

### Use Group Manipulation Functions in the following

- 1) Consider the student data in the marks.csv file. Read it into an R variable, Attach additional columns in it to keep student wise and subjectwise totals .
- 2) Let `list1 <- list(observationA = c(1:5, 7:3), observationB=matrix(1:6,nrow=2))`
  - a) Using `lapply()`, find the length of `list1`'s observations.
  - b) Using `lapply()`, find the sums of `list1`'s observations.
  - c) Find the classes of `list1`'s sub-variables, with `lapply()`.
  - d) Let a user defined function `f1 <- function(x) { log10(x) + 1 }` Apply `f1` to `list1` and obtain the results
  - e) Find the unique values in `list1`. (hint: Use function `unique`)
  - f) Find the range of `list1` . (hint: Use function `range`)
- 3) Let `x<-list(A=matrix(1:9,3),B=1.4,C=matrix(1:10,2),D=21)`  
Apply the function `mean` on `x` using `lapply` and `sapply`