Practical exercises

Part 1: Basic R exercises

Q1. Generate two vectors a and b where a can have 10 repeated observations of 1, and b can have any value between 1 and 10 including 1 and 10. Now you perform the following operations:

(a) Combine a and b vectors in a new vector
(b) a+b
(c) a+2*b
(d) a/b
(e) for a given vector d<- c(3,5,3,6,8,5,4,6,7), find values at 2 to 4 position and how many values are less than 7 and identify these values.

Q2. Generate following matrix and array

(a) for a given vector c(2, 4, 3, 1, 5, 7), generate 2 x 3 matrix
(b) use following vectors to create a 4x4 matrices with three arrays
vector1 = c (5, 10, 15, 20); and vector2 = c (25, 30, 35, 40, 45, 50, 55, 60)

Q3. Create a data frame using the following vectors:

a <- sort(sample(1:500, 100)); b <- rpois(100, 25); c <- rnorm(100, 10, 20); x <- runif(n = 100, min = 10, max = 150); grp <- rep(letters[1:2], length.out = 100)

(a) summarise data
(b) explore data using the various options that you have learned so far

Part 2: Use ***mtcars*** built-in data frame to answer following questions:

Q1. Calculate descriptive statistics for all variables as appropriate.

Q2. Generate following graphs:

(a) Histogram and density plots for *mpg*, *hp*, and *qsec* variables with labels.
(b) Scatter plot for *wt* and *mpg* variables. Keep *wt* on x-axis and *mpg* on y-axis and label them accordingly.
(c) Box plot for *mpg* by *gear* variable, and *mpg* by *cyl*.
(d) Generate pie chart for *gear* variable.
(e) Simple bar plot for *gear* and grouped bar plot for *vs* and *gear* variables.

Part 3: import ***automobile*** data and answer the following questions:

Q1. Summarise data for continuous and categorical variables as appropriate.

Q2. Use appropriate graphs to visualise variables.