9. This exercise involves the Auto data set studied in the lab. Make sure that the missing values have been removed from the data.

(a) Which of the predictors are quantitative, and which are qualitative?

Quantitative: "mpg", "displacement", "weight", "acceleration", "horsepower", "cylinders"

Qualitative:, "year", "origin", "name"

(b) What is the range of each quantitative predictor? You can answer this using the range() function.

mpg	9-46.6
cylinders	3-8
displacement	68-455
horsepower	46-230
weight	1613-5140
acceleration	8-24.8

(c) What is the mean and standard deviation of each quantitative predictor?

mpg	mean: 23.44592	standard deviation:	7.805007
cylinders	mean: 5.471939	standard deviation:	1.705783
displacement	mean: 194.412	standard deviation:	104.644
horsepower	mean: 104.4694	standard deviation:	38.49116
weight	mean: 2977.584	standard deviation:	849.4026
acceleration	mean: 15.54133	standard deviation:	2.758864

(d) Now remove the 10th through 85th observations. What is the range, mean, and standard deviation of each predictor in the subset of the data that remains?

每個變数的 10^{th} ~ 85^{th} ? or only one?

(e) Using the full data set, investigate the predictors graphically, using scatterplots or other tools of your choice. Create some plots highlighting the relationships among the predictors. Comment on your findings.

(f) Suppose that we wish to predict gas mileage (mpg) on the basis of the other variables. Do your plots suggest that any of the other variables might be useful in predicting mpg? Justify your answer

以其他的預測 MPG ?

10. This exercise involves the Boston housing data set.
(a) To begin, load in the Boston data set. How many rows are in this data set? How many columns? What do the rows and columns represent?

(b) Make some pairwise scatterplots of the predictors (columns) in this data set. Describe your findings.

(c) Are any of the predictors associated with per capita crime rate? If so, explain the relationship.

(d) Do any of the census tracts of Boston appear to have particularly high crime rates? Tax rates? Pupil-teacher ratios? Comment on the range of each predictor.

(e) How many of the census tracts in this data set bound the Charles river?

(f) What is the median pupil-teacher ratio among the towns in this data set?

(g) Which census tract of Boston has lowest median value of owneroccupied homes? What are the values of the other predictors for that census tract, and how do those values compare to the overall ranges for those predictors? Comment on your findings.

(h) In this data set, how many of the census tracts average more than seven rooms per dwelling? More than eight rooms per dwelling? Comment on the census tracts that average more than eight rooms per dwelling.