# 2206121-Lab-06-Report

Q1) Use logistic regression to find decision boundary For the given database. Set your learning rate to 0.1. What is the cost function value and learning parameter value after convergence?

```
Final Cost Function Value: 0.2283
Final Theta Values (Decision Boundary Parameters):
[ 0.40125293  2.5885471  -2.72558781]
```

Q2) Plot cost function v/s iteration graph for the model trained in question 1.Do not use scatter plots for this.
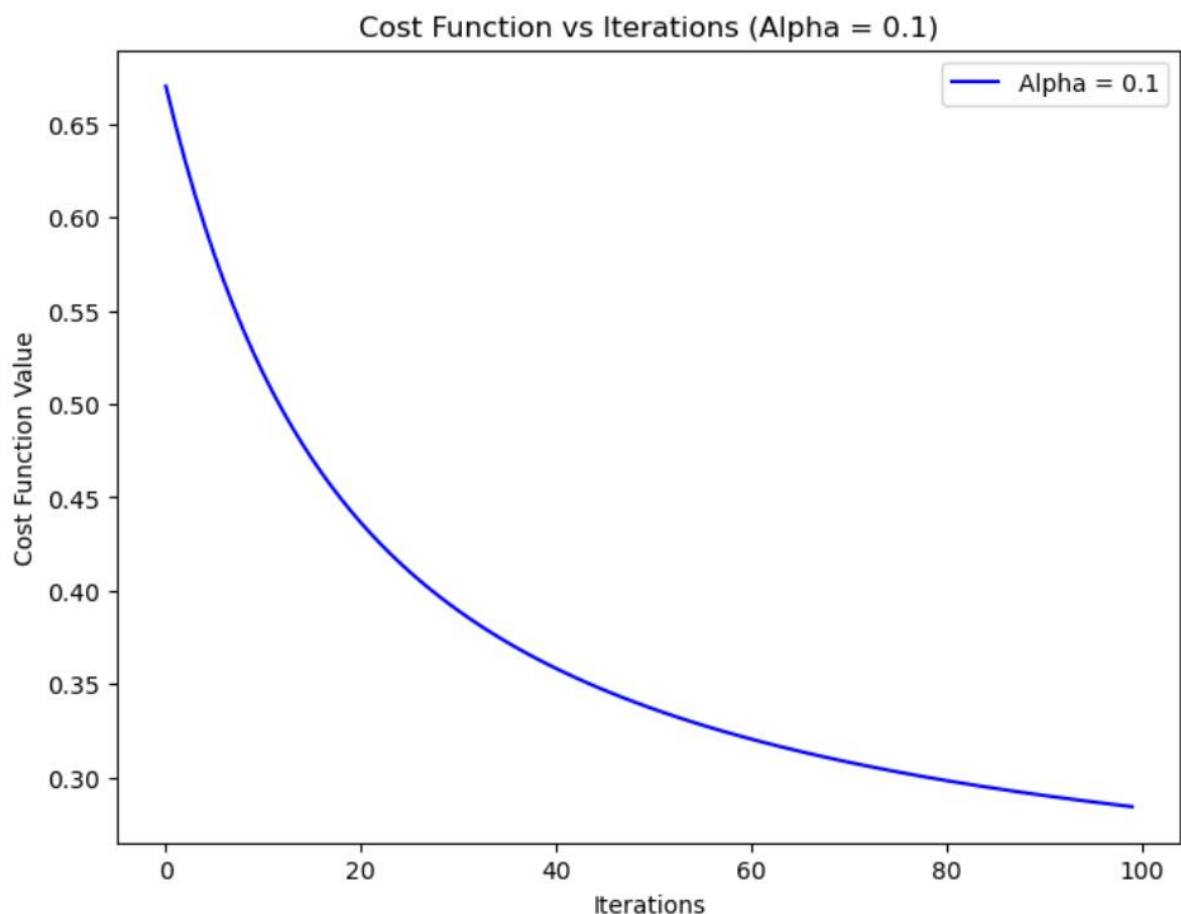
Q3) Plot the given dataset on a graph, use different colours for different classes and also show the decision boundary you obtained in question Do not use scatter plot.

