Homework 4 Due date: April 13

1. Given the car price data (https://www.kaggle.com/hellbuoy/car-price-prediction),
   (a) Retrieve the first two sample principal components with all the continuous variables except for *price* (*wheelbase, carlength, carwidth, carheight, curbweight, enginesize, boreratio, stroke, compressionratio, horsepower, peakrpm, citympg, highwaympg*). Make a biplot for the data. Color the points according to the categorical variable *fuelsystem* and interpret the results.
   (b) Use the 13 variables to compute the correlation coefficient r_{ij} between the ith and the jth samples. Use 1-r_{ij} as the distance between the two samples and conduct the classical multidimensional scaling analysis with a two-dimensional plot. Interpret the results. Color the points according to the categorical variable *fuelsystem* and Interpret the results.
   (c) Use the 13 variables to compute the Euclidean distance between the ith and the jth samples. Conduct the classical multidimensional scaling analysis with two dimensions. Compare the coordinates with PC1 and PC2 scores in (a). Verify that they are the same.