EXERCISE: TRUCK PLANNING

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A truck company requires us to develop an engine to correctly plan the assignment of packages to its trucks. The main question that we want to answer is if a set of packages can be loaded in a given truck.

A truck knows its maximal capacity (kg), and the its volume (m^3). For each package to load we have also the weight and the volume.

We are going to implement the following use cases, one by one. For each of them, we need to implement the required test scenarios. As we are doing an iterative development, we are adding new features to the solution one by one, keeping the older ones working. For ensuring the working of the previous implemented ones, it is important to profit the tests.

(1) We want to know if a package can be loaded in a given truck.
(2) Load the package in the truck, this will affect the packages that we can load later (a.k.a. will consume the space and capacity).
(3) The company, then introduced the concept of *composed packages*. A composed package, is a set of packages that should work as a single one. They should be loaded or not in a truck as a single entity. The weight and volume of the composed package is the combination of the weight and volume of the packages in the composed package.
(4) The company will add to its fleet of trucks refrigerated trucks. A refrigerated truck can transport refrigerated packages. A refrigerated package can *only* be transported in a refrigerated truck. In this initial state, refrigerated trucks will only transport refrigerated packages.
(5) The company want to profit their refrigerated trucks to transport non-refrigerated packages also. However, a refrigerated truck cannot mix the two types of packages.