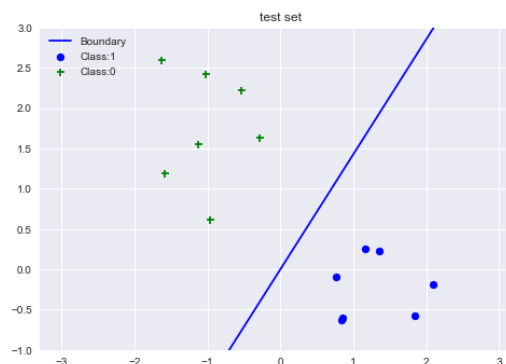
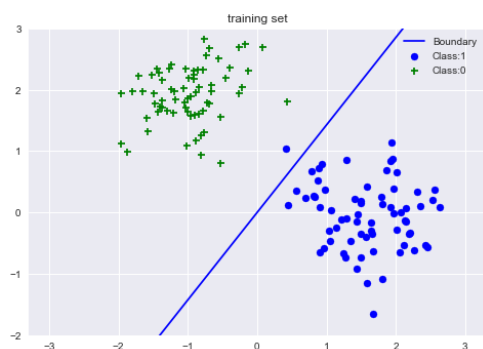
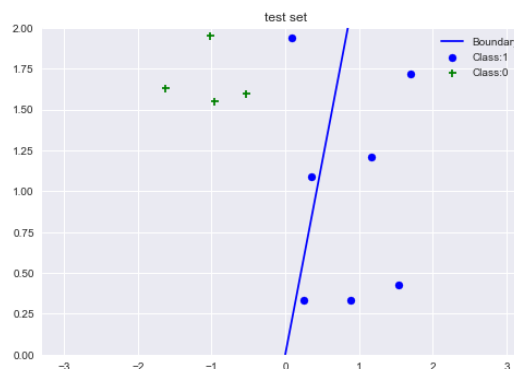


Q8) SVM Implementation.

Dataset 1: For C=1:



Dataset 1: For C=1:



Classification Error percent for both datasets for various C:

Regularization parameter C	Training set-data1	Test set-data1	Training set – data2	Test set-data2
C = 0.00001	50.74%	50.00%	61.11%	64.29%
C = 0.0001	50.74%	50.00%	59.52%	64.29%
C = 0.001	50.74%	50.00%	59.52%	64.29%
C = 0.01	50.74%	50.00%	59.52%	64.29%
C = 0.1	50.74%	50.00%	62.70%	64.29%
C = 1	50.74%	50.00%	59.52%	64.29%
C = 10	52.21%	50.00%	59.52%	64.29%
C = 100	50.74%	50.00%	55.56%	57.14%
C = 1000	53.68%	50.00%	59.52%	64.29%

Dataset1:

Using Linear Kernel [0 0 0 0 0 0 0 1 1 1 1 1 1 1]

Prediction Using SVM-LIB:

Sigmoid: [0 0 0 0 0 0 0 1 1 1 1 1 1 1]

Linear: [0 0 0 0 0 0 0 1 1 1 1 1 1 1]

Poly: [0 0 0 1 0 0 0 1 1 1 1 1 1 1]

Rbf: [0 0 0 0 0 0 0 1 1 1 1 1 1 1]

Dataset2:

Using Linear Kernel [0 0 0 0 0 0 0 1 1 0 1 1 1 0]

Prediction Using SVM-LIB:

Sigmoid: [0 1 0 0 0 0 0 1 1 0 1 1 1 0]

Linear: [0 0 0 0 0 0 0 1 1 0 1 1 1 1]

Poly: [0 0 0 0 0 0 0 1 1 1 1 1 1 1]

Rbf: [0 0 0 0 0 0 0 1 1 0 1 1 1 1]

Number of mis-classified points for both datasets for various C:

Regularization parameter C	Training set-data1	Test set-data1	Training set – data2	Test set-data2
C = 0.00001	69	7	77	9
C = 0.0001	69	7	75	9
C = 0.001	69	7	75	9
C = 0.01	69	7	75	9
C = 0.1	69	7	79	9
C = 1	69	7	75	9
C = 10	71	7	75	9
C = 100	69	7	70	8
C = 1000	73	7	75	9

Dataset2 has bigger classification error than dataset1 because, the samples in dataset2 are not linearly separable.