Analysis for task gifts

The solution is based on the dynamic programming method. Let’s say we have an array gifts, where we hold each present’s weight, with a total of N presents. Let S be the total weight of all presents and Ki – the weight of the i-th present. Then we create a boolean array canMake with starting element canMake[0] = 1 and length N\*MAXK, where we’re going to hold the weights from combining different presents. If we have a valid combined weight j, then we can also make a valid combined weight j + gifts[i] for j = S, S-1, …, 1, 0 and i = 0, 1, … , N-1. After we’re done filling the array canMake, the closest valid combined weight to S/2 is the answer to the problem.

The solution has time complexity of O(N\*S).

 Author: Delyan Dobrev