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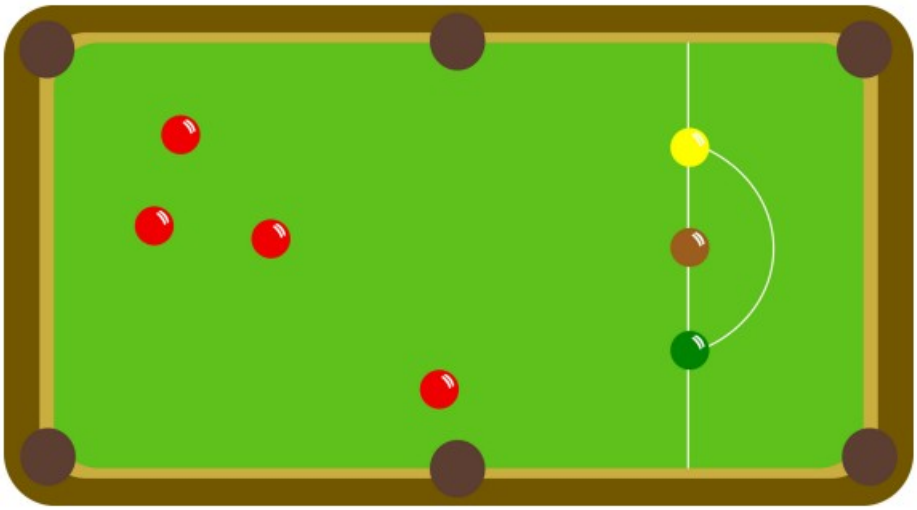
SAÉ 1.02 - Comparison of algorithmic approaches

Optimization of algorithms for a simulation snooker



— AC 1 Analyzing a problem with method (division into algorithmic elements simple, data structure, . . .)
— AC 2 Compare algorithms for classical problems (simple sorting, search, . . .)

Step 0 :
At the beginning of this project, we have a very poorly optimized algorithm, very slow to run.
After running the benchmark, we get a time of 24342 ms.

Step 1 :
In this step, the algorithm is a bit more fluid. We ensure that it only calculates collisions for balls in motion.
After running the benchmark, we get a time of 12313 ms, wich is better !

Step 2 :
Now, we modify the algorithm to calculate at every instant whether a point on a ball is in contact with the nearest ball. We will modify this to have much fewer calculations to perform.
After running the benchmark, we get a time of 241 ms, crazy !

Step 3 :
In this step, we avoid updating balls that are not in motion.
After running the benchmark, we get a time of 115 ms.

Step 4 :
Finally, we improve the step 3 with a list containing all the moving balls.
After running the benchmark, we get a time of 48 ms.

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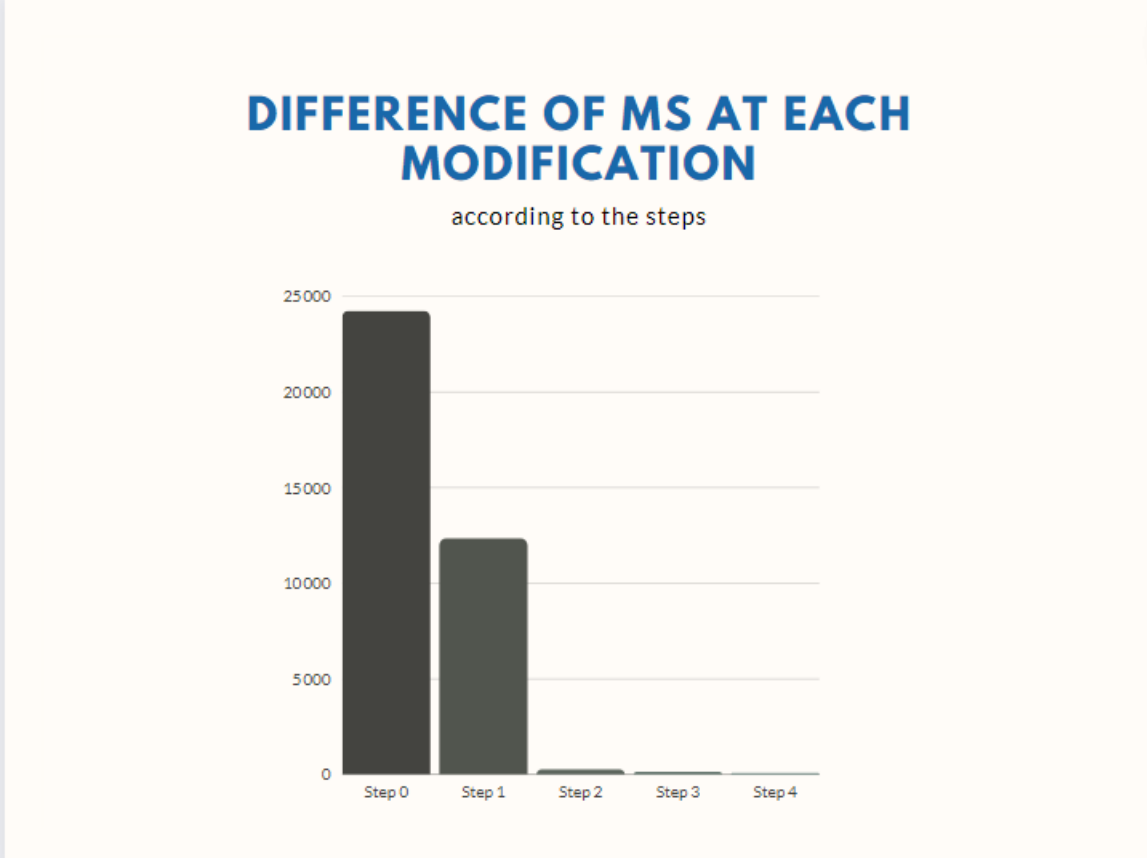
Here is the graph with all the measurements :




Step 0 : 24342 ms
Step 1 : 12313 ms
Step 2 : 241 ms
Step 3 : 115 ms
Step 4 : 48 ms