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fichero = read.csv2("prueba.csv")

len = function(list){
  count = 0
  for (element in list){
    count = count + 1
  }
  count
}

distancias = fichero$Numeros

len(distancias)

## [1] 12

bubble = function(list){
  n = len(list)
  for (i in 2:n){
    for (j in 1:(n-1)){
      if (list[j] > list[j+1]){
        temp = list[j]
        list[j] = list[j+1]
        list[j+1] = temp
      }
    }
  }
  list
}

distanciasordenadas = bubble(distancias)
distanciasordenadas

## [1] 13 15 16 20 20 22 27 29 30 33 34 42

rank = function(list){
  ordered_list = bubble(list)
  ordered_list[len(ordered_list)] - ordered_list[1]
}

rango = rank(distanciasordenadas)
rango

## [1] 29

mean = function(list){

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        total = 0
        n = len(list)
        for (i in 1:n){
            total = total + list[i]
        }
        mean = total / n
        mean
    }

media = mean(distancias)
media

## [1] 25.08333

mode = function(list){
    ordered_list = bubble(list)
    n = len(ordered_list)
    actual_mode = ordered_list[1]
    times_mode = 0
    for (i in 1:n){
        actual_element = ordered_list[i]
        actual_c = 0
        j = i
        while(j <= n & actual_element == ordered_list[j]){
            actual_c = actual_c + 1
            j = j+1
        }
        if (actual_c > times_mode){
            times_mode = actual_c
            actual_mode = actual_element
        }
    }
    actual_mode
}

moda = mode(distancias)
moda

## [1] 20

median = function(list){
    n = len(list)
    if (n%%2 == 0){
        median = (list[n/2] + list[(n/2)+1]) / 2
    }
}

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        else{
            median = list[(n+1)/2]
        }
        median
    }

mediana = median(distancias)
mediana

## [1] 24.5

standard_desv = function(list){
    mean = mean(list)
    n = len(list)
    add = 0
    for (i in 1:n){
        add = add + ((list[i] - mean)^2)
    }
    sqrt(add/n)
}

desviacion = standard_desv(distancias)
desviacion

## [1] 8.47996

variance = function(list){
    desv = standard_desv(list)
    var = desv^2
    var
}

varianza = variance(distancias)
varianza

## [1] 71.90972

quant = function(list, c){
    ordered_list = bubble(list)
    n = len(list)
    if (c < 0){
        quant = 0
    }
    else{
        if((n*c)%1 == 0){

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        quant = (ordered_list[(n*c)] + ordered_list[(n*c) + 1]) / 2
    }
    else {
        int_prod = floor(n*c)
        quant = ordered_list[int_prod + 1]
    }
}
quant
}

cuartil1 = quant(distancias,0.25)
cuartil2 = quant(distancias,0.5)
cuartil3 = quant(distancias,0.75)
cuartil1
## [1] 18
cuartil2
## [1] 24.5
cuartil3
## [1] 31.5

absolute_freq = function(list){
    ordered_list = bubble(list)
    n = len(ordered_list)
    elements = vector()
    frequencies = vector()
    i = 1
    while (i <= n){
        actual_element = ordered_list[i]
        elements = append(elements, actual_element)
        actual_freq = 0
        j = i
        while(j <= n & actual_element == ordered_list[j]){
            actual_freq = actual_freq + 1
            j = j+1
        }
        frequencies = append(frequencies, actual_freq)
        i = j
    }
    rbind(elements, frequencies)
}

frecuencia_abs = absolute_freq(distancias)
frecuencia_abs

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##	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]	[,10]	[,11]
## elements	13	15	16	20	22	27	29	30	33	34	42
## frequencies	1	1	1	2	1	1	1	1	1	1	1