Algorithmics	Student information	Date	Number of session
	UO: 283928	19/02/2022	Lab 1.1
	Surname: Suárez Losada		
	Name: Gonzalo		

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Activity 1. Measuring execution times

Question 1:

- 292.471.156 remaining years

Question 2:

- That it takes less than a ms to complete such a task.

Question 3:

- We start getting reliable times(t greater than 50ms) from n = 4 000 000.

Activity 2. Grow of the problem size

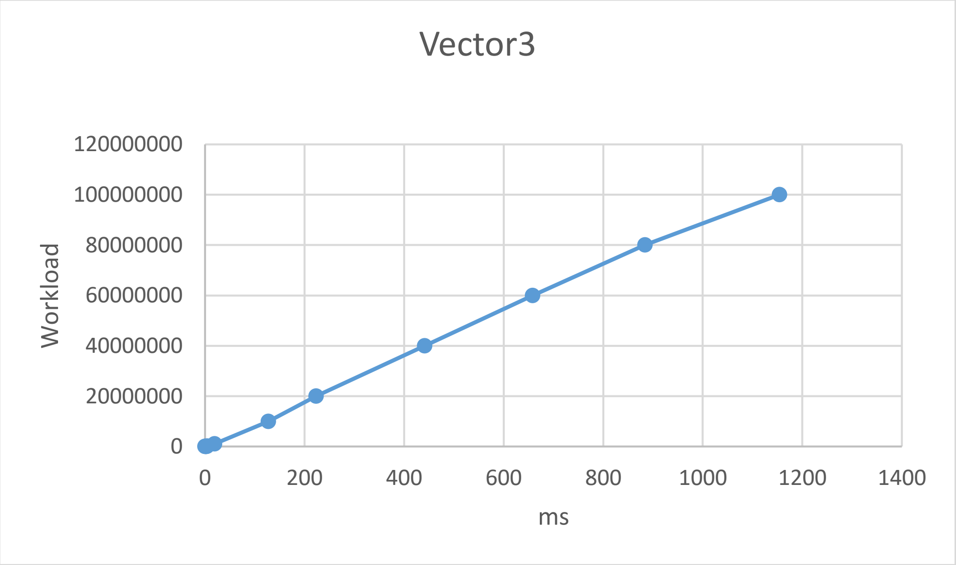
Question 1:

- It will take near to 5 times more.

Question 2:

- Yes, they are.

Question 3:



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Activity 3. Taking small execution times

n	fillIn(ms)	sum(ms)	maximum(ms)
10	0	0	0
30	0	0	0
90	0	0	0
270	0	0	0
810	0	0	0
2430	0	0	0
7290	0	0	0
21870	0	0	0
65610	0	0	0
196830	2	0	0
590490	6	0	0
1771470	18	0	1
5314410	53	3	2
15943230	161	6	6
47829600	476	17	17
143489070	1382	51	47

CPU: intel i5-10400 @ 2.90GHz, 2904 MHz, 6 physical cores, 12 logical cores.

RAM: 16GB

fillIn():

- Next value of n = 5314410 (t = 53ms): N2 = 15943230 (t=159ms)
- Next value of n = 15943230(t = 161ms): N2 = 47829600(t = 483ms)

sum():

- Next value of n = 15943230 (t = 6ms): N2 = 47829600 (t=18 ms)
- Next value of n = 47829600 (t = 17ms): N2 = 143489070 (t = 51ms)

maximum():

- Next value of n = 15943230 (t = 6ms): N2 = 47829600 (t=18 ms)
- Next value of n = 47829600 (t = 17ms): N2 = 143489070 (t = 513ms)

They match quite well.

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Activity 4. Operations on matrices

N	sumDiagonal1(ms)	sumDiagonal2(ms)
10	0	0
30	0	0
90	0	0
270	1	0
810	3	0
2430	6	0
7290	31	1
21870	246	2

CPU: intel i5-10400 @ 2.90GHz, 2904 MHz, 6 physical cores, 12 logical cores.

RAM: 16GB

sumDiagonal1():

- ○ Next value of n = 7290 (t = 31ms): N2 = 21870 (t=93ms)
- ○ Next value of n = 21870 (t = 246ms): N2 = 65610(t = 738ms)

sumDiagonal2():

- ○ Next value of n = 7290 (t = 1ms): N2 = 21870 (t=3 ms)
- ○ Next value of n = 21870 (t = 2ms): N2 = 65610 (t = 6ms)

They do not match so well, specially the first value for sumDiagonal1

Activity 5. Benchmarking

Question 1:

- Even though there are many small factors such as background processes or os, the main difference comes from being comparing java against python. Not all the programming languages have the same features and they make differences on execution times even if the algorithm is exactly the same.

Question 2:

- They both follow the same time complexity as their code is identical.