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Section:ML_CS_3

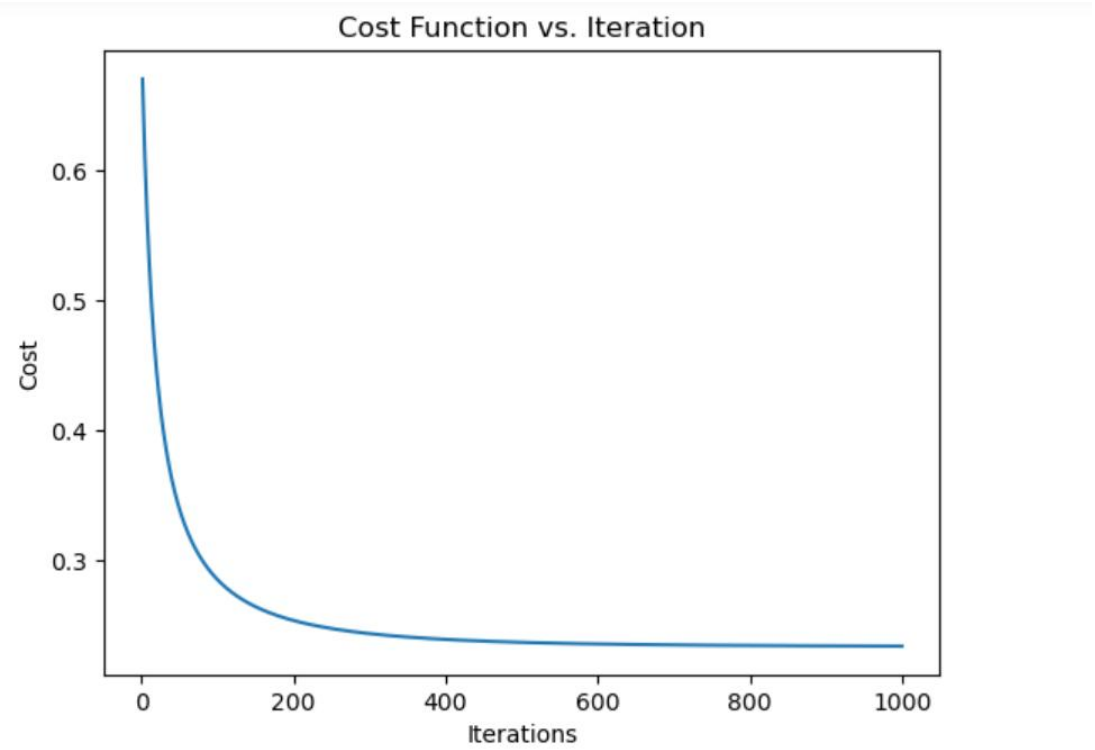
ML ASSIGNMENT 2

Logistic Regression

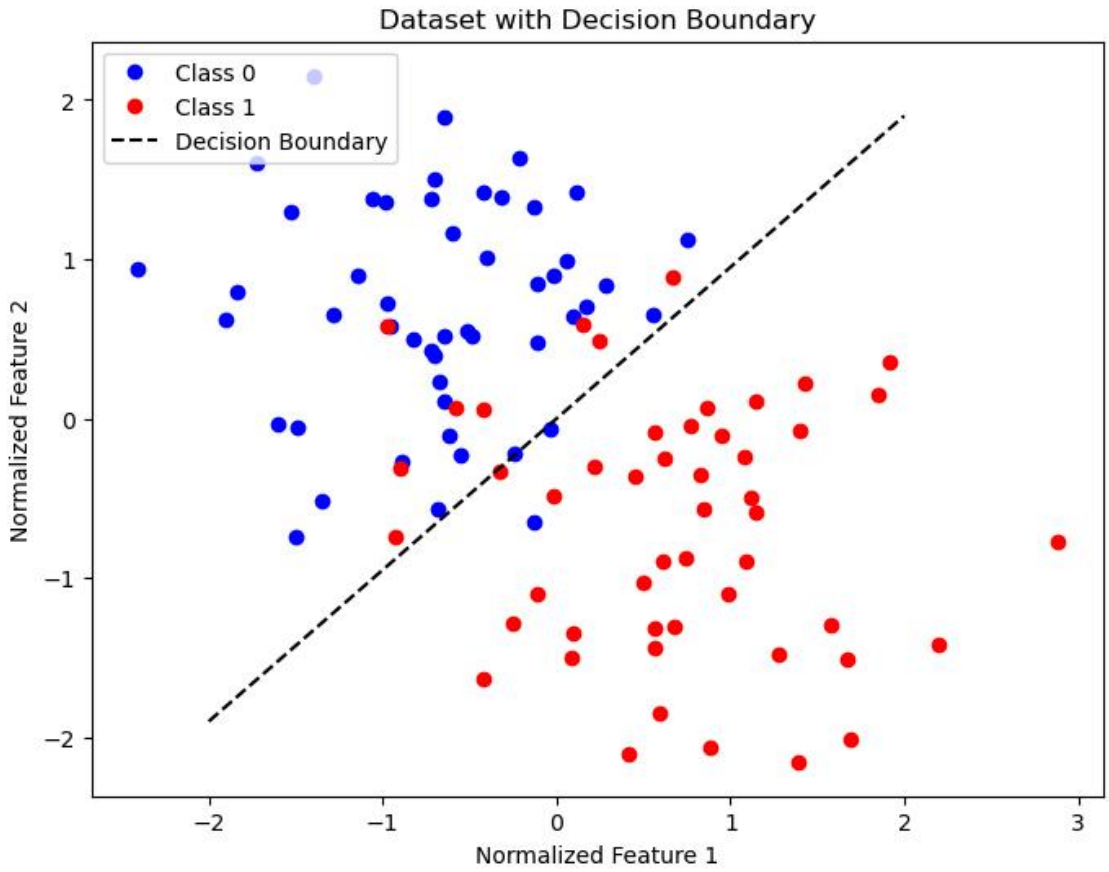
Question 1:Use logistic regression to find decision boundary for the given database. Set your learning rate to 0.1. What is the cost function value and learning parameter value after convergence?

```
Final Cost Function Value: 0.23
Final Parameters (theta): [ 0.    2.31 -2.43]
```

