

CSE 4/574
Gaussian Discriminant Analysis and Linear
Regression

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Problem 1

Problem 2

$$w = (X^T X)^{-1} X^T y$$

Train data

MSE without intercept: 19099.446844570746

MSE with intercept: 2187.1602949303892

Test data

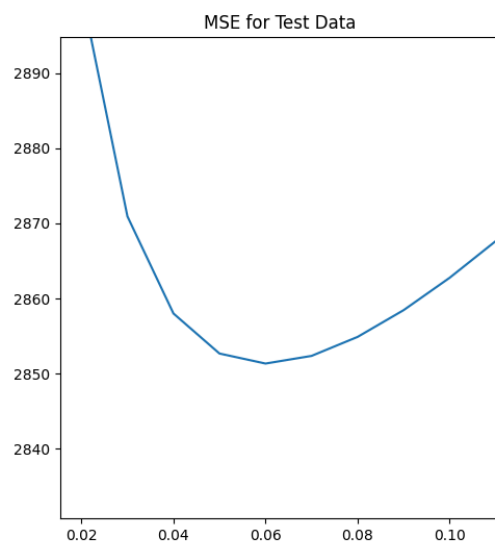
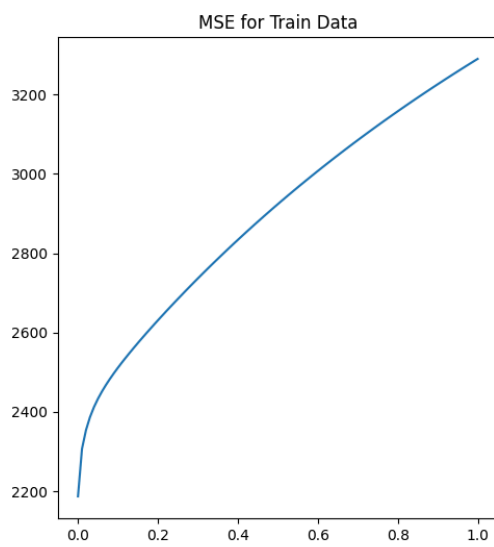
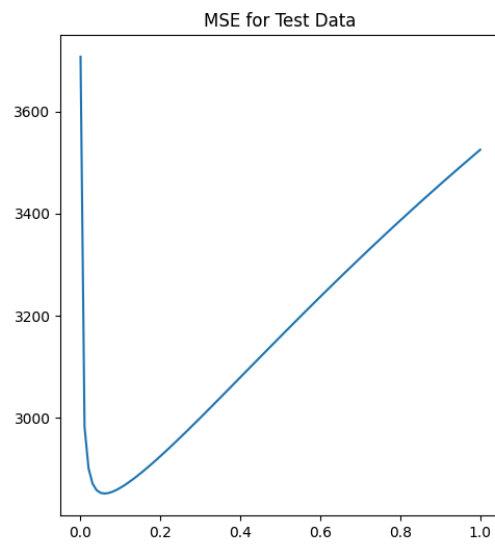
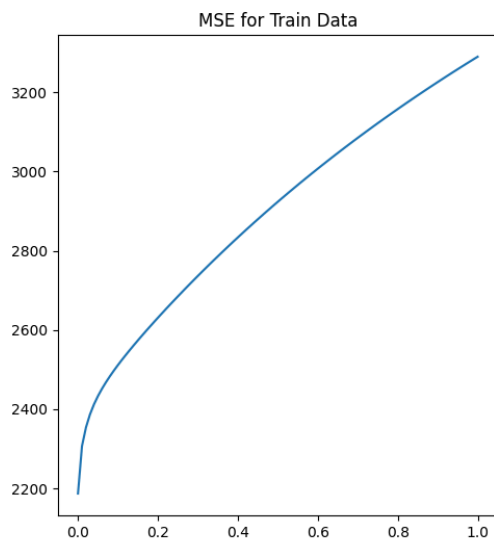
MSE without intercept: 106775.36153972965

MSE with intercept: 3707.8401811277313

In both the datasets (train and test), MSE with intercept is significantly less than MSE without intercept, and thus MSE with intercept is better.

