# R PROGRAMMING PRACTICE

VECTORS, LISTS, FACTORS, DATA FRAMES

# NAMING A VECTOR

- It is important to have a clear view on the data that you are using

- Understanding what each element refers to is therefore essential

- You can give a name to the elements of a vector with the **names()** function.

# NAMING A VECTOR

**Example:**

some_vector <- c("John Doe", "poker player")

names(some_vector) <- c("Name", "Profession")


**Output:**

Name              Profession

"John Doe"        "poker player"

# ACCESSING VALUES OF A VECTOR

**Example:**

\# Poker and roulette winnings from Monday to Friday:

poker_vector <- c(140, -50, 20, -120, 240)

roulette_vector <- c(-24, -50, 100, -350, 10)

*What are the outputs of following statements??*

*poker_vector[5] ==??*

*roulette_vector[3] ==??*

*Write commands to print values of 3,4,5 elements of poker_vector and 1,3,5 elements of roulette_vector*

# ACCESSING VALUES OF A VECTOR

**# Poker and roulette winnings from Monday to Friday:**

*poker_vector <- c(140, -50, 20, -120, 240)*

*roulette_vector <- c(-24, -50, 100, -350, 10)*

*days_vector <- c("Monday", "Tuesday", "Wednesday", "Thursday", "Friday")*

*names(poker_vector) <- days_vector*

*names(roulette_vector) <- days_vector*

*Write command to select poker results for Monday, Tuesday and Wednesday*

# ACCESSING VALUES OF A VECTOR

**# selection by comparison**

*Example:*

*c(4, 5, 6) > 5*

*[1] FALSE FALSE TRUE*

*Write a command to print the elements of the above vector whose value is greater than 5???*

# CREATING A MATRIX

You can construct a matrix in R with the matrix() function

**Example:**

matrix(1:9, byrow = TRUE, nrow = 3)

or

matrix(c(1, 2, 3, 4, 5, 6, 7, 8, 9), byrow = TRUE, nrow = 3)

*What is the difference between matrix(1:9, byrow = TRUE, nrow = 3) and matrix(1:9, nrow = 3)????*

# CREATING A MATRIX

# Box office Star Wars (in millions!)

new_hope <- c(460.998, 314.4)

empire_strikes <- c(290.475, 247.900)

return_jedi <- c(309.306, 165.8)

*Write commands to get the following output*

```
       new_hope empire_strikes return_jedi
[1,]    460.998        290.475     309.306
[2,]    314.400        247.900     165.800
```

# CREATING A MATRIX

\# Box office Star Wars (in millions!)

new_hope <- c(460.998, 314.4)

empire_strikes <- c(290.475, 247.900)

return_jedi <- c(309.306, 165.8)

*Write commands to get the following output*

```
                        [,1]    [,2]
new_hope              460.998 314.4
empire_strikes        290.475 247.9
return_jedi           309.306 165.8
```

# ADDING NAMES TO ROWS AND COLUMNS OF A MATRIX

**# Commands**

*rownames(my_matrix) <- row_names_vector*

*colnames(my_matrix) <- col_names_vector*

**Example:**