ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (A.A. 2019/2020)
25/10/2019 (2.5 hours)

Surname _____ Name _____ Student ID (Matricola) _____

We want to implement a system to fill containers with items. All available containers have a maximum capacity of N items and they can be partially filled but they cannot be filled over their maximum capacity.

All the items belong to one of the following categories: Trash; Food; Explosive; Frozen; Fresh.
For all the items to be put inside a container we have the following constraints:
- all the Explosive items must be put in different containers;
- Trash items cannot be in the same container with a Food item;
- Frozen items must be all within the same container;
- Fresh and Frozen items cannot be within the same container.

Model the problem as a constraint satisfaction problem and implement it.

OBSERVATION: You may implement either the Backtracking-Search algorithm or the one based on local search.

Test your implementation on the following problem:

Number of containers = 4
Maximum capacity for a container = 6

Trash: t1, t2, t3, t4, t5.
Food: f1, f2, f3.
Explosive: e1, e2.
Frozen: fz1, fz2, fz3.
Fresh: fs1.