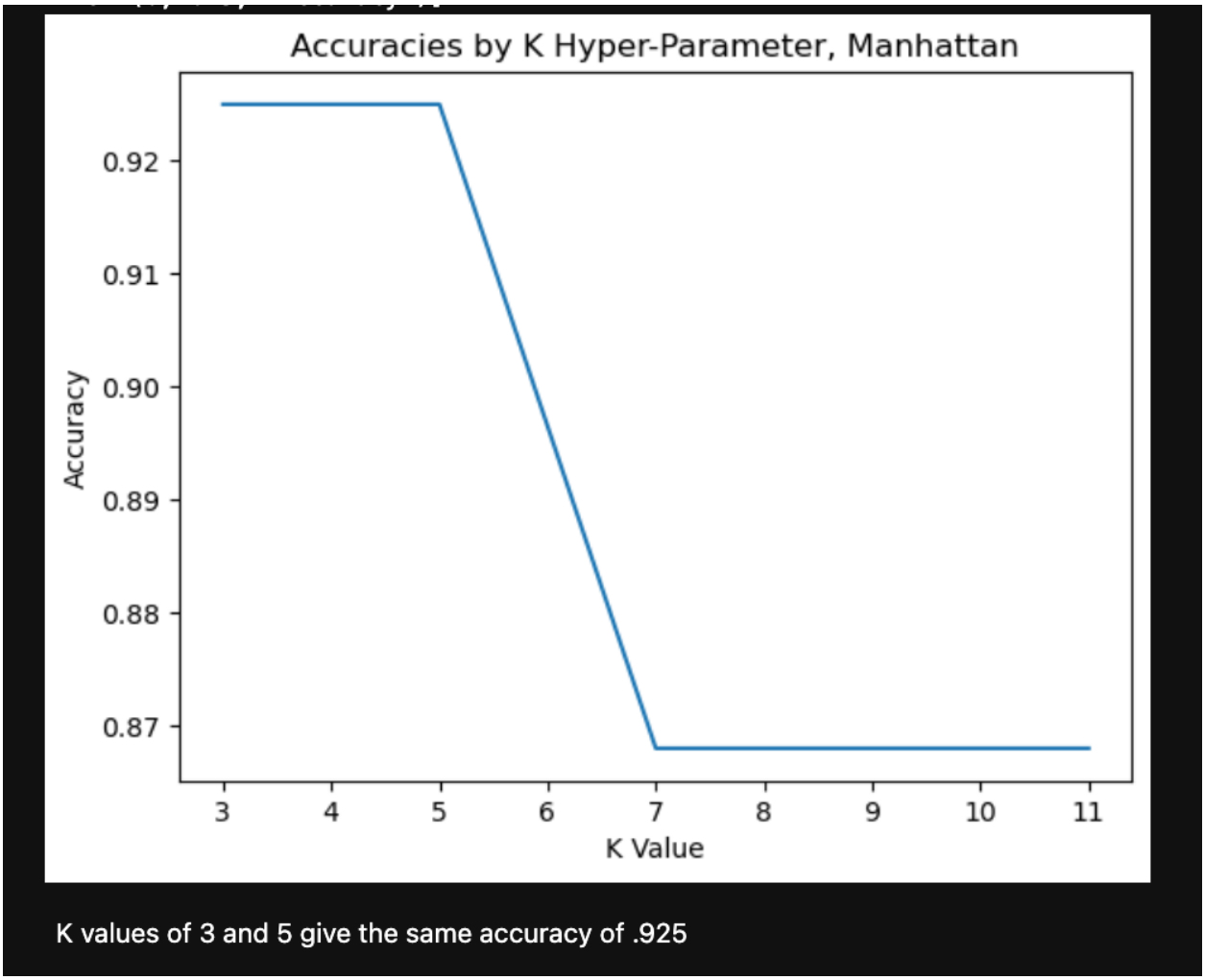
Q1



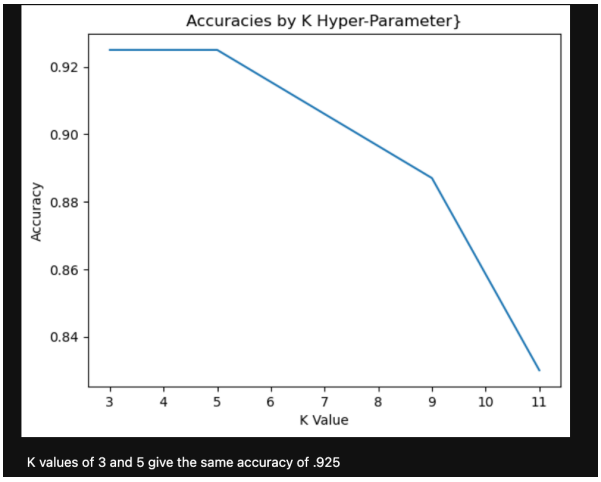
Accuracy in Y2: .865

Confusion matrix: [[28, 6],[1, 17]]
The true positive rate is 0.94 and the tnr is 0.82

Trading based on labels results in 43844.62, while trading based on buy and hold results in 807.43

Euclidean resulted in 44865.61, so slightly more than Manhattan.

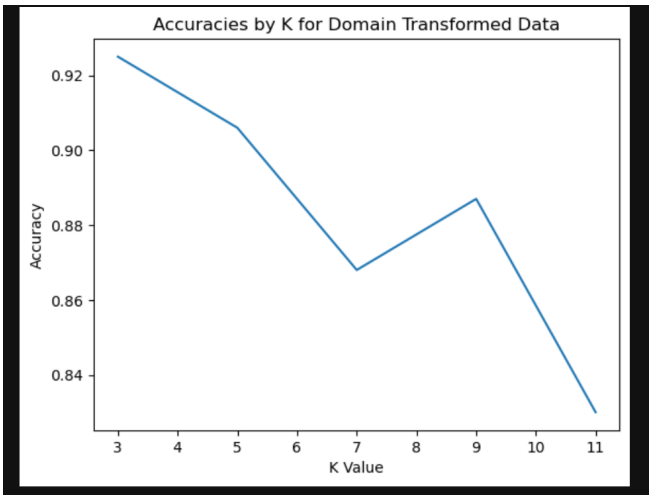
Q2



Accuracy is .865 in Y2 with K=3. This is the same K.The TRP is .94, the TNR is .82
Trading on labels yields 43844.62, b&h 43844.62

Q3
Distances, mean and median
{'distance_to_red': (4.868762518477502, 3.5680571679489086),
'distance_to_green': (5.497250723801833, 5.481875123253371)} Green sphere is larger.
TRP: .79, TNR: .67. Trading strategy: 31068.38 (worse than k-NN), b&h: 807.43

Q4



Best k: 3. Y2 accuracy: 0.885. same k, though with regular k-NN k of 5 was just as good. TPR = .94 ; TNR = .85

Returns: 44865.61, 807.43. No improvement

Q5

Opt. K : 3 & 5. Y2 Accuracy: 0.865. Returns: (43844.62, 807.43). There is not an improvement over regular knn. There is slightly lower accuracy and return on $100