Algorithmics	Student information		Date	Number of session
	UO: 282650		20/02/23	1.1
	Surname: Fernández Noriega			
	Name: Christian			

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Activity 1. Measuring execution times

1.- 2^64-1(Number of total milliseconds, as they are stored in a long data type which is 64 bits) /1000(To seconds) /60(To minutes) /60(To hours)/ 24(To days) /365(To years)

That is approximately 584942417 years from 1970, so 584942364 from now (2023), which is much more than the estimated age of the universe (13.77 billion years)

2.- It means that the program did not take long enough to have a significant difference despite of the influence of the garbage collector, or that the program executed in less than a millisecond, but we cannot know nor accept the result even if it was the case because it could have been the garbage collector, which we cannot control.
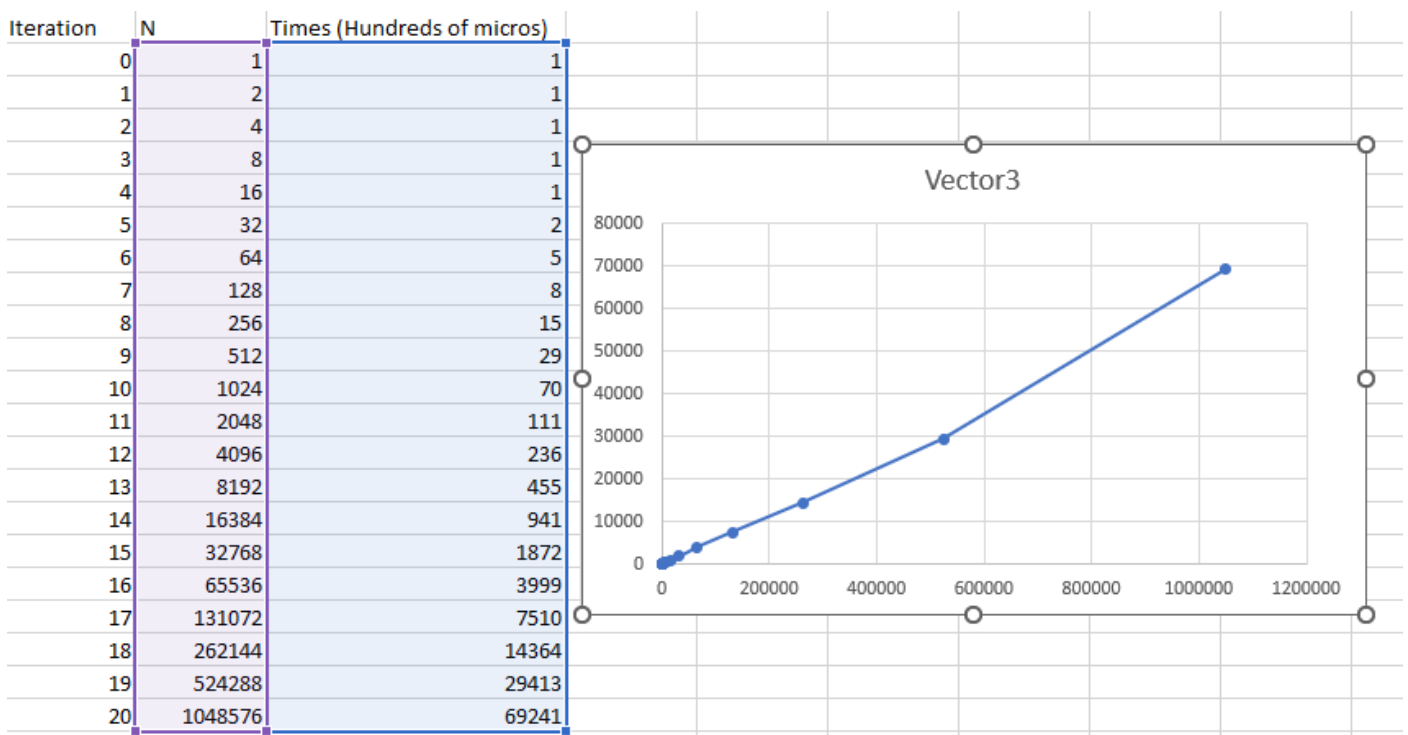
3.- With N= 120000000 I get 54 milliseconds

Activity 2. Grow of the problem size

1.- The times are multiplied by 5 as well

2.- Yes, as it can be seen in the next exercise graph

3.-Excel graph:

Iteration	N	Times (Hundreds of micros)
0	1	1
1	2	1
2	4	1
3	8	1
4	16	1
5	32	2
6	64	5
7	128	8
8	256	15
9	512	29
10	1024	70
11	2048	111
12	4096	236
13	8192	455
14	16384	941
15	32768	1872
16	65536	3999
17	131072	7510
18	262144	14364
19	524288	29413
20	1048576	69241

Vector3

Activity 3. Taking small execution times

N	FillIn()	Sum()	Maximum()
10	20	3	4
30	34	1	1
90	94	2	3
270	268	7	10
810	816	22	21
2430	2388	78	87
7290	7003	194	249
21870	21303	596	762
65610	63683	1785	2334
196830	191879	5421	6928

(Times are in hundreds of millis)

To store the array, the heap is being used, while the CPU takes charge of the process

Activity 4. Operations on matrices

N	sumDiagonal11()	sumDiagonal12()
10	1	0
30	3	0
90	10	0
270	30	0
810	207	1
2430	1675	30
7290	16245	130
21870	145423	776

(Times are in microseconds)

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Activity 5. Benchmarking

I did not get to any answers for these two questions.