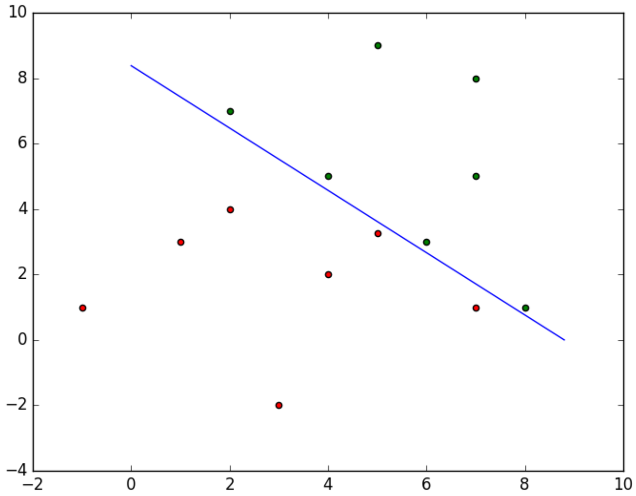
Single Sample



The weights learnt were [-44. 5. 5.25]
We started with [1,1,1]

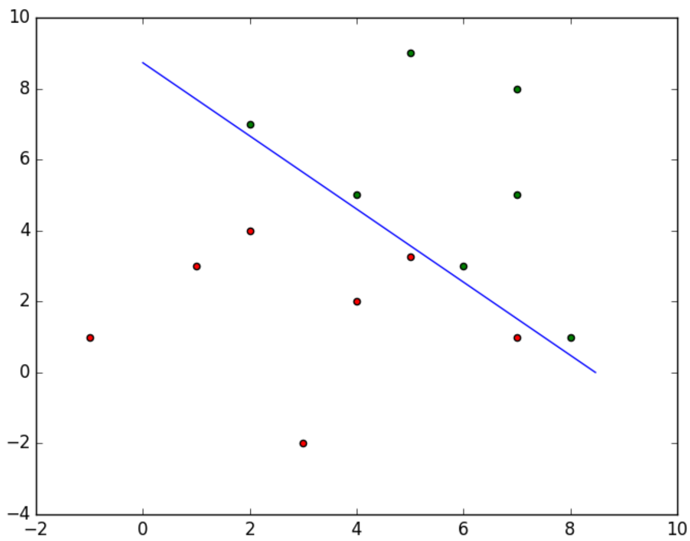
Convergence :
For [1 1 1] took 65 steps

For[2 2 2] took 61 steps

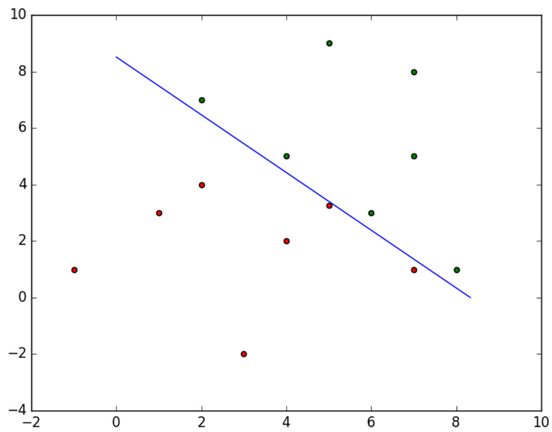
For [-44 3 3] took 42 steps.
So as we get nearer and nearer to the correct weights, the convergence time decreases.

Single Sample with margin

The weights learnt where [-144. 17. 16.5]
with b=5.



With b=0.5 we got this boundry which is very near to some points :



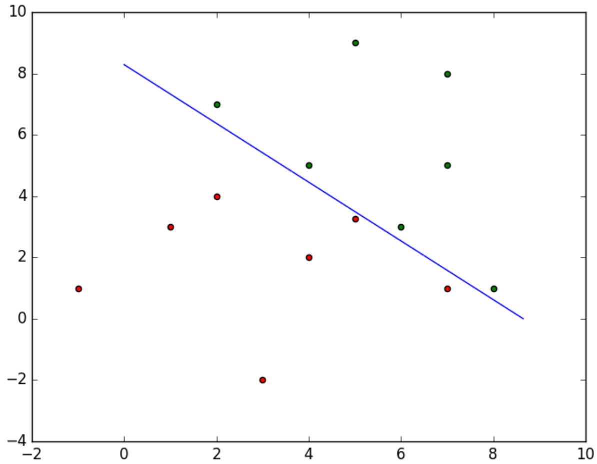
For different initial values of a , we found following results (with b=1):
[5 5 5] =289
[10 10 10] = 286
[-100 10 10] = 30

So as we get nearer and nearer to the correct weights, the convergence time decreases.

Relaxation algorithm with margin

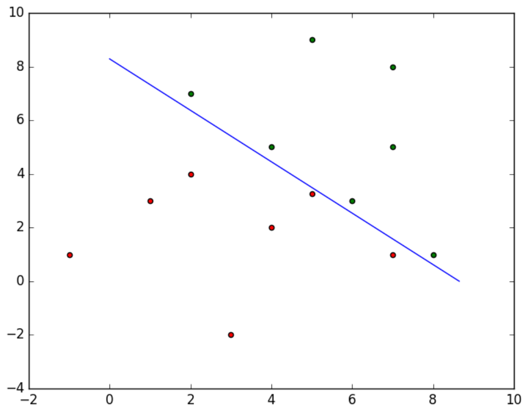
Ran the method with b=0.5 ,eta=0.7 and we got this chart.

The weights taken initially were [1 1 1].

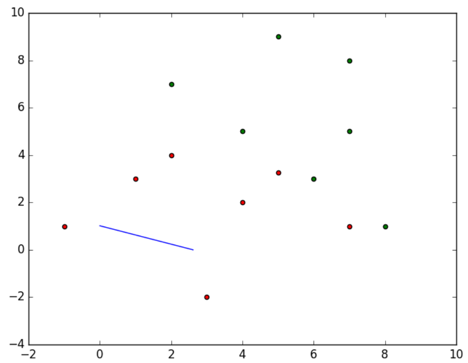


As with the cases above , the nearer we initialized the weights to the correct values, the faster we converged.

For b=5 ,we got same boundry as shown. So large values of b didnt make a difference.



Interesting to note that at b=0 , we didnt get a solution:



Widrow-Hoff or Least Mean Squared (LMS) Rule: