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**Problem 1)**

For any algorithm to meet Big O notation criteria, its time complexity needs to be examined in terms of input size sz. The outer loop iterates over the elements of the array from index 0 to 'sz - 2'. The inner loop iterates over the elements of the array from the current 'iterate1' index to 'sz - 1'. The time complexity is determined by the number of iterations performed by these nested loops. Therefore, the total number of iterations is: (sz−1) + (sz−2) + (sz−3) +…+ 2 + 1.

This simplifies the triangular number, which is the sum of the first 'n' positive integers.

n(n+1)/2

n=sz - 1, so the number of iterations is:

((sz-1) (sz-1+1)) / 2

(sz^2-2sz+1) /2

Therefore, the Time Complexity = O(sz2)

**Problem 2)**

We have 20 M&M bags. We will take one M&M from the first bag, two from the second, and so on, until we take 20 M&Ms from the 20th bag. This way, we will have 1+2+…+20 M&Ms. We will place all the M&Ms on the scale and weigh them. If all M&Ms were 1.0 grams, the expected weight would be 1+2+…+20, the sum of the first 20 natural numbers. This sum can be calculated using the formula n(n+1) / 2​, where ‘n’ is the number of bags. So, the expected weight is 20\*21/2 = 210 grams. The difference between the actual and expected weights will indicate which bag has heavier M&Ms. Let X be the weight of the M&Ms from the heavy bag. The heavy bag number is given by the formula X−210+1.