Programming and frameworks for ML

Introduction to R - Exercises

Exercise 1

- Create a vector called "x" with the following values: 36, 28, 19, 22, 27, 28, NA, 28, 39, 46, 43, 27, 30, 54 and NA
- Prints the vector size
- Print your average (without using the mean function)
- Print your range (maximum value minus minimum)
- Prints its variance (without using the var function)

$$\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$$

- Based on the previous calculation it prints the standard deviation
- Calculate the median (without using median)
- Calculate the mode (value that is most repeated from the vector

Exercise 2

- Write a function in R implementing the QuickSort algorithm

```
function quicksort(array):

    si el array está vacio salir y devolver un array vacio

    pivots = elementos del array iguales al primer elemento
    lesser = elementos del array menores al primer elemento
    greatter = elementos del array mayores al primer elemento

    devolver quicksort(lesser) + pivots + quicksort(greater)
```

```
> set.seed(100)
> quicksort(sample(1:100, 10))
 [1]  6 16 26 31 35 45 46 51 55 77
```

Exercise 3

- Set the random seed to 2017
- Create a vector of numbers according to the normal distribution (mean = 20 and sd = 2)
- With this data create 8 different graphs
  - 2 different types of histograms
  - 1 density graph
  - 1 box graph
  - 1 pie chart
  - 1 bar graph
  - 1 scatter plot
  - 1 line graph

THANKS FOR YOUR ATTENTION

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