Eric Wan - ezw23@drexel.edu

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Problem 1

```
%{
function[N, XT, D, YT, beta_est, Y_est] = linefit(X, Y)
%% Problem 1
N = length(X);
XT = X';
D = [ones(N,1), XT];
YT = Y';
beta_est = (D'*D)^-1*(D'*YT);
Y_est = D*beta_est;
end
%}
```

Problem 2

```
load('leastSq1') % Loading in file
```

Problem 3

```
[N, XT, D, YT, beta_est, Y_est] = linefit(X, Y);
% Running function linefit copied above
```

Problem 4

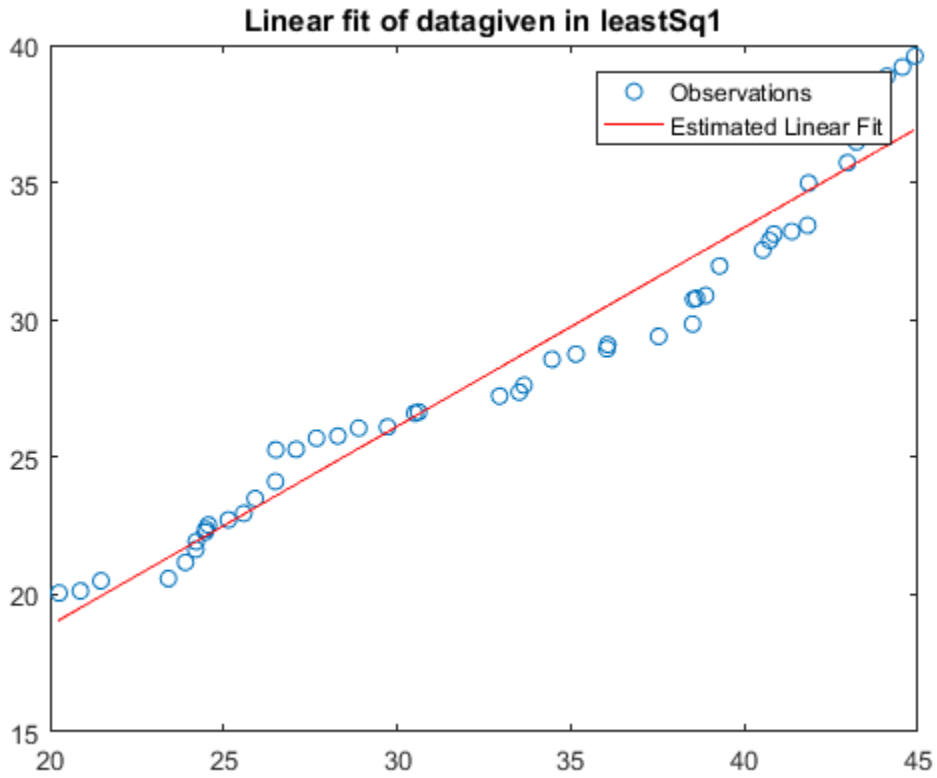
```
%{
YT = Y';
beta_est = (D'*D)^-1*(D'*YT);
Y_est = D*beta_est;

variable is already defined in function linefit
%}
```

Problem 5

```
plot(X, Y, 'o'), hold on % plotting data points of leastSq1
```

```
plot(X, Y_est, 'r') % plotting line of best fit
legend('Observations','Estimated Linear Fit') % labeling legend
title('Linear fit of datagiven in leastSq1') % labeling title
```



Problem 6

```
err = YT - Y_est; % calculating error of each Y value
RMSE = (err'*err/N)^0.5 % calculating RMS error
```

```
RMSE =

    1.2609
```

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