**ASSIGNMENT-2**

**HOUSE PRICE PREDICTION USING**

**NEURAL NETWORKS**

GROUP MEMBERS:

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**DESIGN:**

The design of the algorithm is based on the formulas given by Fisher’s Discriminant method where the separating vector is determined using Sw and means of the points of each class.

m1 and m2 (the means of class 0 and class 1 respectively) are calculated by taking simple average of each factor.

Sw(co-variance matrix) is calculated using the formula:

SW=∑n∈C1(xn−m1)(xn−m1)^T +∑n∈C2(xn−m2)(xn−m2)^T

where c1 and c2 are the class sizes of class 0 and class 1 respectively.

w is then calculated by taking the dot product of

Sw^-1 and (m1-m2)

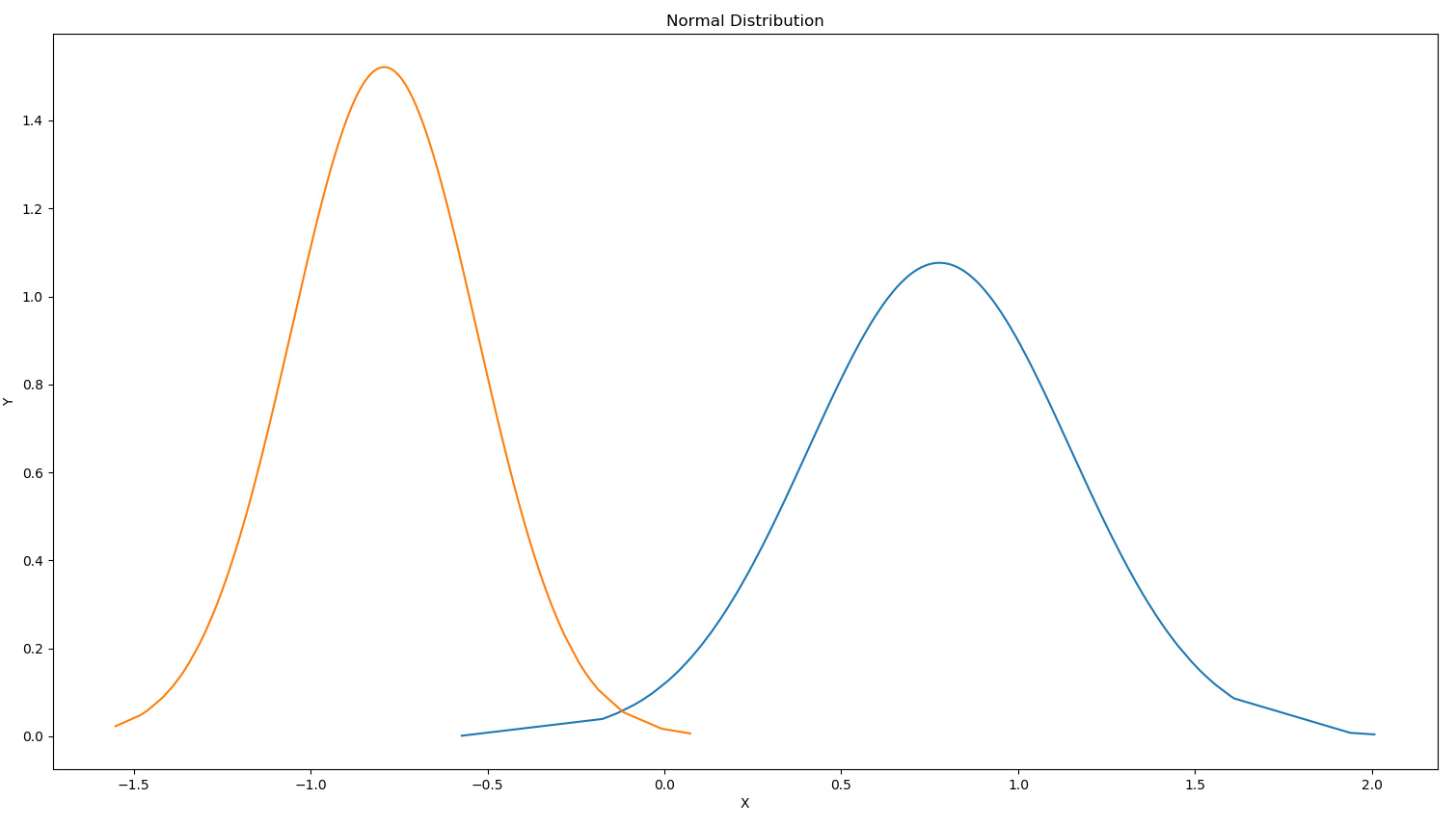
Then, the program plots the normal distribution and then plots the points in 1-D (this data is held by trans\_vec list) for both the classes, after which the intersection

