

Ex.No.2.

BINARY CLASSIFICATION

Aim:

To write a python program to perform binary classification.

Equipment's Required:

1. Hardware – PCs
2. Anaconda – Python 3.7 Installation / Moodle-Code Runner / Google Colab

Concept:

Classification is a task that requires the use of algorithms that learns how to assign a class label to examples from the problem domain.

Ex: classifying emails as “spam” or “not spam.”

Binary classification is the task of classifying/grouping/bundling the elements of a set into two groups on the basis of a classification rule.

Binary classification tasks involve one class that is the normal state and another class that is the abnormal state.

The class for the normal state is assigned the class label 0 and the class with the abnormal state is assigned the class label 1.

Neural Network/ANN is one of the best binary classifier.

The perceptron algorithm is the simplest form of artificial neural networks.

Hence Perceptron is used for Binary Classification problems.

This also mandates the conceptual understanding of binary classification as the preliminary requirement for neural network.

Algorithm :

1. Start the program.
2. Import libraries required as per requirement.
3. Define dataset use the make_blobs() function to generate a synthetic multi -class classification dataset.
4. summarize dataset shape
5. summarize observations by class label
6. summarize first few examples
7. plot the dataset and color the by class label
8. stop the program .

Program :

/*Program to implement binary classification.

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*/

```
import matplotlib.pyplot as plt
```

```
from sklearn import datasets
```

```
X, y = datasets.make_blobs(n_samples=150,n_features=2, centers=2,cluster_std=1.05,  
random_state=2)
```

```
#Plotting
```

```
fig = plt.figure(figsize=(10,8))
```

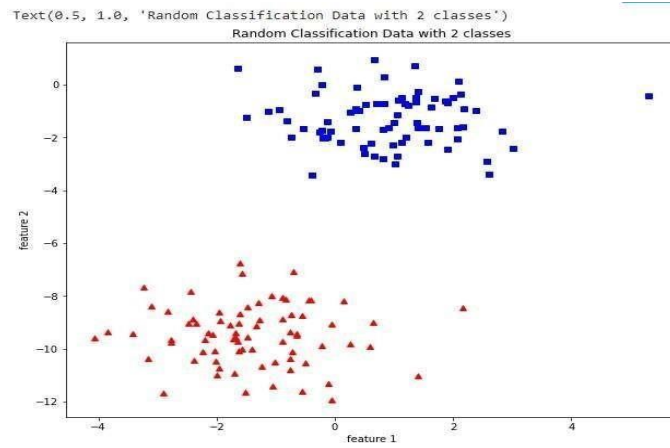
```
plt.plot(X[:, 0][y == 0], X[:, 1][y == 0], 'r^')
```

```
plt.plot(X[:, 0][y == 1], X[:,1][y == 1], 'bs')
```

```
plt.xlabel("feature 1") plt.ylabel("feature 2")
```

```
plt.title('Random Classification Data with 2 classes')
```

sample output:



Result:

Thus the python program performed binary classification successfully.