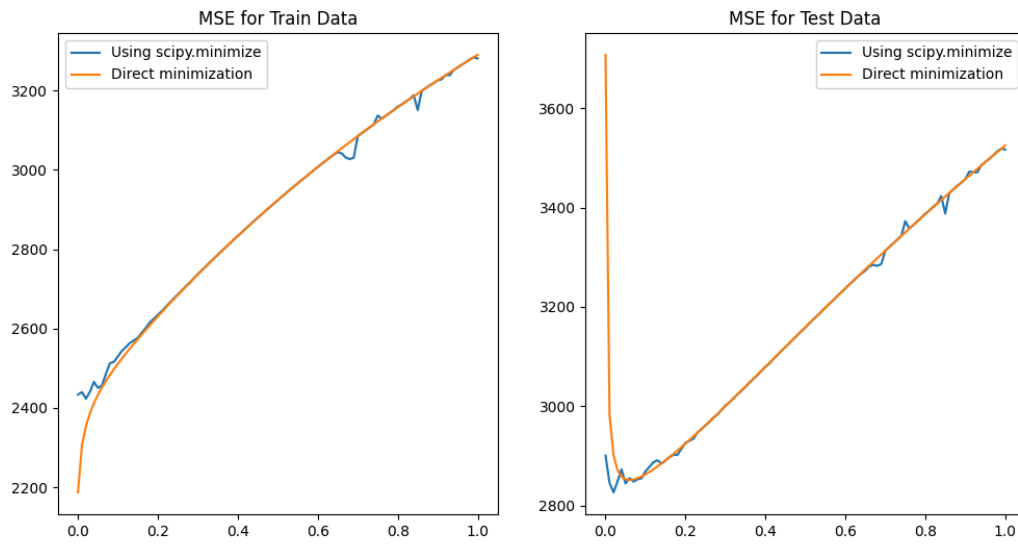
Problem 3

$$w = (\lambda I + X^T X)^{-1} X^T y$$

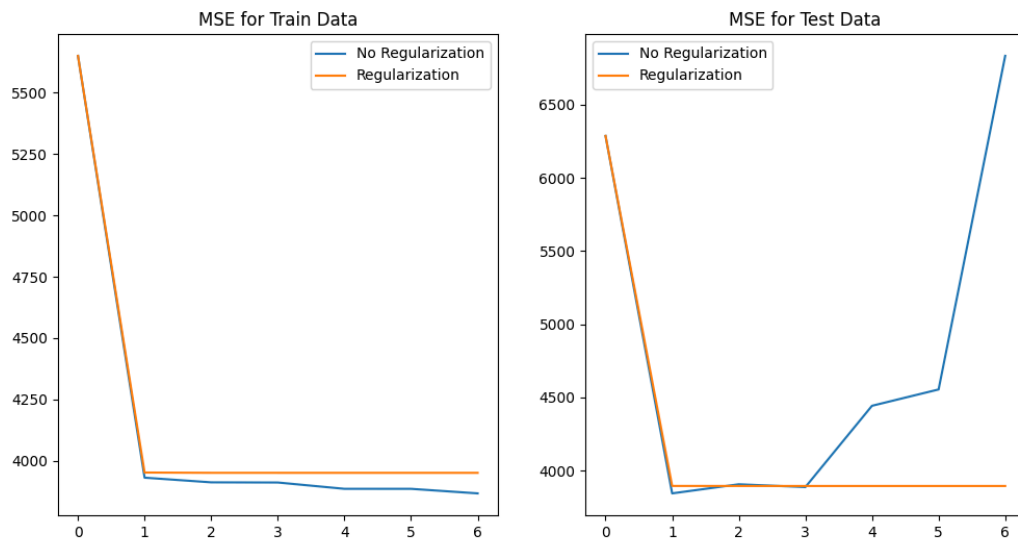


$\lambda_{\text{opt}} = 0.06$ (at this λ , MSE for test data is lowest (~ 2851))

Problem 4



Problem 5



Problem 6