CSE 6242 Assignment 3

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Question 1: Data Preprocessing

Question 2: Theory

Part a: Write down the formula for the loss function used in Logistic Regression, the expression that you want to minimize: L(θ)

Taken from the lecture "MLE and Iterative Optimization":

$$\hat{\theta}_{MLE} = argmin_{\theta} \sum_{i=1]}^{n} log(1 + e^{y^{(i)} * <\theta, x^{(i)}>})$$

Thus, the loss function is

$$L(\theta) = \sum_{i=1]}^{n} log(1 + e^{y^{(i)} * <\theta, x^{(i)}>})$$

where $y^{(i)} = 1$ or $y^{(i)} = -1$.

Part b: Derive the gradient of the loss function with respect to model parameters: $\frac{dL(\theta)}{d\theta}$.