## Water Jugs

This code defines and asserts a set of constraints for a problem involving three resources (j1, j2, j3) and time periods (t). The function C appears to represent the amount of each resource at a given time period, and the function Capacity represents the capacity for each resource.

The code asserts that the capacity of each resource at time 1 is 8, 5, and 3, respectively. It also asserts that the amounts of each resource at time 0 are 8, 0, and 0, respectively. The amounts of each resource at time N are 4, 4, and 0, respectively.

The code also includes a constraint stating that the amount of each resource at each time period must be non-negative and less than or equal to the capacity for that resource.

There is a constraint stating that the total amount of all resources at each time period must be equal to the total amount of all resources at the next time period.

There is a constraint stating that, for each time period, there must exist three distinct resources such that one resource remains unchanged, one resource decreases by 1, and one resource increases by 1. If the resource that decreases reaches 0, it must stay at 0. If the resource that increases reaches its capacity, it must stay at its capacity.

Finally, the code asserts that the value of N (the number of time periods) must be less than or equal to 10.

The code then checks whether the set of constraints is satisfiable (i.e., whether there exists a solution that satisfies all of the constraints) and, if so, produces a solution by getting the values of all of the variables.