

## Lab 7

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The purpose of the lab is to implement logistic regression. When the model is trained, the gradient descent algorithm is used to calculate the value of  $w$ . When the model is tested, the value of  $w$  is used to calculate the predicted value of  $y$ .

Train Error Rate	Test Error Rate
7.15%	7.69%

The train error rate is less than the test error rate. Because the model is trained on the training data, the model fits the training data better than the testing data. The train error rate is sometimes greater than the test error rate. Because the initial values of  $w$  are random, the value of  $w$  changes every time the model is trained.