a2_printed_outputs

Question 1.

Question 1(b).

K value: 3
weight vector: [114.30512878 -187.717837   31.24228605   14.25033792 -23.28707996
  -96.93067091   8.90033976]
Training error: 8.658268242282482
Test error: 11.905786549444972

Question 1(c).

K value: 9
weight vector: [4.19153584e+06 -7.78801464e+06 -6.11451033e+04 4.26697405e+06
  5.19610930e+04 -1.18585190e+06 -1.64583885e+04 1.33819262e+05
  1.61411568e+03 -2.77362460e+03 3.75946151e+04 -6.23166544e+06
  -6.45948283e+04 2.47048667e+06 3.29936787e+04 -4.57000350e+05
  -6.21109444e+03 2.67547715e+04 2.20973771e+02]
Training error: 3.103912426400354
Test error: 86.3006145395624

Question 1(d).

K value: 12
weight vector: [-1.38297483e+12 2.60517269e+12 1.29956684e+11 -1.60379014e+12
  -1.29021460e+11 5.87092364e+11 5.68044854e+10 -1.17555765e+11
  -1.17071091e+10 1.07754737e+10 9.17914894e+08 -2.89166914e+08
  -1.20197189e+07 -7.71266339e+10 2.17461067e+12 1.46026588e+11
  -1.03940722e+12 -9.37996359e+10 2.85557493e+11 2.85455707e+10
  -3.99383438e+10 -3.79480139e+09 2.16790682e+09 1.48145035e+08
  -1.91347580e+07]
Training error: 3.089167630322388e-06
Test error: 72448368382.92644

Question 1(f).

K value: 2
weight vector: [66.22002474 -107.19437051   15.21342666   -9.79486139 -52.43545557]
Training error: 13.741160276011051
Test error: 12.090256909518201

Question 2.

Question 2(b).
----

accuracy1: 0.7766666666666666
accuracy2: 0.7766666666666666
accuracy2 - accuracy1: 0.0

Question 2(c).
----
accuracy1: 0.8227777777777778
accuracy2: 0.8227777777777778
accuracy2 - accuracy1: 0.0

Question 2(d).
----
accuracy1: 0.7838888888888889
accuracy2: 0.7838888888888889
accuracy2 - accuracy1: 0.0

Question 3.

Question 3(b).
----
test accuracy: 0.6861111111111111

Question 3(c).
----
test accuracy: 0.7844444444444445

Question 3(d).
----
test accuracy: 0.8111111111111111

Question 3(e).
----
test accuracy: 0.5555555555555556
test accuracy: 0.6277777777777778
test accuracy: 0.7044444444444444
test accuracy: 0.7205555555555555
test accuracy: 0.7927777777777778
test accuracy: 0.79
test accuracy: 0.7927777777777778
test accuracy: 0.8027777777777778
test accuracy: 0.8122222222222222

Question 3(f).
----
test accuracy: 0.8105555555555556
test accuracy: 0.81
test accuracy: 0.8144444444444444
test accuracy: 0.8122222222222222

test accuracy: 0.8116666666666666
test accuracy: 0.8116666666666666
test accuracy: 0.8116666666666666
test accuracy: 0.8116666666666666
test accuracy: 0.81

Question 3(g).
----
accuracy1: 0.8111111111111111
accuracy2: 0.8111111111111111
accuracy2 - accuracy1: 0.0

Question 3(h).
----
cross entropy1: 0.43181943978589826
cross entropy2: 0.43181943978589826
cross entropy2 - cross entropy1: 0.0

Question 5.

Question 5(c).
----
accuracy1: 0.9913513513513513
accuracy2: 0.9913513513513513
accuracy2 - accuracy1: 0.0
cross entropy1: 0.045975863494428205
cross entropy2: 0.045975863494428205
cross entropy2 - cross entropy1: 0.0

Question 5(f).

Epoch 0 Test accuracy= 0.6302702702702703
Epoch 1 Test accuracy= 0.6491891891891892
Epoch 2 Test accuracy= 0.6616216216216216
Epoch 3 Test accuracy= 0.6767567567567567
Epoch 4 Test accuracy= 0.6897297297297297
Epoch 5 Test accuracy= 0.7037837837837838
Epoch 6 Test accuracy= 0.7113513513513513
Epoch 7 Test accuracy= 0.72
Epoch 8 Test accuracy= 0.7297297297297297
Epoch 9 Test accuracy= 0.7367567567567568
Test accuracy= 0.7427027027027027
cross entropy= 1.180325546962009

Question 5(g).

Iteration 0 Test accuracy= 0.6302702702702703
Iteration 1 Test accuracy= 0.9551351351351351
Iteration 2 Test accuracy= 0.9551351351351351
Iteration 3 Test accuracy= 0.9594594594594594

Iteration 4 Test accuracy= 0.9686486486486486
Iteration 5 Test accuracy= 0.9675675675675676
Iteration 6 Test accuracy= 0.9664864864864865
Iteration 7 Test accuracy= 0.9648648648648649
Iteration 8 Test accuracy= 0.9664864864864865
Iteration 9 Test accuracy= 0.9675675675675676
Test accuracy= 0.9686486486486486
cross entropy= 0.1329496521750695
---E.N.D---