

## Assignment #1: Learning R

### 1. Data generation and matrix indexing

- (1) Generate a vector with 25 elements and each element independently follows a normal distribution (with mean =0 and sd=1);
- (2) Reshape this vector into a 5 by 5 matrix in two ways (arranged by row and column);
- (3) Similarly, generate another vector with 100 elements and plot its histogram.
- (4) Provide screenshots of the R code used for the above questions as well as the plots in the report. Explain the plots in your own words.

### 2. Upload the **Auto** data set, which is in the **ISLR** library. Understand information about this data set by either ways we introduced in class (like “?**Auto**” and **names(Auto)**)

### 3. Make a scatterplot between every pair of the following variables (try to plot all scatterplots in one figure; hint: use **pairs()** command): “**mpg**”, “**displacement**”, “**horsepower**”, “**weight**”, “**acceleration**”. By observing the plots, do you think the two variables in each scatterplot are **correlated**? If so, how?

### 4. Draw a line on the scatterplot of **mpg** vs. **horsepower** to represent relationship between the two variables.

### 5. Is there a better way to represent their relationship rather than the linear model you just drew? (No need to use mathematical formula. Just draw something on the figure)

*Submit through link: eCampus -> Assignments -> Assignment 1 Submission*

*Deadline: Sep 12 (Tue) @11:59pm*