

System design

Following the minimum requirements according to time limitations here are the assumptions:

- each package can be delivered only once
- each truck does only 1 delivery per day
- solution represents package loading for a single day, meaning we don't keep delivery history and assume all trucks are available at the beginning of the day

Data relations:

- Package has foreign key to relate Truck, it's many to 1 relationship.
- Each truck has availability so no need to do join request to check truck availability. This field is set to True when packages are assigned to the truck

Basic flow:

1. User requests package loading and sends a list of package ids.
2. Service checks if these ids are present in the database and returns an error if not all packages were found
3. Calculate the volume of all packages
4. Query all available trucks from the database and get the first of them meeting the condition "total volume of packages is not less than 80% and not more than truck volume"
5. Assign the truck id to each package in the database and set the truck.available field to False
6. Return the truck id

