Lab1

1. Learning RStudio

1.1 Four panels in RStudio

1.2 Creat a R script in RStudio

1.3 Note and section in R:

```
# (note you give to the code)
# this code is used for calculating the mean value
mean()

# this is the section ----
# this is the section ====
# this is the section ####
```

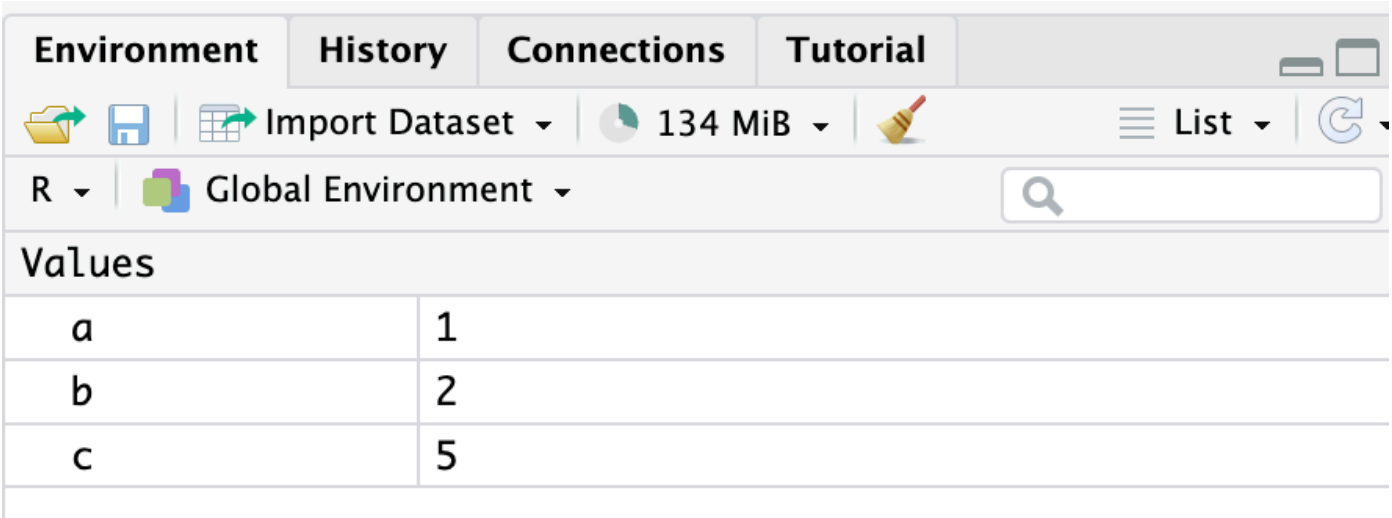
1.4 Help in R:

```
# help(function name)
help(mean)
# help(package = "package name")
help(package = "BAS")
```

2. Basical operations

2.1 Mathematical operations

```
# try =, +, -, *, \,^ in different variables
a = 1
b <- 2
c = a + b^2
```



2.2 Comparison and logical operations

```
# Comparison operations: >, <, ==,!=,>=,<=
l1 = c(1,2)
l2 = c(3,4)
print(l1==l2)
print(l2>=l1)
```

[4] FALSE FALSE

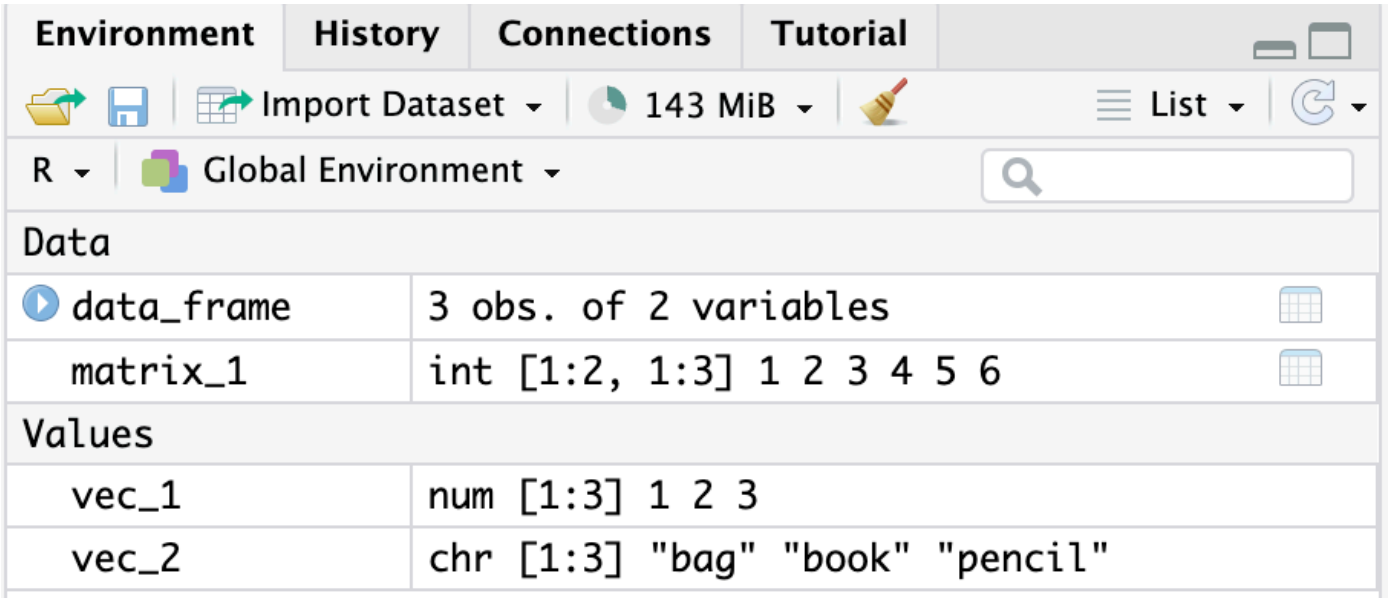
[5] TRUE TRUE

```
# Logical operations : &,|,!
m = 2
print((m>1) & (m=2))
```

[1] TRUE

2.3 Data structure

```
# matrix, vector, Dataframe
vec_1 <- c(1,2,3)
vec_2 <- c('bag','book','pencil')
matrix_1 <- matrix(1:6, nrow = 2)
data_frame <- data.frame(vec_1,vec_2)
# list
list <- c(vec_1,vec_2,matrix_1,data_frame)
```



3. Function

3.1 Basic function

```
# function_name <- function(a,b,...){
 # formula
 # return
# }

fun1 <- function(a,b){
c = a*b+1
return (c)
}
fun1(1,2)
```

```
x = c(1,2,3)
min(x)
max(x)
sum(x)
sum(x>3)
which(x>2)
prod(x)
sqrt(x)
exp(x)
log(9,3)
```

[2] 1
[3] 3
[4] 6
[5] 0
[6] 3(index)
[7] 6
[8] 1.000000 1.414214 1.732051
[9] 2.718282 7.389056 20.085537
[10] 2

3.2 summary statistics functions

```
mean(x)
var(x)
sd(x)
summary(M)
```