

Problem A.5 writeup:

1. What were your results from `compare_cow_transport_algorithms`? Which algorithm runs faster? Why?

The brute-force algorithm was significantly slower, and this is a result of its complexity being exponential since it iterates over all possibilities of sets of trips. On the other hand, the complexity of the greedy algorithm was linear since it only iterates over a sorted list of elements, in our case, astronaut cows being the elements?!

2. Does the greedy algorithm return the optimal solution? Why/why not?

The greedy algorithm does not necessarily return the global-optimal solution since it assumes that the optimal set of trips is the one where you choose the cows by order of weight, from heaviest to lightest. In short, it only tries one possibility of the sets of trips, whereas brute-force tries all of them.

3. Does the brute force algorithm return the optimal solution? Why/why not?

The brute-force algorithm does indeed return the global-optimal solution since it iterates over all possibilities of sets of trips and checks which one has the least amount of trips.