Algorithmics	Student information	Date	Number of session
	UO:276824	24/03/2021	4
	Surname: García Fernández		
	Name: Pablo		

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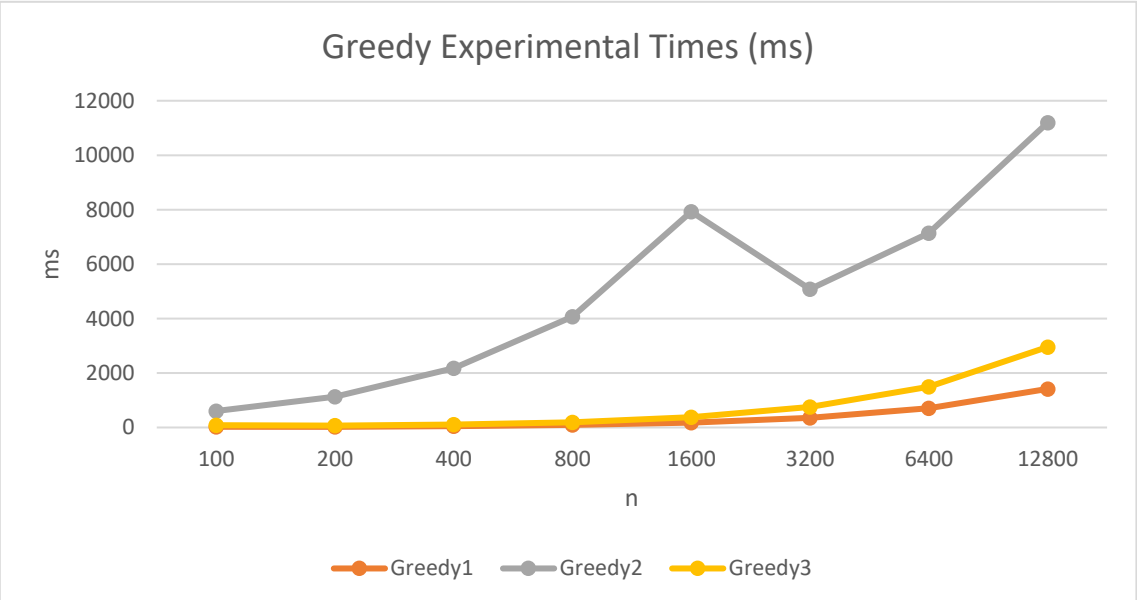
Activity 1. Execution times.

n	tGreedy1	tGreedy2	tGreedy3
100	29	606	87
200	24	1130	70
400	45	2180	110
800	91	4074	195
1600	178	7932	381
3200	355	5076	752
6400	707	7138	1490
12800	1417	11196	2957



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Activity 2. Answer the following questions.

1. Explain if any of the greedy algorithms involves the optimal solution from the point of view of the company, which is interested in maximizing the number of “pufosos”.

   In order to get the maximum pufosos you should use the greedy algorithm number 2, the one that uses the list order from increasing order but it takes more time.

2. Explain if any of the greedy algorithms involves the optimal solution from the point of view of the player, who is interested in minimizing the number of “pufosos”.

   In order to get the minimum pufosos you should use the third greedy algorithm, the one that uses the list order from decreasing order it takes an average time.

3. Explain the theoretical time complexities of the three greedy algorithms, according to the implementation made by each student, depending on the size of the problem n.

   - The greedy 1 is $O(n)$ since there is only a for loop
   - The greedy 2 is $O(n * \log(n))$ since Collections.sort() is $O(n * \log(n))$ and Collections.reverse is $O(n)$ and a for loop
   - The greedy 3 is $O(n * \log(n))$ since Collections.sort() is $O(n * \log(n))$ and a for loop

4. Explain if the times obtained in the table are in tune or not, with the complexities set out in the previous section.

   The theoretical values are:

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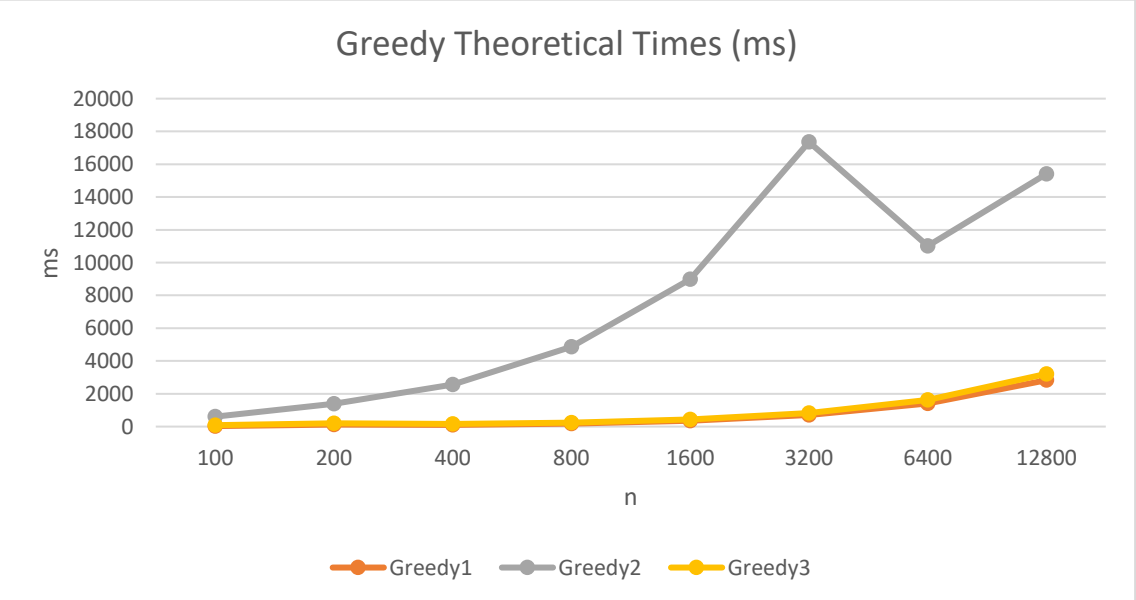
n	tGreedy1	tGreedy2	tGreedy3
100	29	606	87
200	116	1394	200
400	96	2555	158
800	180	4864	245
1600	364	8992	430
3200	712	17354	833
6400	1420	11023	1633
12800	2828	15405	3215



The times are very close to the time complexities but there are some values that vary.