Exercises – R Course

May 2013

Day 2: Looping and conditional execution

1. Use the **ifelse** statement to create a dummy variable for whether a car in the **mtcars** data set has a miles per gallon (mpg) value of less than 21.
   1. Store the result in a vector
   2. Append (a) to the **mtcars** data set
   3. Construct a box plot of car weight with separate boxes for less than 21 mpg and greater than or equal to 21 mpg. Label the title, axes, and boxes appropriately.

ifelse(mtcars$mpg < 21, 1, 0)

lt21.ind <- ifelse(mtcars$mpg < 21, 1, 0)

mtcars1 <- data.frame(mtcars, lt21.ind)

boxplot(wt~lt21.ind, data=mtcars1, main="Boxplots of mpg by car weight", names=c("< 21", ">=21"), xlab="mpg grouping var", ylab="Car weight")

1. Display the cumulative sum of the **qsec** variable in the **mtcars** data set after each record in the R output window.

for(i in 1: nrow(mtcars)) {print(sum(mtcars[1:i,"qsec"]))}

1. Repeat the calculation in (2), but now create a numeric vector that stores the results. Print the data object in the R window.

cum.qsec <- c(rep(0, nrow(mtcars)))

for(i in 1: nrow(mtcars)) { cum.qsec[i] <- sum(mtcars[1:i,"qsec"]) }

cum.qsec

1. Use the **order** function (use **help** for help on this function) to sort the **mtcars** data set by the variable **disp**. Make sure you do not overwrite the existing **mtcars** data set.
   1. Using a **while** loop print out the records for the cars in the data set with a **disp** value of less than 260.
   2. Is there another way to accomplish (a) on the original **mtcars** data set? If so, do it.
   3. What is/are the difference(s) between the output(s) you got in (a) and (b)?

mtcars.ord <- mtcars[order(mtcars$disp),]

mtcars.ord

i <- 1

while (mtcars.ord$disp[i] < 260){print(mtcars.ord[i,]); i <- i + 1}

mtcars[mtcars$disp < 260,]