Activity 3. Measuring execution times

In 292 471 154 years.

It means that the two calls are so close in time that is practically instantaneous

We get a reliable time from: SIZE=7000000 TIME=57 milliseconds SUM=47327

Activity 5. Taking small execution times (<50 ms)

Original version: SIZE=156250 TIME=11 milliseconds SUM=-2401 NTIMES=5

When the problem size is multiplied by 2, the size reaches around four times of the original size. SIZE=655360 TIME=27 milliseconds SUM=-20462 NTIMES=5

When the problem size is multiplied by 3, the size reaches more than 3 times of the original size. SIZE=590490 TIME=25 milliseconds SUM=-27459 NTIMES=5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N = 100 | Tsum | Tmaximum | Tmatches1(1) | Tmatches2 |
| 10000 | 0,13 | 0,2 | 1741 | 0,2 |
| 20000 | 0,29 | 0,42 | 6475 | 0,41 |
| 40000 | 0,82 | 0,84 | 25867 | 0,77 |
| 80000 | 1,25 | 1,89 | 104413 | 1,55 |
| 160000 | 3,29 | 3,59 | 372672 | 3,49 |
| 320000 | 5,69 | 6,59 | 1684180 | 7,18 |
| 640000 | 9 | 13,27 | ----- | 12,6 |
| 1280000 | 16,06 | 23,67 | ----- | 24,48 |
| 2560000 | 32,38 | 49,59 | ----- | 57,83 |
| 5120000 | 66,71 | 108,65 | ----- | 100,59 |
| 10240000 | 128,95 | 226,18 | ----- | 195,19 |
| 20480000 | 291,09 | 396,61 | ----- | 412,52 |
| 40960000 | 542,1 | 764,75 | ----- | 828,74 |
| 81920000 | 1029,01 | 1532,96 | ----- | 1556,52 |

Processor: 13th Gen Intel(R) Core(TM) i7-13700H 2.40 GHz

Installed RAM: 16 GB

The times obtained meet the expectations as is the matches1() we are executing an O(n2) algorithm while the rest are O(n), so the times for that one are greater