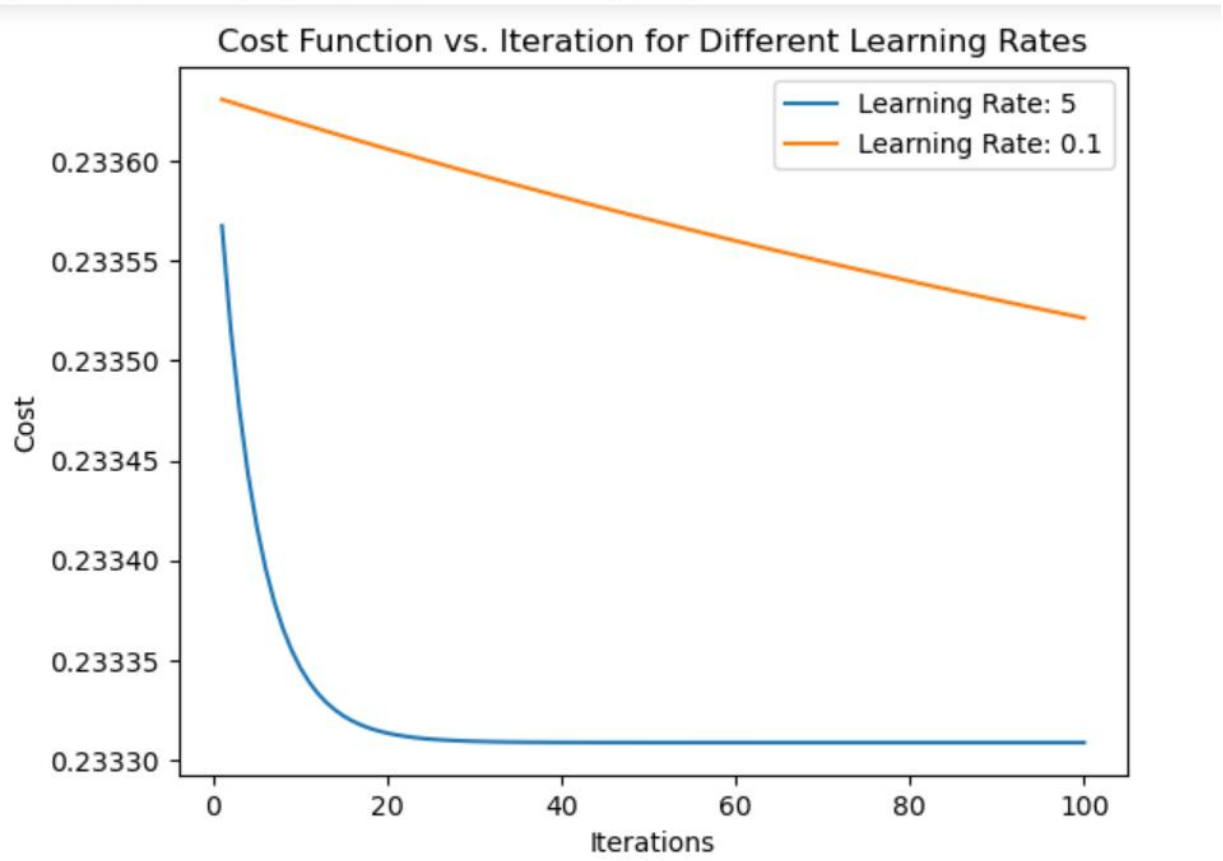
Question 2: Plot cost function v/s iteration graph for the model trained in question1. Do not use scatter plot for this.



Question 3:Plot the given dataset on a graph, use different colours for different classes and also show the decision boundary you obtained in question1. Do not use scatter plot.



Question 4: 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.



Question 5: Find the confusion matrix for your training dataset . Using the confusion matrix to calculate accuracy,precision,recall , F1-score.

```
Confusion Matrix:
True Positive: 42
False Positive: 2
True Negative: 48
False Negative: 8

Metrics (in percentage):
Accuracy: 90.0
Precision: 95.45454545454545
Recall: 84.0
F1-score: 89.36170212765958
```

The confusion matrix:

	Positive	Negative
Positive	TP(42)	FP(2)
Negative	FN(8)	TN(48)

GITHUB LINK: https://github.com/Bhrammm/2105364_MLAssignment2