Problem A.5: Writeup

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

Results:
Greedy: Trips = 6, Time = 0.0 seconds
Brute Force: Trips = 5, Time = 0.687 seconds

The greedy algorithm runs faster because it only makes one decision at a time and does not explore other options. It selects the largest cow that fits and moves on, which saves time.

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

The greedy algorithm does not always return the optimal solution in terms of minimizing the number of trips. It does not check all combinations of cows. It just picks the biggest one that fits, which can lead to suboptimal groupings. However, it is optimal in terms of time, because it runs very quickly.

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

Yes, the brute force algorithm returns the optimal solution in terms of minimizing the number of trips. It tries every possible grouping of cows and selects the one with the fewest trips that work in terms of weight limits. But it's not optimal for time, since checking all combinations takes longer.