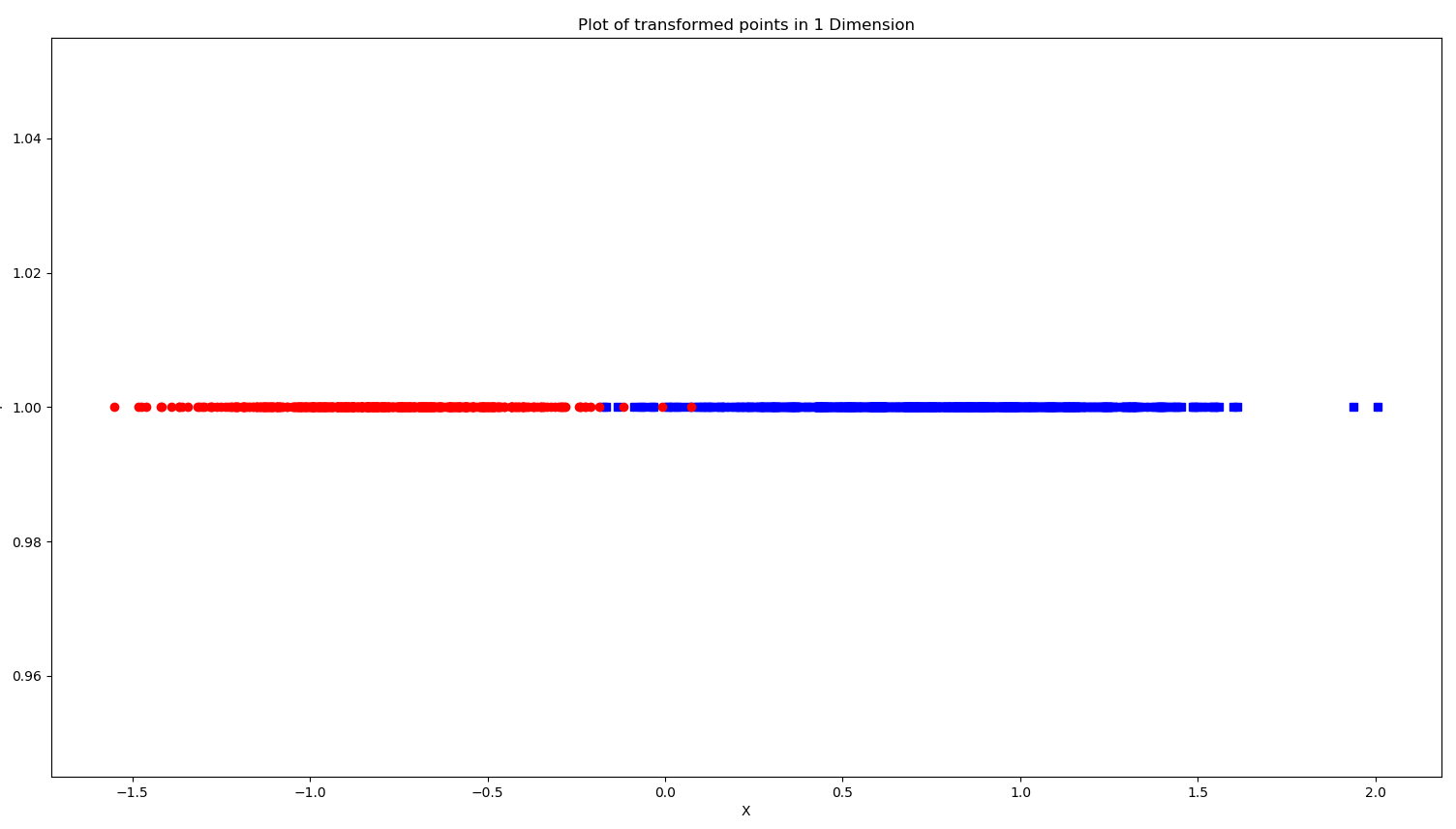
This data is then used to find the intersection of both the curves and hence finding the accuracy and F score.

