1b: accuracy = .98

2b:

the cost for lambda ( 0 ) is 0.20252633908551299

the cost for lambda ( 1 ) is 0.9111150341988488

the cost for lambda ( 2 ) is 1.6197037293121845

3: [4.53958077e-05, 2.50000000e-01, 4.53958077e-05]

4d: I used alpha = .01

5:

Accuracy with alpha = .1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lambda | MaxEpochs = 50 | | MaxEpochs = 100 | |
|  | Training | Testing | Training | Testing |
| 0 | 74.19 | 53.8 | 92.857 | 91.666 |
| .01 | 32.57 | 38.88 | 32.59 | 34.379 |
| .1 | 34.14 | 29.62 | 34.375 | 27.27 |
| 1 | 30.95 | 45.83 | 29.82 | 44.44 |

cost for results above

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lambda | MaxEpochs = 50 | | MaxEpochs = 100 | |
|  | Training | Testing | Training | Testing |
| 0 | 1.26 | 1.98 | .519 | .49 |
| .01 | 3.4 | 2.7 | 3.5 | 5.49 |
| .1 | 5.4 | 5.9 | 5.49 | 6.349 |
| 1 | 5.64 | 8.77 | 5.88 | 7.847 |

For both MaxEpochs =50 and =100, the best accuracy came with lambda = 0

And the only time the testing really outperformed the training was with lambda = 1