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Task 1:

Output:

For training file = pendigits\_training.txt

For test file = pendigits\_test.txt

1. Degree = 1 and lambda = 0

* Training Phase:

|  |
| --- |
| w0=-6.3872  w1=0.0276  w2=0.0432  w3=0.0126  w4=0.0176  w5=0.0080  w6=-0.0058  w7=-0.0081  w8=0.0714  w9=-0.0153  w10=-0.0190  w11=0.0117  w12=0.0222  w13=-0.0018  w14=-0.0013  w15=0.0091  w16=0.0382 |

* Test Phase:

|  |
| --- |
| ID= 3498, output= 3.8514, target value = 4.0000, squared error = 0.0221 |

1. Degree = 1 and lambda = 1

* Training Phase:

|  |
| --- |
| w0=-6.2611  w1=0.0275  w2=0.0428  w3=0.0126  w4=0.0172  w5=0.0078  w6=-0.0059  w7=-0.0081  w8=0.0713  w9=-0.0154  w10=-0.0191  w11=0.0116  w12=0.0221  w13=-0.0018  w14=-0.0017  w15=0.0090  w16=0.0383 |

* Test Phase:

|  |
| --- |
| ID= 3498, output= 3.8528, target value = 4.0000, squared error = 0.0217 |

1. Degree = 2 and lambda = 0

* Training Phase:

|  |
| --- |
| w0=-7.5608  w1=0.0223  w2=0.0001  w3=0.0352  w4=0.0000  w5=0.0049  w6=-0.0000  w7=-0.0299  w8=0.0002  w9=0.0327  w10=-0.0001  w11=0.0694  w12=-0.0004  w13=0.0079  w14=-0.0002  w15=0.0596  w16=-0.0003  w17=-0.0184  w18=-0.0000  w19=0.0093  w20=0.0002  w21=0.0162  w22=-0.0000  w23=0.0398  w24=-0.0002  w25=-0.0041  w26=0.0001  w27=0.0538  w28=-0.0007  w29=-0.0149  w30=0.0002  w31=0.1215  w32=-0.0007 |

* Test Phase:

|  |
| --- |
| ID= 3498, output= 3.6074, target value = 4.0000, squared error = 0.1542 |

1. Degree = 2 and lambda = 1

* Training Phase:

|  |
| --- |
| w0=-7.0384  w1=0.0219  w2=0.0001  w3=0.0310  w4=0.0001  w5=0.0043  w6=-0.0000  w7=-0.0345  w8=0.0002  w9=0.0315  w10=-0.0001  w11=0.0678  w12=-0.0004  w13=0.0077  w14=-0.0002  w15=0.0574  w16=-0.0003  w17=-0.0192  w18=-0.0000  w19=0.0091  w20=0.0002  w21=0.0156  w22=-0.0000  w23=0.0401  w24=-0.0002  w25=-0.0050  w26=0.0001  w27=0.0536  w28=-0.0007  w29=-0.0155  w30=0.0002  w31=0.1208  w32=-0.0007 |

* Test Phase:

|  |
| --- |
| ID= 3498, output= 3.6001, target value = 4.0000, squared error = 0.1599 |