USER DEFINED FUNCTION

function [w] = perceptron(X,Y,w\_init) **---x and y are our attribute and we can define them in the perceptron algorithm and assigned them into the w function.**

w = w\_init; **--- we can define weighted value**

for iteration = 1 : 100 **--- we start with 1 and do until 100 iterations to do this algorithm.**

for ii = 1 : size(X,2) **---- ii start with 1 and until contain of all numbers of columns x**

if sign(w'\*X(:,ii)) ~= Y(ii) **---if we make wrong decision I mean ıf target is not equal to our output, do this line.**

w = w + X(:,ii) \* Y(ii); **----then add this point to w**

end **----end of the if cycle.**

end **---end of the second for cycle.**

sum(sign(w'\*X)~=Y)/size(X,2) **—we can show the misclassification rate**

end **---end of the** **first for cycle.**

//////////////////////////////////////////////////////////////////////////////////////////////////

COMMAND WINDOW

X1=[rand(1,100);rand(1,100);ones(1,100)]; % class '+1' **---x1 is consist of random 2 random numbers an 1 ones**

X2=[rand(1,100);1+rand(1,100);ones(1,100)]; % class '-1' **---x2 is consist of 1 random number,1 random number added plus one and 1 ones**

X=[X1,X2]; **-- x1 and x2 attributes of x**

[-1,+1]; **----our output class consist of -1 end +1.**

Y=[-ones(1,100),ones(1,100)]; **---we assigned the our output class to Y.**

w=[.5 .5 .5]'; **----transpose of initial weigth vecctor**

wtag=perceptron(X,Y,w); **---at there we call the perceptron x,y,w.**

ytag=wtag'\*X**; ----at there we predict the ytag of output**

% plot prediction over origianl data

figure;hold on **--- we can consist of figure on the editor page an we draw two figure then open the hold on**

plot(X1(1,:),X1(2,:),'b.') **---plot first x1**

plot(X2(1,:),X2(2,:),'r.') **---then secondly plot the x2**

plot(X(1,ytag<0),X(2,ytag<0),'bo')

plot(X(1,ytag>0),X(2,ytag>0),'ro')

legend('class -1','class +1','pred -1','pred +1')