

The purpose of the following task is to display your knowledge in Object Oriented programming. You should try to showcase your understanding of the four basic principles of Object Oriented programming - Encapsulation, Data Abstraction, Polymorphism and Inheritance.

Provided time for the task's completion is 3 hours. The programming language in which the task will be written is entirely up to you.

You should not create any kind of User Interface or use any type of database. The completed task should be sent via email to [jobs@madduckcode.com](mailto:jobs@madduckcode.com) with the subject "Mad\_duck\_zadatak".

## The task

Create the application called "**STORE CHAIN**".

A store chain can be consisted of **multiple shops**. Every shop is defined by it's name and it's type.

Available shop types are: corner shop, supermarket and pharmacy.

Every shop has it's **products** which are defined by their types, names, prices and quantities (available amounts of the product currently in stock).

Available types of one product are: food, drink, medicine, cigarettes, toys and parking tickets.

When selling a product, the shop must create a **bill** with the following data:

- Number of bill (generated for each store separately and it starts at 1 for each year)
- Date of bill's creation
- Customer's data (First name, last name, telephone number)
- Bought product's list which is consisted of their bought amounts, prices and serial numbers (if the product is of type medicine/parking ticket)

Cigarettes can only be sold by a corner shop, and medicine can only be sold by pharmacies.

When selling a product of type medicine or parking ticket, the bill should have a serial number attached to it.

After a successful purchase of a product, it's quantity should be decreased by the bought amount. If the remaining amount of product units is less than zero, the purchase and the bill's creation should not be allowed.

Every shop should have a **report** of all sold products in a requested period.

## Test

Create a test which consists of a shop of each type, with minimum two products in it.

For each of the stores You should create two bills on the current day.

You should also create the following bills:

- With the amount greater than the product's available quantity
- Without the serial number and made in a pharmacy

Generate reports of sold products for the current day for each of the created stores.

**Bonus:** Every product purchase should be logged in the following format:

Store type, product type, product's price, amount before the purchase, amount after the purchase and bill creation time.

**We wish you good fortune!**