LAB TASK 3. GREEDY ALGORITHMS. MILK PRODUCTION.

A farm has N cows for sale, of which the number of kilos of feed each cow needs, the space they occupy and the litres of milk they produce are known. The farmer who wants to buy the cow farm has a property of M square metres. Then, the students must:

1. Develop a program that applies a greedy strategy to find out:
   a. Assuming that feed is free to the farmer, which cows can he buy to maximise the amount of milk produced?
   b. Assuming that all cows produce the same number of litres of milk, which cows can he buy to minimise the feed cost of the chosen cows?
2. Calculate the theoretical complexity of the developed algorithms.
3. Perform several tests with different data sets.

SESSION 1.

- Design the necessary classes.
- Develop the code for reading N and M, as well as for importing the table with the cows data shown on the next page.

SESSION 2.

- Develop the greedy strategy that solves the specified problem.
- Calculate the theoretical complexity of the developed methods (to be included in the documentation)
- Justification of whether the strategy for both implementations is optimal or not. If you think it is sub-optimal, you must prove it with a counterexample. (to be included in the documentation)

Data from the cows

Code	Space (dm²)	Food (kg)	Milk (liters)
1	550	64.00	30.80
2	620	56.00	45.00
3	550	79.00	38.00
4	610	80.00	38.70
5	590	58.00	36.80
6	490	69.00	33.20
7	630	82.00	41.20
8	460	68.00	28.90
9	640	66.00	46.50
10	500	46.00	30.70
11	490	61.00	33.10
12	590	72.00	38.60
13	550	62.00	38.80
14	610	73.00	34.40
15	490	41.00	31.70
16	500	57.00	32.50
17	610	57.00	40.00
18	590	51.00	44.00
19	510	55.00	31.40
20	640	73.00	43.90
21	590	73.00	43.70
22	480	62.00	27.60
23	530	76.00	37.10
24	490	59.00	33.00
25	460	59.00	30.50
26	630	80.00	36.10
27	500	61.00	34.00
28	470	50.00	29.50
29	470	71.00	32.30
30	530	49.00	33.90