There is a minor correction in PS1:

Please use b and e as follows:

**b <- c(0,8,8,20)**

**e <- c(-1,3,-5,3)**

-giri

For PS2, I tried to find the best fitting equation that expresses mpg in terms of the other 4 variables (displacement, horsepower, weight, acceleration). To confirm my calculation, I tried the R built-in lm() function.   
  
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fit <- with(data, lm(mpg~displacement+horsepower+weight+acceleration))  
summary(fit)  
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The summary of lm() fitting didn't return the same coefficients as my calculated equation. I noticed that there is an extra 'intercept' coefficient. To match the same result, I need to contruct the matrix A with 4 variables (displacement, horsepower, weight, acceleration) plus a column of intercept (I used 1 for the whole column). Then the results matched.  
  
I discussed with Prof. Iyengar. He suggested posting this in the forum so that students know to add an intercept to construct the A matrix for the PS2 submission.

Thanks Xingjia:

lm function in R adds an intercept term and sets the corresponding measurement variable to 1. So, doing the same in Ordinary Least Squares will get results that match R's output.

Khan Video, Number 3.

At 7:52: C(A) = V. The column space of A is the subspace?

Consider the case of Ax = b when the system of equations has no solutions.

b lies outside the column space of A (more dimensions?) In other words, there exists a non-zero error e = b – Ax. So, we have:

e = b – Ax

minimize e

The vector closest to b is the projection vector p = Axhat, this minimizes the error e = b – Axhat.

The xhat that minimizes the error is the least squares solution.

Ax = b = p + e