Exam of Informatics - Algorithm

We have a data frame `points` with two columns x and y representing points in a two dimensional space. For each point p_i we want to find the point $p_{nn(i)}$ such that his distance $d(p_i, p_{nn(i)})$ is the minimum with respect to the distances $d(p_i, p_j), \forall j \notin \{i, nn(i)\}$ of the other points

	x	y	nn	nn_dist
1	1	1	7	0.58309518948453
2	2	1.5	7	0.53851648071345
3	4	4	4	1.4142135623731
4	3	3	3	1.4142135623731
5	1.5	3	4	1.5
6	4	1.5	4	1.80277563773199
7	1.5	1.3	2	0.53851648071345

Write the algorithm for a function which takes as parameters a dataframe df and returns a dataframe with the index of the nearest point and the distance.

Write the **algorithm in pseudo code**

The algorithm must be written according to the following rules

1. list the variables you are using and, if you are writing a function, the function parameters
2. write the assignments, sequences, repetitions, choices in the appropriate order
3. each repetition must include the control logic and must be put in evidence with the appropriate indentation
4. each choice must include the choice logic and the alternative sequences