start_2_R_basics

In R, an object is anything that can be assigned to a variable. This includes constants, data structures, functions, and even graphs. Objects have a mode (which describes how the object is stored) and a class (which tells generic functions like print how to handle it).

Vectors are one-dimensional arrays that can hold numeric data, character data, or logical data. The combine function c() is used to form the vector.

```
x <- c(1,2,4) #The "c" stands for "concatenate."
x
```

```
## [1] 1 2 4
```

```
q <- c(x,x,8)
q
```

```
## [1] 1 2 4 1 2 4 8
```

```
#
a <- c(1, 2, 5, 3, 6, -2, 4)
b <- c("one", "two", "three")
c <- c(TRUE, TRUE, TRUE, FALSE, TRUE, FALSE)
```

Seen Above -- a is numeric vector, b is a character vector, and c is a logical vector. Note that the data in a vector must only be one type or mode (numeric, character, or logical). You can't mix modes in the same vector.

Indexing vectors -

```
#
a_idx_1_3 <- a[c(1:3)]
```

```
a_idx_1_3 <- a[c(1:3)]
a_idx_1_3
```

```
## [1] 1 2 5
```

```
print(a_idx_1_3)
```

```
## [1] 1 2 5
```

```
# x <- c(1,3,4) #The "c" stands for "concatenate."
# x
# q <- c(x,x,8)
# q
```

A matrix is a two-dimensional array where each element has the same mode (numeric, character, or logical). Matrices are created with the matrix function
#
The option byrow indicates whether the matrix should be filled in
by row (byrow=TRUE) or by column (byrow=FALSE). The default is by column.

```
myymatrix <- matrix(vector, nrow=number_of_rows, ncol=number_of_columns,
byrow=logical_value, dimnames=list(
char_vector_rownames, char_vector_colnames))
```

```
matrx_y <- matrix(1:20, nrow=5, ncol=4)
matrx_y
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    6   11   16
## [2,]    2    7   12   17
## [3,]    3    8   13   18
## [4,]    4    9   14   19
## [5,]    5   10   15   20
```

Read CSV

```
library(readr)
df_iris <- read_csv("~/temp/11_22/#Rstats/RStudio_Nov22/git_up/rstats_nov22/iris.csv")
```

```
## Rows: 150 Columns: 5
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (1): Species
## dbl (4): Sepal.Length, Sepal.Width, Petal.Length, Petal.Width
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
View(df_iris)
```

```
print(df_iris$Species)
```

Get DF Cols

```
##   [1] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##   [6] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [11] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [16] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [21] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [26] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [31] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [36] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [41] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [46] "setosa"     "setosa"     "setosa"     "setosa"     "setosa"
##  [51] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [56] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [61] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [66] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [71] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [76] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [81] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [86] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [91] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
##  [96] "versicolor" "versicolor" "versicolor" "versicolor" "versicolor"
## [101] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [106] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [111] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [116] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [121] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [126] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [131] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [136] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [141] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
## [146] "virginica"  "virginica"  "virginica"  "virginica"  "virginica"
```

```
vector_species <- df_iris$Species
print(class(vector_species))
```

```
## [1] "character"
```

```
duplicated(vector_species)
```

```
##   [1] FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [13]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [25]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [37]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [49]  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [61]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [73]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [85]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [97]  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [109]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
```

```
## [121]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [133]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [145]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
```

```
print(class(vector_species))
```

Check Duplicates

```
## [1] "character"
```

```
duplicated(vector_species)
```

```
##   [1] FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [13]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [25]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [37]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [49]  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [61]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [73]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [85]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
##  [97]  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [109]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [121]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [133]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
## [145]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
```

```
# #https://www.rdocumentation.org/packages/utils/versions/3.6.2/topics/read.table
# www <- "http://www.massey.ac.nz;-pscowper/ts/cbe.dat"
# CBE <- read.table(www, header = T)
```

```
y <- matrix(1:20, nrow=5, ncol=4)
```

```
y <- matrix(1:20, nrow=5, ncol=4)
```

```
x <- c(1,7,4) #The "c" stands for "concatenate."
x
```

```
## [1] 1 7 4
```

```
q <- c(x,x,8)
q
```

```
## [1] 1 7 4 1 7 4 8
```

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