CurrentTimeMillis() lifetime.

A Double number has 64 bits to represent a number. Only considering positive numbers the biggest number we can represent with those bits is 2^64 - 1 = 18.446.744.073.709.551.615 milliseconds= 5.124.095.576.030 hours = 584.942.417years.

2024 –1970 = 54

584.942.417 - 54 = 584.942.363 years left

Measurement Sensitively

If a time measurement is “0”, it means that the time it takes to run this task is lower than 1 millisecond, so the first measurement will be the same as the second one and the difference between them will be “0”.

Minimum reliable size

The lowest size for the problem to be reliable is something close to 20.000 so the time measured by the benchmark is higher than 50 milliseconds (52 in this case)

|  |  |  |
| --- | --- | --- |
| n | TSum(ms) | Tmaximum |
| 10.000 | 0,0659 | 0,0866 |
| 20.000 | 0,1321 | 0,1738 |
| 40.000 | 0,2634 | 0,3464 |
| 80.000 | 0,5246 | 0,6928 |
| 160.000 | 1,0456 | 1,3775 |
| 320.000 | 2,0953 | 27,574 |
| 640.000 | 4,1660 | 5,5265 |
| 1.280.000 | 8,335 | 11,082 |
| 2.560.000 | 16,386 | 22,122 |
| 5.120.000 | 32,444 | 44,387 |
| 10.240.000 | 63,53 | 88,811 |
| 20.480.000 | 124,43 | 177,055 |

|  |  |  |
| --- | --- | --- |
| n | Matches1 | Matches2 |
| 10.000 | 723 | 0,0919 |
| 20.000 | 2.887 | 0,1839 |
| 40.000 | 11.523 | 0,3691 |
| 80.000 | 46.087 | 0,7365 |
| 160.000 | 184.374 | 1,4747 |
| 320.000 | 738606 | 2,9404 |
| 640.000 |  | 5,8834 |
| 1.280.000 |  | 11,7765 |

The difference between Matches 1 and 2 is “n” since the complexity of matches1 is O(n^2) and for matches2 is O(n). As you can appreciate in the excel graph, the difference between times is matches2(n) \* n = matches1(n)