


Algorithmics	Student information	Date	Number of session
	UO: 299874	10/02/2025	2
	Surname: Puebla	 Escuela de Ingeniería Informática Universidad de Oviedo	
	Name: Álvaro		



## Activity 1. Measurement with currentTimeMillis()

A long variable of 64 bits can contain  $2^{64}$  different values (milliseconds), we transform it into seconds, minutes, years.

$$2^{64} \text{ms} * \frac{1 \text{ S}}{1000 \text{ ms}} * \frac{1 \text{ h}}{3600 \text{ S}} * \frac{1 \text{ day}}{24 \text{ h}} * \frac{1 \text{ year}}{365.4 \text{ day}} = 584302086.3 \text{ years}$$

From the 1<sup>st</sup> of January of 1970

## Activity 2. Vector 2

Sometimes the value is 0 as the program is too fast for a “low” n, for being accurate enough we need a  $n \geq 12750000$

## Activity 3. Taking small execution times

If the problem size is multiplied by 2, the execution time in this algorithm is also multiplied by 2.

Same if instead of  $k=2$ ,  $k=\text{any}$ , the time also increases k times

Algorithmics	Student information	Date	Number of session
	UO: 299874	10/02/2025	2
	Surname: Puebla		
	Name: Álvaro		

## Activity 4. Tables

n (10 <sup>4</sup> )	Tsum (mS)	Tmaximum (mS)	Tmatches1 (mS)	Tmatches2 (mS)
1	0.0386	0.061	504.4	0.063
2	0.0764	0.11	2011.1	0.114
4	0.1521	0.224	8067	0.226
8	0.3077	0.44	32506	0.454
16	0.6095	0.884	OoT	0.903
32	1.2177	1.75	OoT	1.807
64	2.4702	3.537	OoT	3.640
128	4.9133	7.044	OoT	7.261
256	9.741	14.19	OoT	14.676
512	19.625	28.2	OoT	29.525
1024	39.674	56.7	OoT	58.9
2048	79.17	113.8	OoT	118.5
4096	157.98	228.2	OoT	235.6
8192	316.24	458.8	OoT	471.6

The expected results are similar as the ones obtained