

Algorithmics	Student information	Date	Number of session
	UO: 301022	06/02/2025	1
	Surname: Canga		
	Name: Martín		



Escuela de
Ingeniería
Informática
Universidad de Oviedo



Activity 1. [Calculate time frame currentTimeMillis]

Since the currentTimeMillis function returns a 64bit long, the maximum time frame that could be stored is $2^{64} ms \approx 584,942,417 years$ which is insane. If we the time when we start counting is the 1st of January on 1970 UTC we can count from now on to 584,942,362 years in the future.

Activity 2. [timing = 0ms and reliability issues]

Since the privilege level of the process in charge of measuring time, this could be killed by the OS or other high level process that is running. If the OS kills the process by accident as soon as it starts you will get a timing = 0ms;

In order to achieve the highest reliability when testing the performance of certain function the more we run the test the better so $(n) \rightarrow \infty$

Activity 3. [Explanation for timing = 0ms]

Non Optimized

N	sum	max	matches1	matches2
10000	0.01	0.012	7.429	0.010
20000	0.02	0.022	30.429	0.020
40000	0.031	0.049	112.714	0.039
80000	0.065	0.083	456.143	0.081
160000	0.138	0.167	1869.000	0.154
320000	0.278	0.345	7083.429	0.314
640000	0.492	0.648	30357.143	0.618
1280000	1.104	1.614	117032.000	1.217

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2560000	2.003	2.830	>5min	2.454
5120000	4.053	5.200	>5min	5.057
10240000	8.044	10.390	>5min	10.165
20480000	16.258	20.160	>5min	19.710
40960000	34.086	42.900	>5min	39.190
81920000	69.071	74.190	>5min	79.740

Optimized

N	sum	max	matches1	matches2
10000	0.0005	0.00029	0.380	0.00037
20000	0.001	0.00049	0.970	0.00061
40000	0.002	0.00096	3.780	0.00121
80000	0.003	0.00195	14.930	0.00260
160000	0.006	0.00376	59.970	0.00509
320000	0.012	0.00757	241.390	0.01006
640000	0.024	0.01512	954.000	0.02193
1280000	0.049	0.03214	3800.000	0.04466
2560000	0.100	0.06454	15530.000	0.09305
5120000	0.213	0.13360	61321.000	0.20800
10240000	0.451	0.29950	244729.000	0.52500
20480000	0.937	0.76280	>5min	1.13300
40960000	2.127	1.49230	>5min	2.49400
81920000	4.063	2.96210	>5min	5.27500