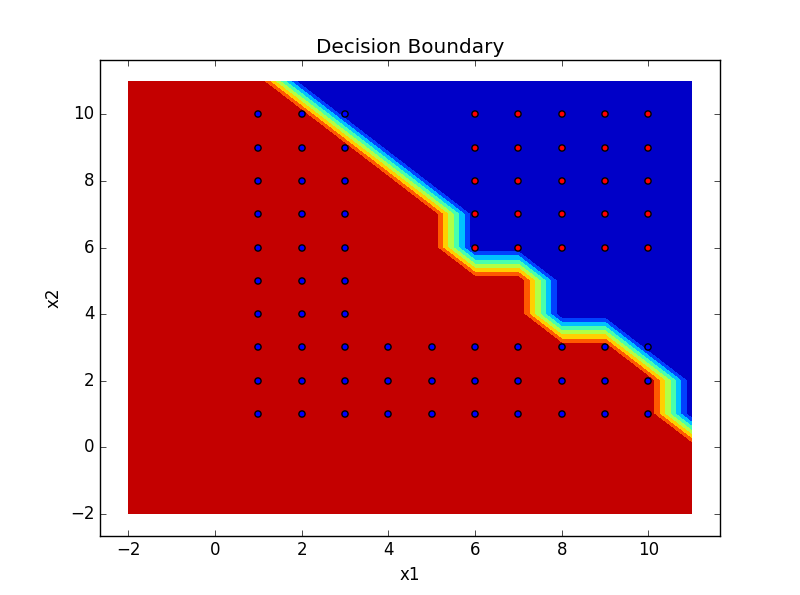
# Homework 5

**Problem 1:**

1. The decision boundary for a voted perceptron algorithm is as follows (T=10):



The final decision boundary is non linear

1. Pseudocode for voted perceptron with down-sampling:

* Repeat T times:
  + Randomly permute the data points
  + for i = 1 to n:

- If l + 1 > L:

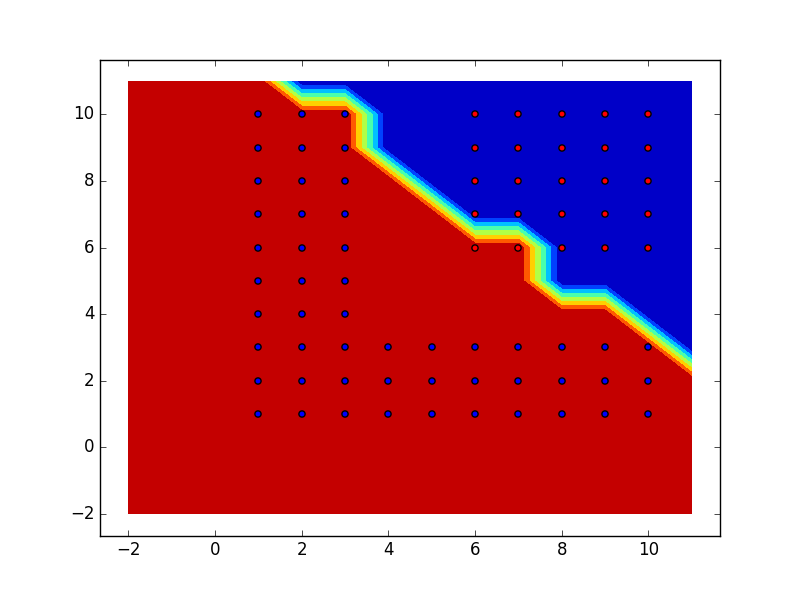
// Remove the (c, w) with the most minimum c

del c[minI], del w[minI]

decrement l

* Else:

The decision boundary using down sampling is as follows (T=100, L=100):

