Practical Data Science
(KNN Model)

Solve the following problems.

Problem 1: KNN Classifier

The table below provides a training data set containing six observations, three predictors, and one qualitative response variable.

Obs.	x_1	x_2	x_3	y
1	3	0	0	Blue
2	0	1	3	Blue
3	1	0	1	Blue
4	0	1	0	Red
5	1	1	1	Red
6	0	2	0	Red

Suppose we wish to use this data set to make a prediction for y when $x_1 = x_2 = x_3 = 0$ using K-nearest neighbors.

a. Compute the Euclidean distance between each observation and the test point

b. Use the Euclidean distance to find the prediction with K=1

c. Use the Euclidean distance to find the prediction with K=3

Problem 2: KNN Regressor

The table below provides a training data set containing six observations, three predictors, and one quantitative response variable.

Obs.	x_1	x_2	x_3	y
1	-1	0	1	5.9
2	-2	1	0	10
3	0	0	2	4.8
4	0	1	0	8.9
5	1	0	2	7.2
6	0	1	-1	3.9

Suppose we wish to use this data set to make a prediction for y when $x_1 = x_2 = x_3 = 0$ using K-nearest neighbors.

a. Compute the Euclidean distance between each observation and the test point

b. Use the Euclidean distance to find the prediction with K=1

c. Use the Euclidean distance to find the prediction with K=3