problem 1

```
data = load('ex2data1.txt');
x = data(:, [1, 2]); y = data(:, 3);  % y has values of 0 and 1.
scatter(x(:,1),x(:,2),'k+')
hold on
for i=1:100
    if(not(y(i)))
    plot(x(i,1),x(i,2),'yo',...
        'LineWidth',1,...
        'MarkerSize',7,...
        'MarkerEdgeColor','k',...
        'MarkerFaceColor',[1,1,0])
    end
end
xlim([30,100]);
ylim([30,100]);
xlabel('Exam 1 score');
ylabel('Exam 2 score');
legend('Admitted','Not Admitted')
hold off
m=length(y);
n=2;

b=mean(x);
c=std(x);
for j=1:2;
 for i=1:m;
x(i,j)=(x(i,j)-b(1,j))./c(1,j);
 end
end
x=[ones(m,1),x];
alpha=0.1;
theta=zeros(n+1,1);
h_theta=1./(1+exp(-x*theta));
j=-1/100*sum((y.*log(h_theta))+((1-y).*log(1-h_theta))) ;
fprintf('the initial value of cost function is')
disp(j)
iterations=1000;
for i=1:iterations;
     h_theta=1./(1+exp(-x*theta));
     temptheta=((h_theta-y)'*x);
     theta=theta - alpha*1/m*temptheta';
     j(i)=-1/100*sum((y.*log(h_theta))+((1-y).*log(1-h_theta)));
end
figure()
plot(1:1000,j);
xlabel('iterations');
ylabel('Cost Function');
disp('theta values are:');
disp(theta);
disp('Cost after 400 iterations of logistic regression algorithm\n');
```

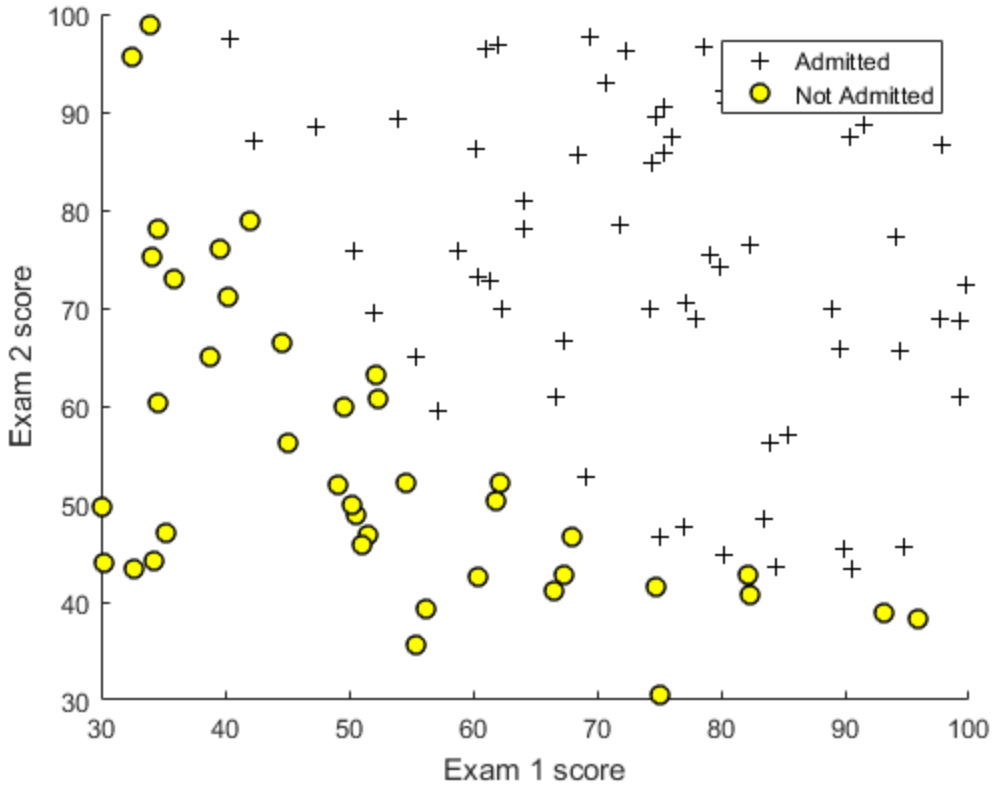
```
disp(j(400));
x=[1,45,85];
h_theta=1./(1+exp(-[1 (45-b(1,1))/c(1,1) (85-b(1,2))/c(1,2)])*theta);
disp('Probability of getting admitted for a student with Exam 1 score
 of 45 and Exam 2 score of 85. ')
disp(h_theta)
```

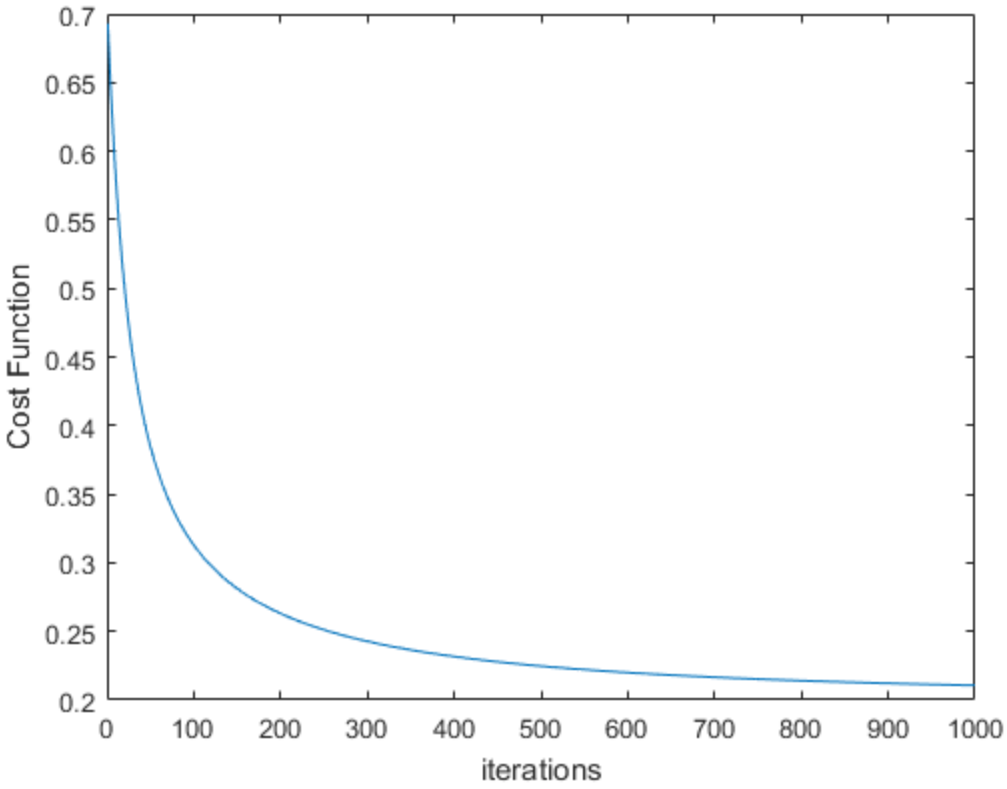
```
the initial value of cost function is    0.6931

theta values are:
    1.2684
    3.0568
    2.8201

Cost after 400 iterations of logistic regression algorithm\n
    0.2317

Probability of getting admitted for a student with Exam 1 score of 45
 and Exam 2 score of 85.
    0.0883
```





Published with MATLAB® R2016b