

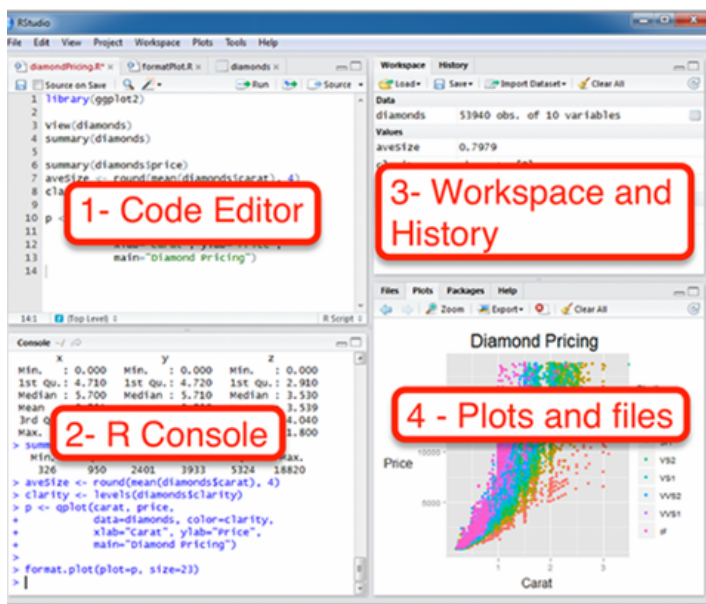
# R WORKSHOP

## INSTALLING R

R Studio is an IDE while R is a programming language  
You can install R in the following website

## INTRODUCTION TO THE PANELS

There are four panels when it comes to R



## CODE EDITOR

- Opening a script

## R CONSOLE

- This is where you write the commands and press enter
- (*try yourself*) type

```
>install.packages(swirl)
```

```
>library("swirl")
```

```
>swirl()
```

## PLOTS AND FILES

- Displays files, plots, packages
- Help: (*try yourself*) try exploring the 'lm' package using `help()`, `demo()` and `example()` commands, have a look at this article:

<https://www.r-project.org/help.html>

## ENVIRONMENT/HISTORY

- This displays the variables
- `rm(list = ls())` (clears the console)

# DATA TYPES IN R

## ASSIGNING A VALUE TO A VARIABLE

```
value_1 <- 50
```

```
value_2 <- "cat"
```

## DATA TYPES IN R

- Logical: TRUE, FALSE
- Integer: 15L, 12L
- Numeric: 12.5, 13.5
- Character: "hi", "Noor"

## OPERATOR PRIORITY

<https://stat.ethz.ch/R-manual/R-devel/library/base/html/Syntax.html>

## ARITHMETIC OPERATORS IN R

- exponentiation:  $3^5$
- integer division:  $15 \% \% 6$
- modulo: %
- Addition:  $1+2$
- multiplication:  $4*5$
- division:  $12/5$
- sqrt(121)
- log(100)
- log10(100)
- abs(-28220985)

## LOGICAL OPERATORS IN R

- less than: <
- greater than: >
- less than or equal to: <=
- greater than or equal to: >=
- equal to: ==
- not equal to: !=

## LOGICAL OPERATORS IN R

- logical not: !TRUE
- logical and: TRUE && FALSE
- logical or: TRUE || FALSE

### • Logical operations:

NOT	AND	OR
! TRUE yields FALSE	TRUE && TRUE yields TRUE	TRUE    TRUE yields TRUE
! FALSE yields TRUE	TRUE && FALSE yields FALSE	TRUE    FALSE yields TRUE
	FALSE && TRUE yields FALSE	FALSE    TRUE yields TRUE
	FALSE && FALSE yields FALSE	FALSE    FALSE yields FALSE

## VECTORS:

- vectors can be either numbers or characters
- It is useful since we are dealing with structured data

## GENERATING A VECTOR

- vector <- c(21, 34, 39, 54, 55) (just simply assigns a list of vectors)
- vector <- seq(from = 2, to=10, by=3)
- vector <- rep(4, times = 10) (*replicates elements*)
- length(vector) (*will give you the length of the vector*)
- class(weight\_g) (*will give your the datatype of the elements*)
- vector <- c("name1"=1, "name2"=2) (*creates a named vector*)

## INDEXING A VECTOR:

- vector[1]
- vector[2:5]
- vector[c(1,3,4)]
- vector[logical\_conditon]

## CREATING DATAFRAMES

- cbind(1:5, 6:10, 11:15) (Combine vectors as columns in a matrix)
- rbind(1:5, 6:10, 11:15) (Combine vectors as rows in a matrix)
- matrix(x = 1:12, nrow = 3, ncol = 4)(Create a matrix from a vector x)
- data.frame("age" = c(19, 21), sex = c("m", "f")) (Create a dataframe from named columns)

# STARTING WORK WITH OUR OWN DATAFRAME

## HOW TO START OFF WITH A SCRIPT

- go to session > "set working directory." This leads you to the directory
- copy the code which comes below

## HOW TO READ A CSV

```
#install.packages(readr)
```

```
library(readr)
```

```
data <- read_csv("Angry moods.csv")
```

## HOW TO RETRIEVE A COLUMN

There are two ways to retrieve a column

```
data$Column_name
```

```
data[1]
```

## TIDYVERSE

- `x %>% f(y)` is the same as `f(x,y)`
- `select(data, column_name)` (*select columns form the dataset*)
- `filter(data, condition)` (*select specific rows*)