Logistic Regression Decision Boundary without Scatter
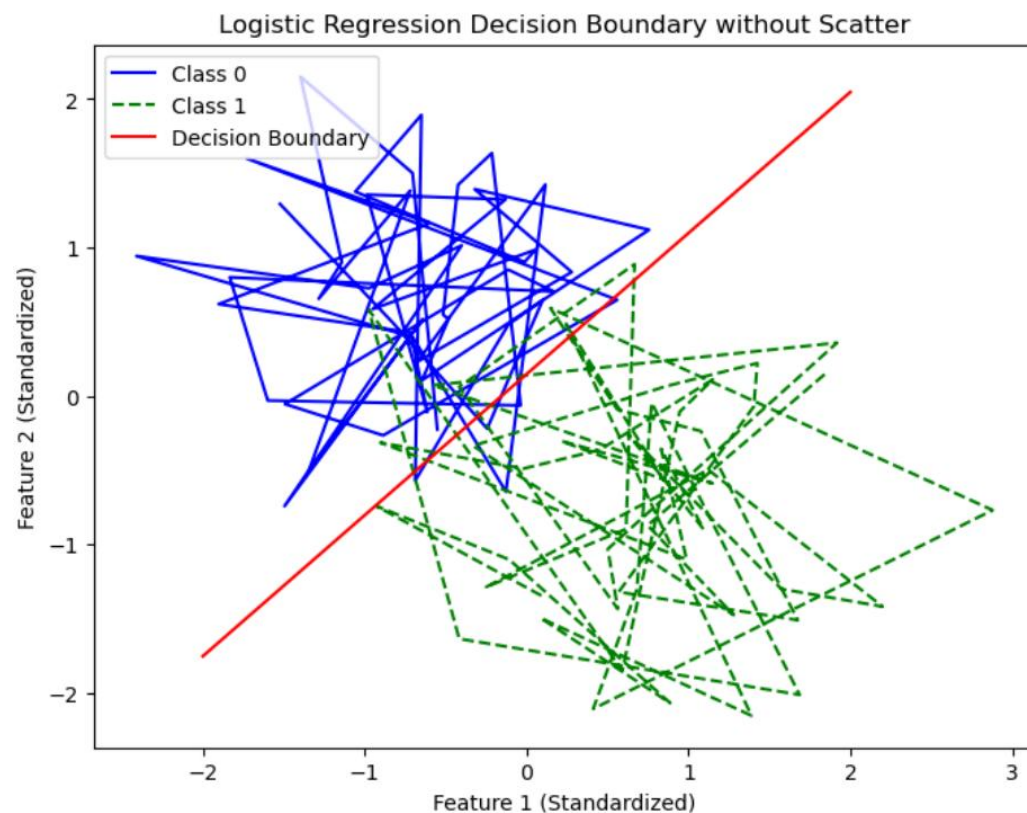
Q4) Train your model with a learning rate of 0.1 and 5. Plot the cost-function v/s iteration curve for both learning rates on the same graph. For this task, only train your model for 100 iterations.

Cost Function vs Iterations for Different Learning Rates
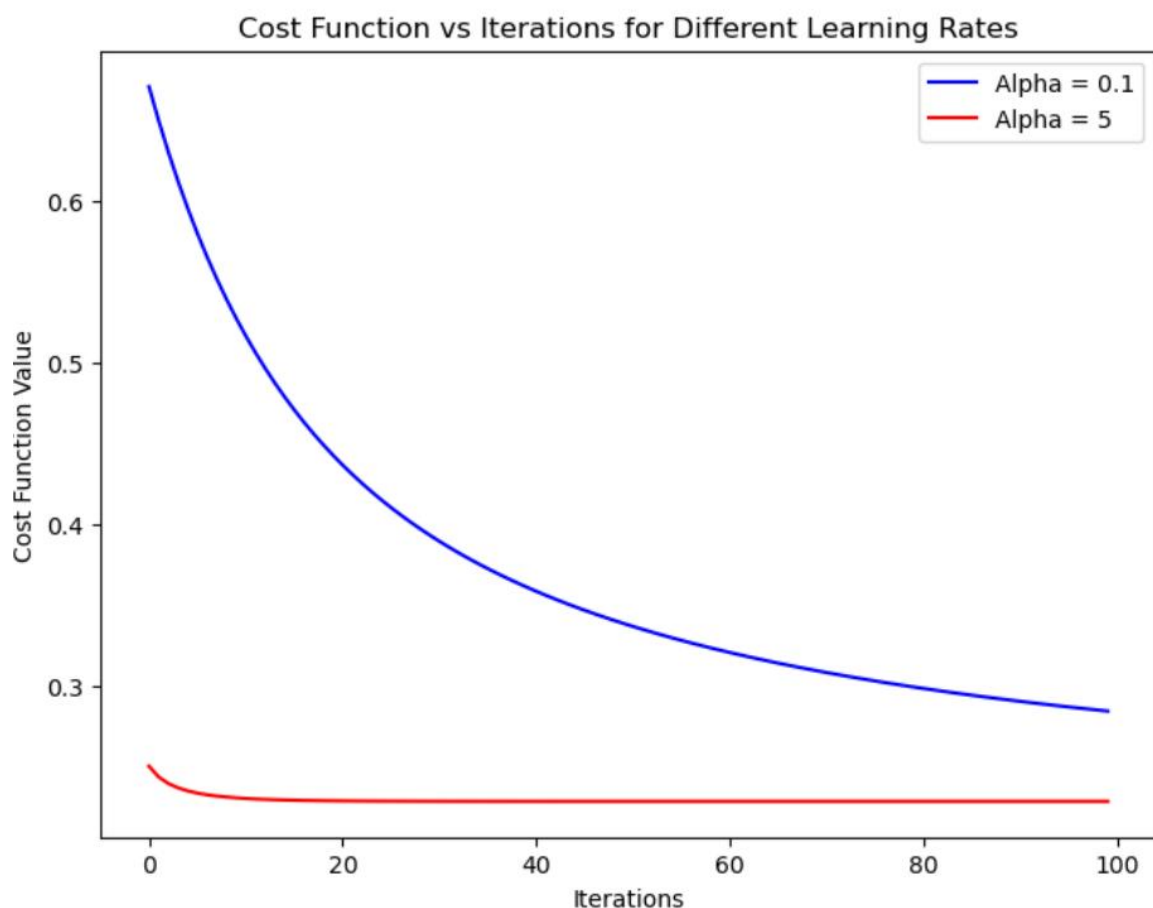
Q5) Find the confusion matrix for your training dataset. Using the confusion matrix to calculate the accuracy, precision, recall, F1-score.

```
Confusion Matrix:
[[45  5]
 [ 7 43]]

Accuracy: 0.8800
Precision: 0.8958
Recall: 0.8600
F1-Score: 0.8776
```

Code Repository
The full implementation of the project, including all code and outputs, can be found at the following GitHub repository:
https://github.com/sattwikc-ss/Logistic-Regression.git

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