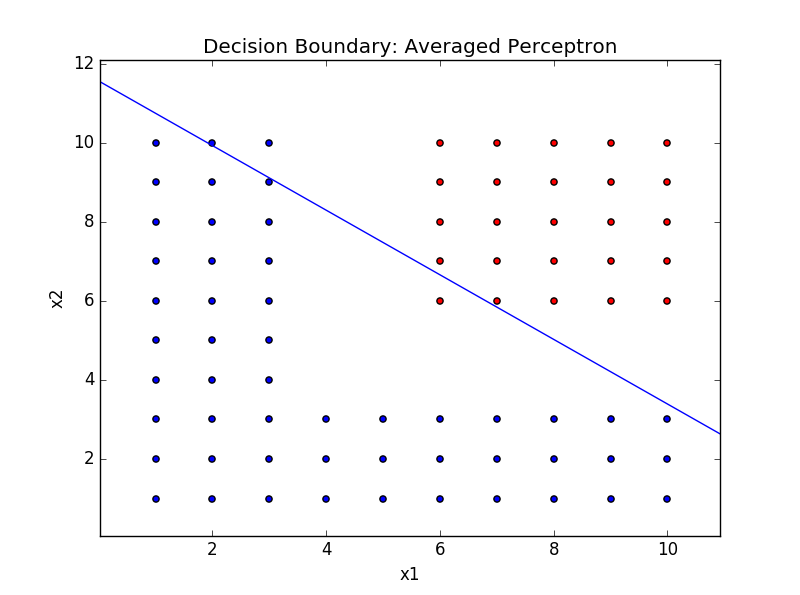


1. Pseudocode for averaged perceptron tracking at most 2 w’s is as follows:

* Repeat T times:
  + Randomly permute the data points
  + for i = 1 to n:

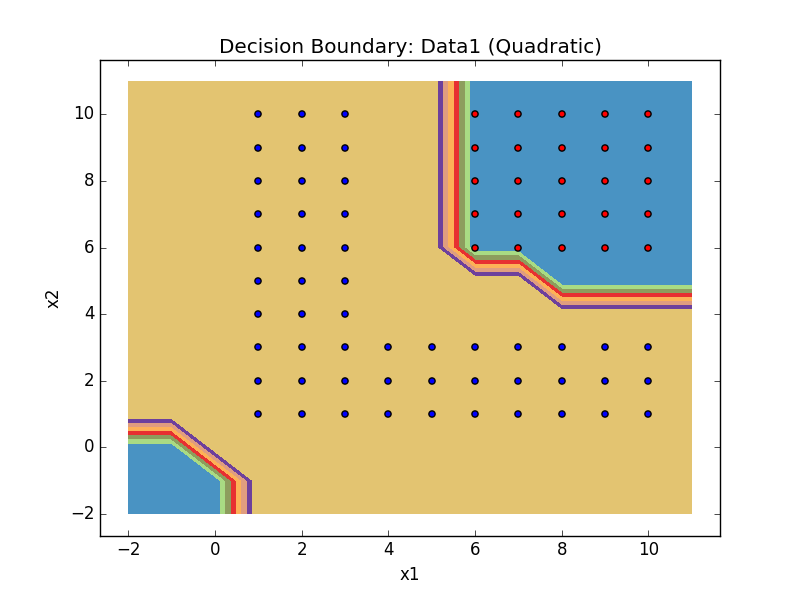
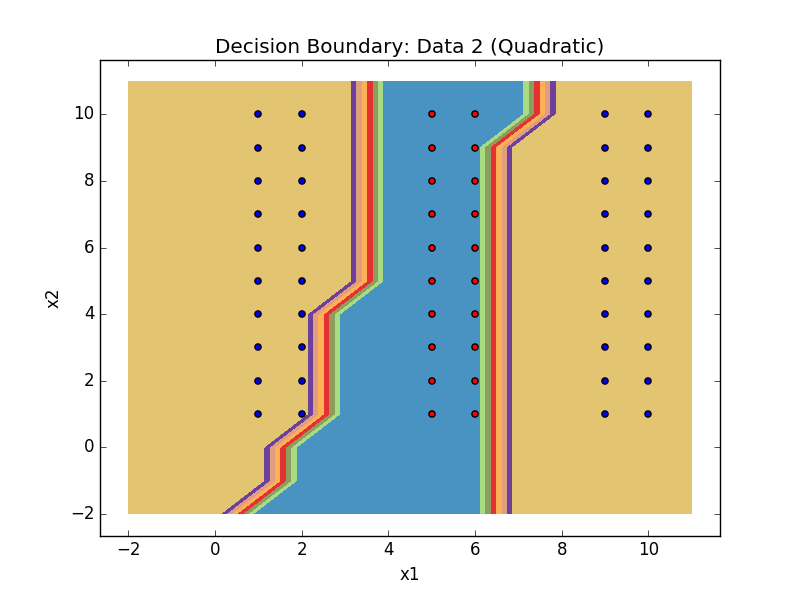
* Else: c = c + 1

The decision boundary is as follows:



**Problem 2:**

Decision boundary obtained by quadratic kernels:



Decision boundary obtained by RBF kernels:

