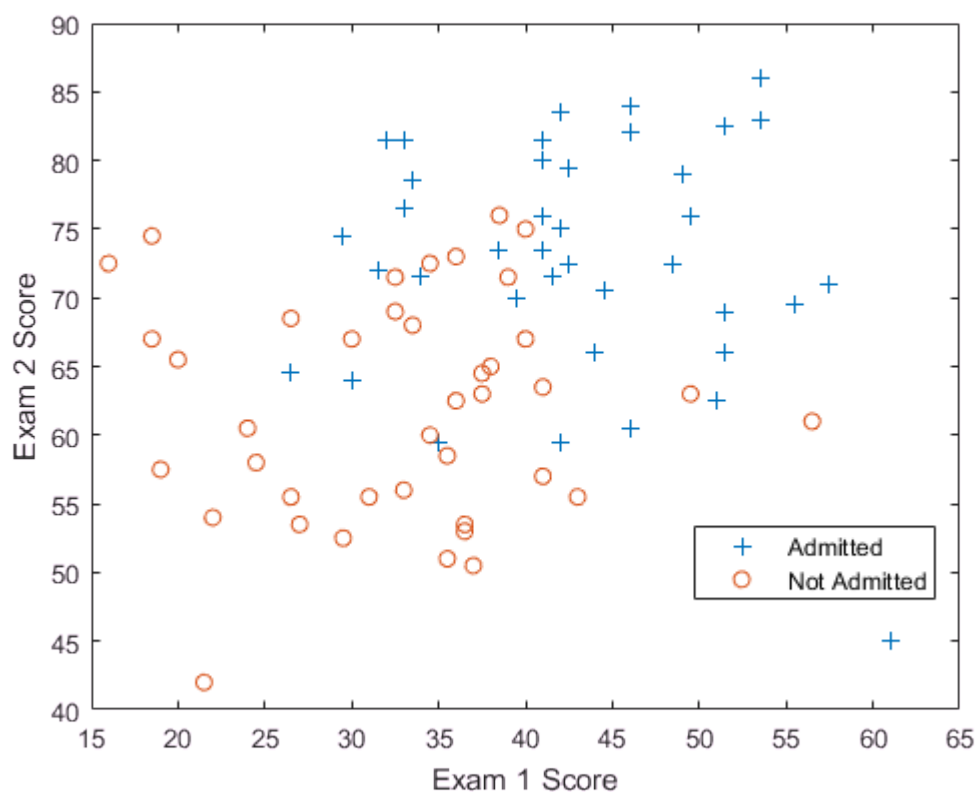


Do “Exercise 4: Linear Regression” from Andrew’s Ng’s OpenClassroom online course:http://openclassroom.stanford.edu/MainFolder/DocumentPage.php?course=MachineLearning&doc=exercises/ex_4/ex4.html

```
clear all; clc
x = load('ex4x.dat');
y = load('ex4y.dat');
```

```
pos = find(y==1);
neg = find(y==0);
```

```
plot(x(pos,1),x(pos,2),'+'); hold on
plot(x(neg,1),x(neg,2),'o')
xlabel('Exam 1 Score'); ylabel('Exam 2 Score'); legend('Admitted','Not Admitted','location','b
```



```
tic;
obj = logical_object(x,y,10);
[final_theta,err] = newton_vectorized(obj);
```

```
Epoch 1: current theta values: 00, 00,
00.
Epoch 2: current theta values: -9.08e+00, 8.32e-02,
8.80e-02.
Epoch 3: current theta values: -1.39e+01, 1.25e-01,
```

```

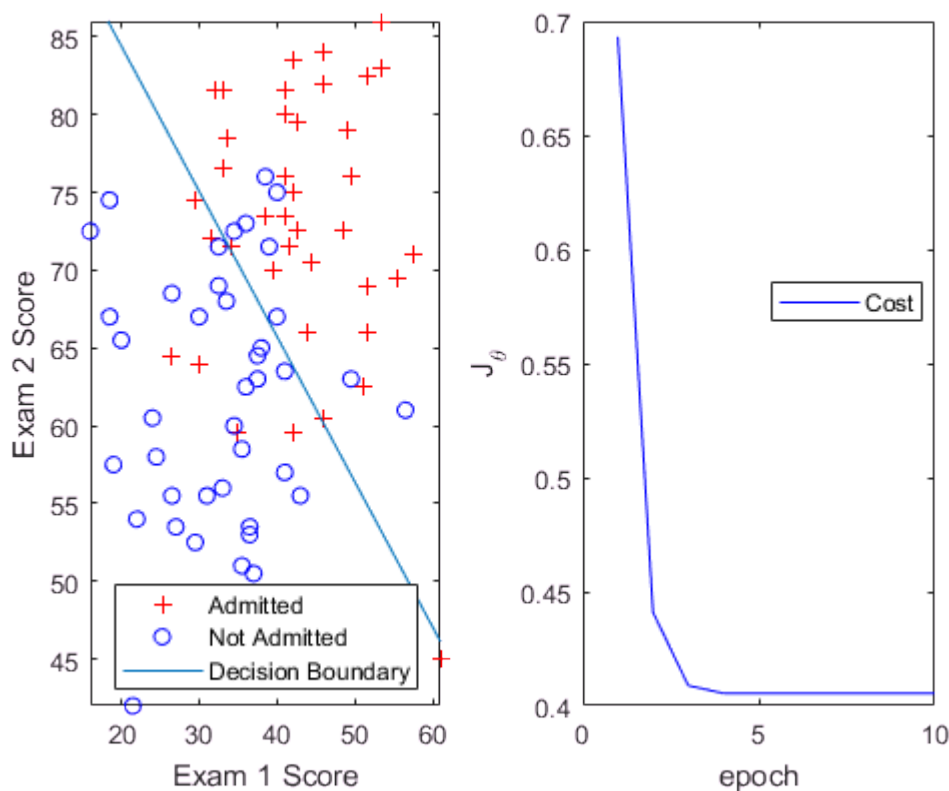
1.35e-01.
Epoch 4: current theta values: -1.60e+01, 1.45e-01,
1.56e-01.
Epoch 5: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.
Epoch 6: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.
Epoch 7: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.
Epoch 8: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.
Epoch 9: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.
Epoch 10: current theta values: -1.64e+01, 1.48e-01,
1.59e-01.

```

```
toc;
```

Elapsed time is 0.051179 seconds.

```
plot_graph(obj,final_theta,err);
```



Probability that a student with a score of 20 on Exam 1 and a score of 80 on Exam 2 will not be admitted?

```
g = @(z) 1.0 / (1.0 + exp(-z));
```

```
prediction = 1 - g([1,20,80]*final_theta') %% 1 minus the answer for chance of NOT being admit
```

```
prediction = 0.6680
```

Implement non-vectorized version for 10 iterations

```
clear; clc

tic;
[final_lambda] = newton_nonVectorized(10)
```

```
final_lambda =
    -0.0228    0.0103   -0.0026
```

```
toc;
```

Elapsed time is 0.036653 seconds.

Implement non-vectorized version for 50,000 iterations

```
clear; clc

tic;
[final_lambda] = newton_nonVectorized(50000)
```

```
final_lambda =
   -16.2499    0.1474    0.1576
```

```
toc;
```

Elapsed time is 16.547872 seconds.