

Lab1

1. Learning RStudio

1.1 Four panels in RStudio

1.2 Create a R script in RStudio

1.3 Note and section in R:

```
1 # (note you give to the code)
2 # this code is used for calculating the mean value
3 mean()
4
5 # this is the section ----
6 # this is the section ====
7 # this is the section #####
```

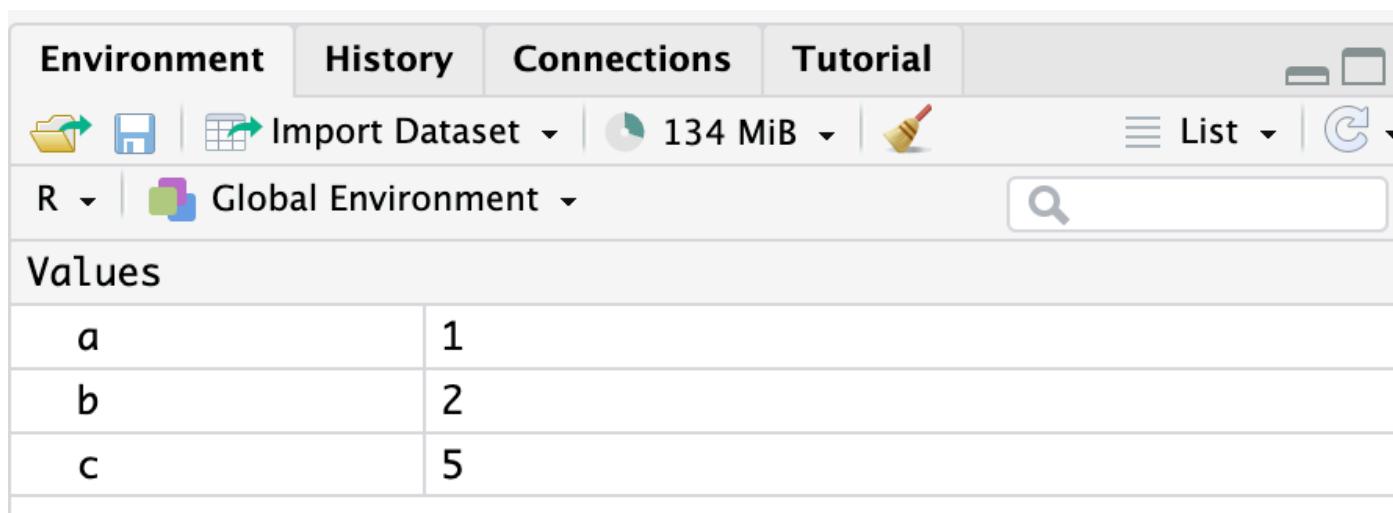
1.4 Help in R:

```
1 # help(function name)
2 help(mean)
3 # help(package = "package name")
4 help(package = "BAS")
```

2. Basical operations

2.1 Mathematical operations

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



The screenshot shows the RStudio interface with the 'Environment' tab selected. The global environment contains three variables: 'a' with value 1, 'b' with value 2, and 'c' with value 5. The 'History' tab is also visible at the top.

Values	
a	1
b	2
c	5

2.2 Comparison and logical operations

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

[4] FALSE FALSE

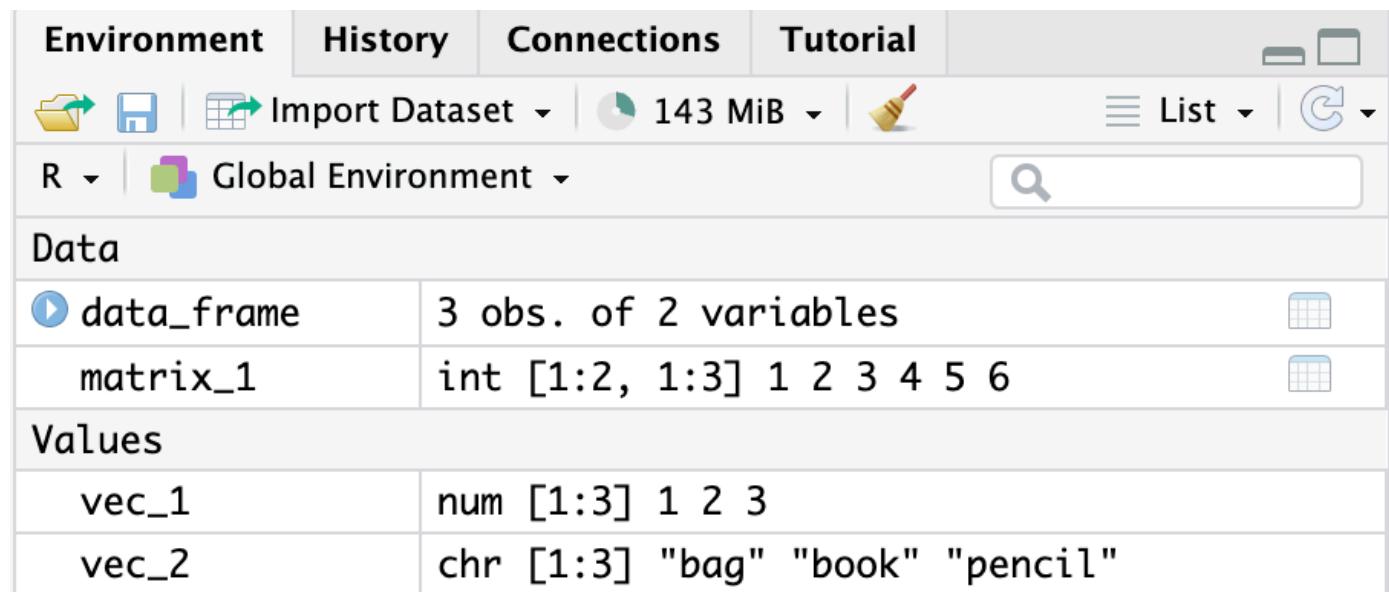
[5] TRUE TRUE

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

[1] TRUE

2.3 Data structure

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



Environment History Connections Tutorial

Import Dataset 143 MiB List

R Global Environment

Data

data_frame	3 obs. of 2 variables
matrix_1	int [1:2, 1:3] 1 2 3 4 5 6
vec_1	num [1:3] 1 2 3
vec_2	chr [1:3] "bag" "book" "pencil"

Values

vec_1	num [1:3] 1 2 3
vec_2	chr [1:3] "bag" "book" "pencil"

3. Function

3.1 Basic function

```
1 # function_name <- function(a,b,...){  
2   # formula  
3   # return  
4 # }  
5  
6 fun1 <- function(a,b){  
7   c = a*b+1  
8   return (c)  
9 }  
10 fun1(1,2)
```

```
1 x = c(1,2,3)  
2 min(x)  
3 max(x)  
4 sum(x)  
5 sum(x>3)  
6 which(x>2)  
7 prod(x)  
8 sqrt(x)  
9 exp(x)  
10 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

```
1 mean(x)  
2 var(x)  
3 sd(x)  
4 summary(M)
```