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Data structures assignment 3 problem 2

Q: You have 20 M&Ms bags. 19 bags have 1.0 gram pieces, but one has pieces of weight 1.1 grams. Given a scale that provides an exact measurement, how would you find the heavy bag? You can only use the scale once.

A: if you take out an amount of pieces equivalent to the bag’s assigned number, then the weight would say the number bag that has the larger pieces. If all of them were equivalent it would come out to 210 when weighed together (bag 1 -> 1 piece, bag 2 -> 2 pieces, …, bag 20 -> 20 pieces). But since one of the bags has .1 extra of a gram it will end up adding .1 \* bag number. So, if it was bag 1 it would be 210.1, if bag 2 then it’s 210.2, if it’s bag 20 then it’s 212.0. So doing this will tell you exactly what bag has the 1.1 grams M&Ms.