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**RESULTS:**

**TRAINING SET-1**

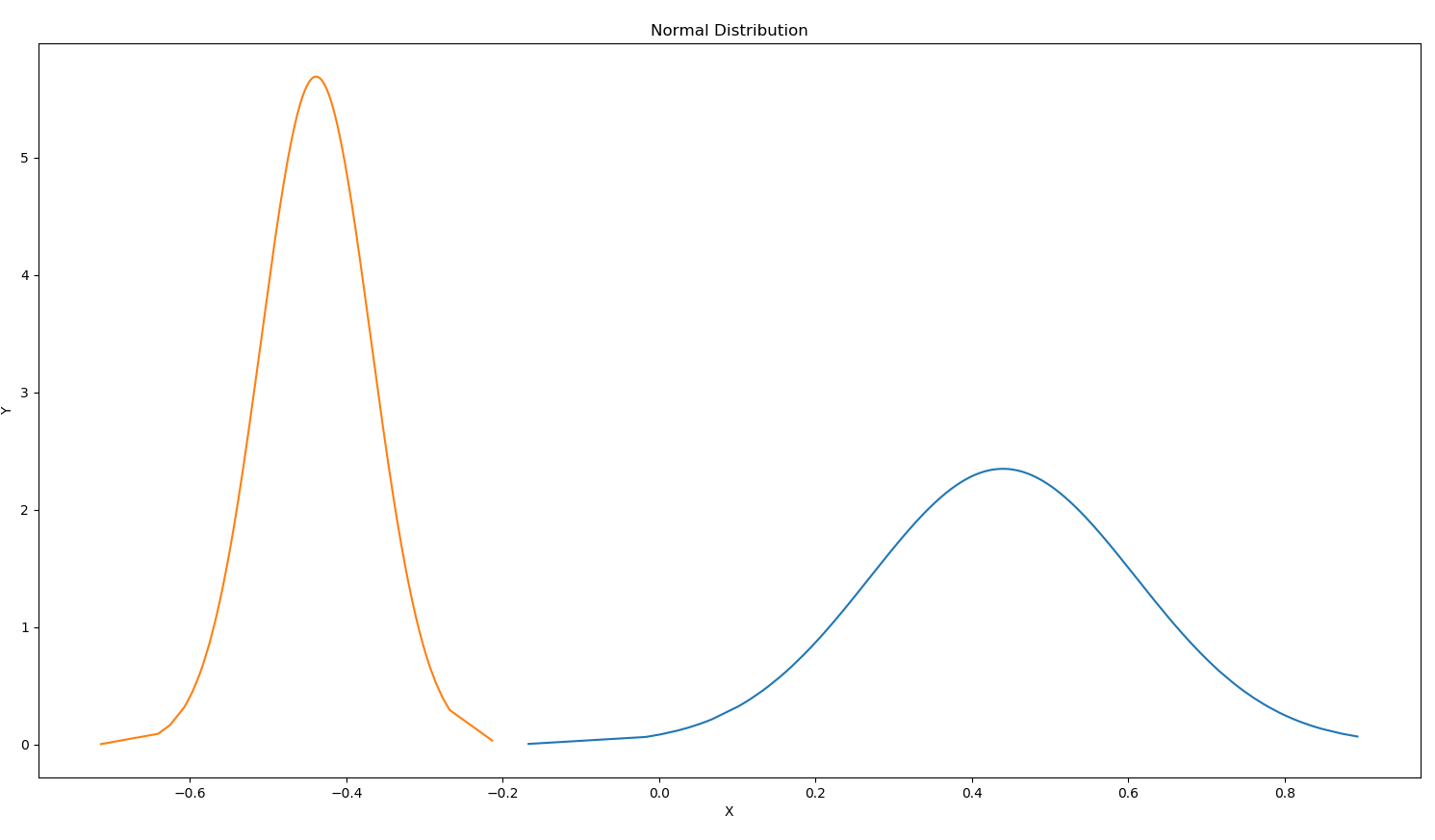
Red – class 0, Blue – class 1



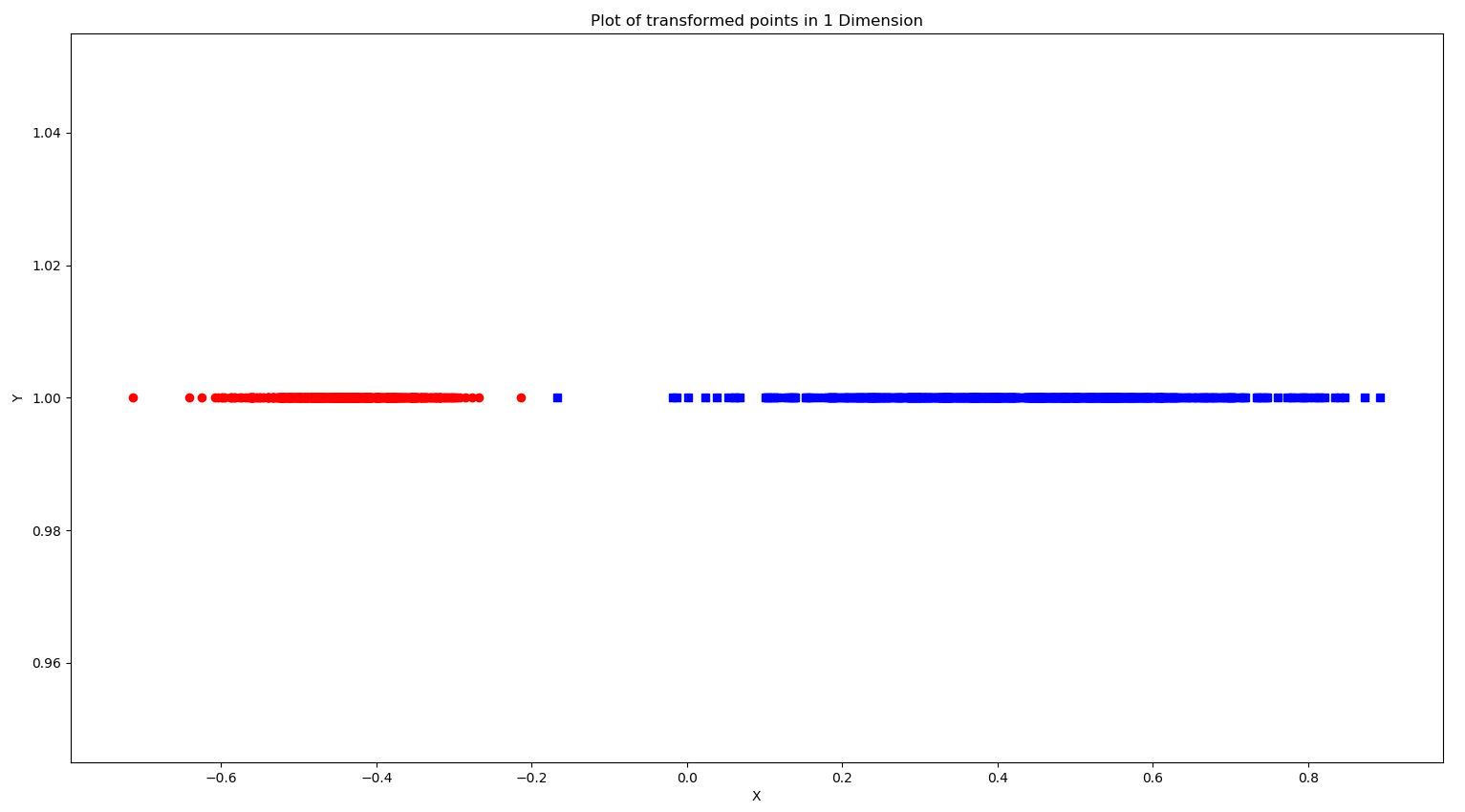
Testing Accuracy for dataset 1 : 99.3 %

F-Score for dataset 1: 99.2992992992993 %

**TRAINING SET-2**



Red – class 0, Blue – class 1



Testing Accuracy for dataset 2 : 100.0 %

F-Score for dataset 2: 100.0 %

**CONCLUSIONS:**

1.Normal Curves:

We observe an intersection in the first training set, but not in the second set. As the second set is linearly separable, where observe 100% accuracy and F-Score.

2. Using the above observations, we can conclude that the Fisher Discriminant Method can be used to accurately predict the data for approximately linearly separable data only.

Note: This is not valid for Extended Fisher Discriminant Method.