Activity 1. Divide and Conquer by subtraction

The n value where both Subtraction1 and Subtraction2 stop giving times is n= 16384. This is because the implementation uses too much Stack memory and the stack overflows.

The time for n=80 for Subtraction3 would be around 1374921718,4302478 years.

This is calculated by 80-30(last n value measured) = 50 -> t(n=30) \* 2^50 -> 38511 \* 2^50

= 43359531312416292864. And then converting it to years.

[TABLE3]

|  |  |
| --- | --- |
|  | Subtraction4 |
| n | t (ms) |
| 100 | 1,41 |
| 200 | 10,57 |
| 400 | 82,51 |
| 800 | 648 |
| 1600 | 4975 |
| 3200 | 39880 |
| 6400 | OoT |

[TABLE4]

|  |  |
| --- | --- |
|  | Subtraction5 |
| n | t(sub5) ms |
| 30 | 519 |
| 32 | 1278 |
| 34 | 3811 |
| 36 | 11346 |
| 38 | 33718 |
| 40 | OoT |

The time for n=80 for Subtraction5 would be around 2,24225555352613 years

This is calculated by 80-38(last n value measured) = 42 -> t(n=38) \* 2^(42/2) -> 33718 \* 2^21 = 70711771136. And then converting it to years.

Activity 2. Divide and conquer by division

For Division1, the times with lower n values are not increasing as expected, with the theoretical complexity O(n), but for higher n values they do increase as expected.

For Division2 and Division3, with complexities of O(nlogn) and O(n) respectively, the times for all n values do increase as expected.

[TABLE3]

[TABLE4]

Activity 3. Two basic examples

[ANSWER].

Activity 4. Petanque championship organization

[ANSWER].

Activity 5. [TITLE OF THE ACTIVITY]

[ANSWER].