-dimensional points (x,y). You are to find the distance of all the points from points 4 and 8 and group the points accordingly. Let's say that point 4 corresponds to group A and 8 to be B respectively. Every other point will be placed in either group wrt the minimum distance calculated. Meaning that a point will be placed in the group that is closer to it in terms of distance.
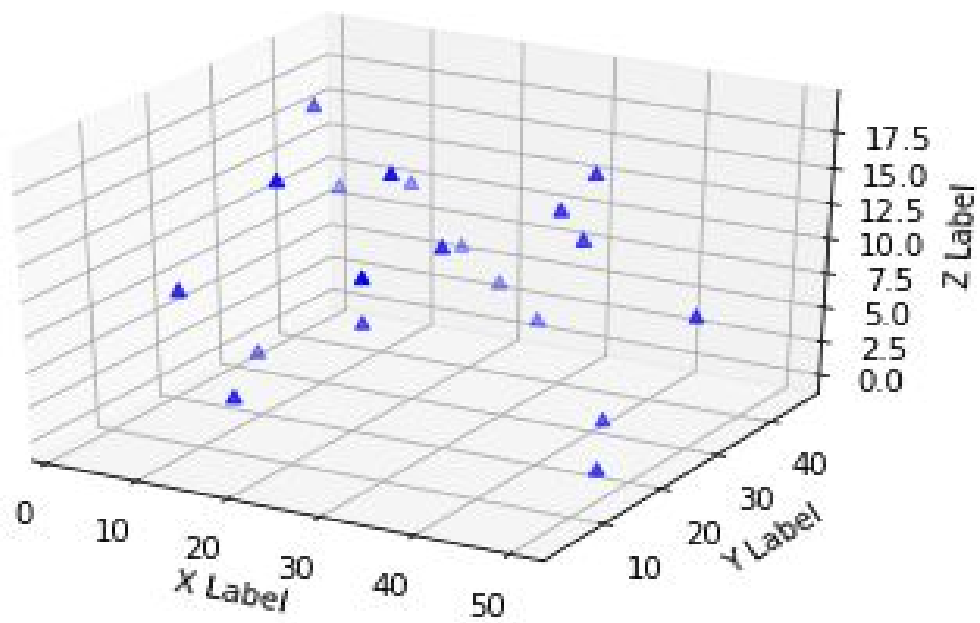
Index	X	Y
1	48.14637244	17.4178671
2	43.6319871	25.81785236
3	6.934521372	23.85573163
4	27.33836151	40.58221376
5	20.39305836	44.81548343
6	18.69254509	3.239161951
7	15.51348496	45.79706095
8	21.91374752	19.07159524
9	49.9831128	31.13422557
10	1.845034883	45.39394299
11	9.734965131	45.89278133
12	11.07850515	6.026680426
13	37.79282082	31.28758926
14	29.76543752	20.20522771
15	35.73305842	30.64363736
16	32.69970185	2.955709005
17	37.28702276	34.04169345
18	5.227639068	36.41523999
19	17.79172892	12.01855338
20	28.03267972	14.68564131

To calculate the distance you will use the Euclidean distance formula.

$$d(p, q) = d(q, p)$$
$$= \sqrt{(q_1 - p_1)^2 + (q_3 - p_3)^2 + \cdots + (q_n - p_n)^2}$$
$$= \sqrt{\sum_{i=1}^{n}(q_i - p_i)^2}$$

Here are some visualisations of the points in 2D and 3D.
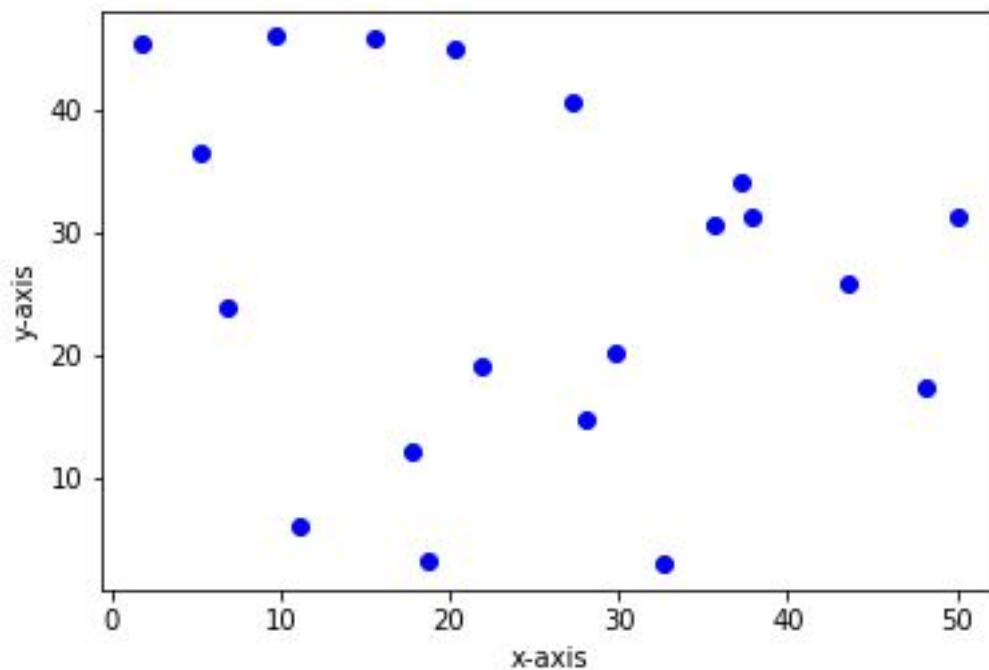
After calculations you will need to display the points in groups in a table format with each point labeled with a group.

For example:

Index	X	Y	Group