Notes 3/20/19

Continuation, for loops

Opening files in a directory WITHOUT for loops:

* Assume the working directory is the code directory

Project/

Data/

File1.x

File2.x

Code/

Script.R

Images/

Plot1.pdf

* To open only one file:
  + dat <- read.table(“../data/file1.x”)
* to make a plot with ggplot:
  + plot1 <- ggplot(dat1, aes(x=a,y=b)) + geom\_point()+ggtitle()
  + ggsave(plot1.pdf)

Open files in a directory WITH for loops:

* vector object of file names:
  + file.names <- c(“file1.x”,”file2.x”,…)
    - can use this in a for loop to read all the tables into R
* n <- length(file.names)
* Loop itself:

For (i in 1:n) {

File <- paste0(“../data/”,file.names[i])

Dat <- read.table(file, …)

P <- ggplot(dat, aes(x=a,y=b))+geom\_point()+ggtitle(file.names[i])

Ggsave(P,paste0(file.names[i],”.pdf”))

}

* How to get the names of files?
  + Use dir() function

File.names <- dir(“../data”)

* Object x:

|  |  |  |
| --- | --- | --- |
| X1 | X2… | Xn |
| … |  |  |
|  |  |  |

* Rescale object/dataframe x:

Zi,j = (Xi,j – minj)/(maxj-minj) \* assuming all variables are pos numbers

|  |  |  |
| --- | --- | --- |
| Z1 | Z2… | Zn |
| … |  |  |
|  |  |  |

* How to rescale in R:

Could use min() and max() to get Z for all the cells, column by column

* Embedded loops

Z = matrix(0, norw(x), ncol(x))

For(j in 1:ncol(x)){

Xmin <- min(X[,j])

Xmax <- max(X[,j])

For (i in 1:nrow(x)) {

Z[i,j] <- (X[i,j]-Xmin)/(Xmax-Xmin)

}

}

While Loops!

* Most generic type of loop
* For loops are good for when you know the extent to which you want to repeat an action
* Can use a while loop for an unknown number of repeats

Example:

While(logical condition that is true or false) {}

If we want to + 2 to each element in a vector x:

x = 2,4,6,8,…

n <- length(x)

position <- 1

y <- rep(0,n)

while(position <= n) {

y[pos] <- X[position] + 2

pos <- pos + 1

print(y)

}

[1] 4 0 0 0

[1] 4 6 0 0

[1] 4 6 8 0

[1] 4 6 8 10

If you accidentally run an infinite loop, press ESC to stop R running the loop

Repeat Loop:

Repeat {

# do something

If (condition for stopping == TRUE) {

Break

}

}