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*"La mente è come un paracadute.
Funziona solo se si apre"
A. Einstein*

Filling up containers with boxes

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Abstract

Spring 2015 started the ESICUP-Renault challenge which ended in March 2015 with the results. The object of the Challenge was to write a code to fill up containers for dispatching spare parts of Renault to its different sites in Romania, Turkey, Marocco, Brasil etc. The primary aim was to minimize the volume of container used. The parts are in boxes, boxes are in stacks which are made of layers which in turn are made of lines. In total there were 29 conditions which had to be satisfied, one of them is that the layers had to be in non increasing weight from bottom to top, another one tried to capture the pressure received by a box from the ones over it, in order to avoid the based to be smashed.

There were 3 sets of data, one, Instances A, for the qualification, another, Instances B, to improve the algorithm and fine tune it and finally the Instances X which were unknown to the competitors and on which the ranking was done.

We will present the methodology we used to win the Challenge. We are currently helping Renault develop their own software, the rules are slightly different, we will say a few words on this.

Some examples of nice container loads will be displayed at the end of the talk.

(joint work with Olivier Briant)