R: data input and loops

Most examples are from

https://www.youtube.com/watch?v=_V8eKsto3Ug

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R help documents

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https://www.benjaminbell.co.uk/2018/03/quick-guide-to-annotating-plots-in-r.html

Summary

- Why R?
- https://www.r-project.org/, Rstudio
- Cran and R packages, install and load
- variables

Enter the data 1

- <-

Colon operation:

- x1<-1:10
- x2<-20:1
- ?seq
- x3<-seq(10)
- x4<-seq(30,0, by=-3)
- ?c
- x1<-c(1,2,3,4,5,7,9, 10)

Enter the data 2

- ?scan
- x2<-scan()
- x2
- ?rep
- X3<-rep(T, 5)
- x4<-rep(c(1,3),6)
- x5<-rep(c(3,4,5), each=2)
- rm(list=ls())

Enter the data 3: import from files

- CSV, TXT, XLSX, JSON (javeScript object notation)
- browseURL("http://j.mp/2aFZUrJ")
- rio1<-read.table("C:/Users/Shawn Li/Downloads/mbb.txt", header=TRUE, sep="\t")
- rio2<-read.table("C:/Users/Shawn Li/Downloads/mbb.CSV", header=TRUE)
- rio3<-read.table("C:/Users/Shawn Li/Downloads/mbb.CSV", header=TRUE, sep=“,”)
- rio4<-read.csv("C:/Users/Shawn Li/Downloads/mbb.CSV", header=TRUE, sep=“,”)
- write.table(rio1, "C:/Users/Shawn Li/Downloads/mbb1.txt", sep="\t")

Input from files with rio package

- install.packages("pacman")   #install
- library(pacman) #load
- pacman::p_load(rio) #rio for input/ouptu from files
- import("C:/Users/Shawn Li/Downloads/mbb.txt")
- import("C:/Users/Shawn Li/Downloads/mbb.CSV“)
- export("C:/Users/Shawn Li/Downloads/mbb.dat“)

https://cran.r-project.org/web/packages/rio/vignettes/rio.html

Logic operators

- And &
- Or |
- Not !
- > !(10==3)
- [1] TRUE

print

- x<-1:10
- print(x)
- print(“Hello world”)
- print(paste('Hello', 'world’))
- print (paste('Hello', 'world', sep="-"))
- paste0('Hello', 'world')
- paste0('Hello', 'to', 'world')

If else

- if (x>1) {paste0('Hello','to', 'world')} else print('bad')

While loop

```
while  (x>1) {
paste0('Hello','to', 'world')
x<-1
}
```

For loop

```
u1 <- rnorm(30)
print("This loop calculates the square of the first 10 elements of vector u1")
# Initialize usq
usq <- 0
for(i in 1:10) {
# i-th element of u1 squared into i-th position of usq
 usq[i] <- u1[i]*u1[i]
print(usq[i])
}
print(i)
```