Creation phase

Software Engineering - Software Process

UML - Unified Process

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Teacher : GODART Claude

Years : 2021 – 2022

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Summary

PARTIE A - ANALYSIS OF THE EXISTING

Nowadays, Connie's store works only thanks to her. Indeed, she is in charge of everything: calculating the prices of the items, adding taxes, giving the coins, entering and leaving the items and much more...

Our goal is to create a system: "To help each cashier work more effectively during checkout, to keep good records of each sale and to support more efficient store operations."

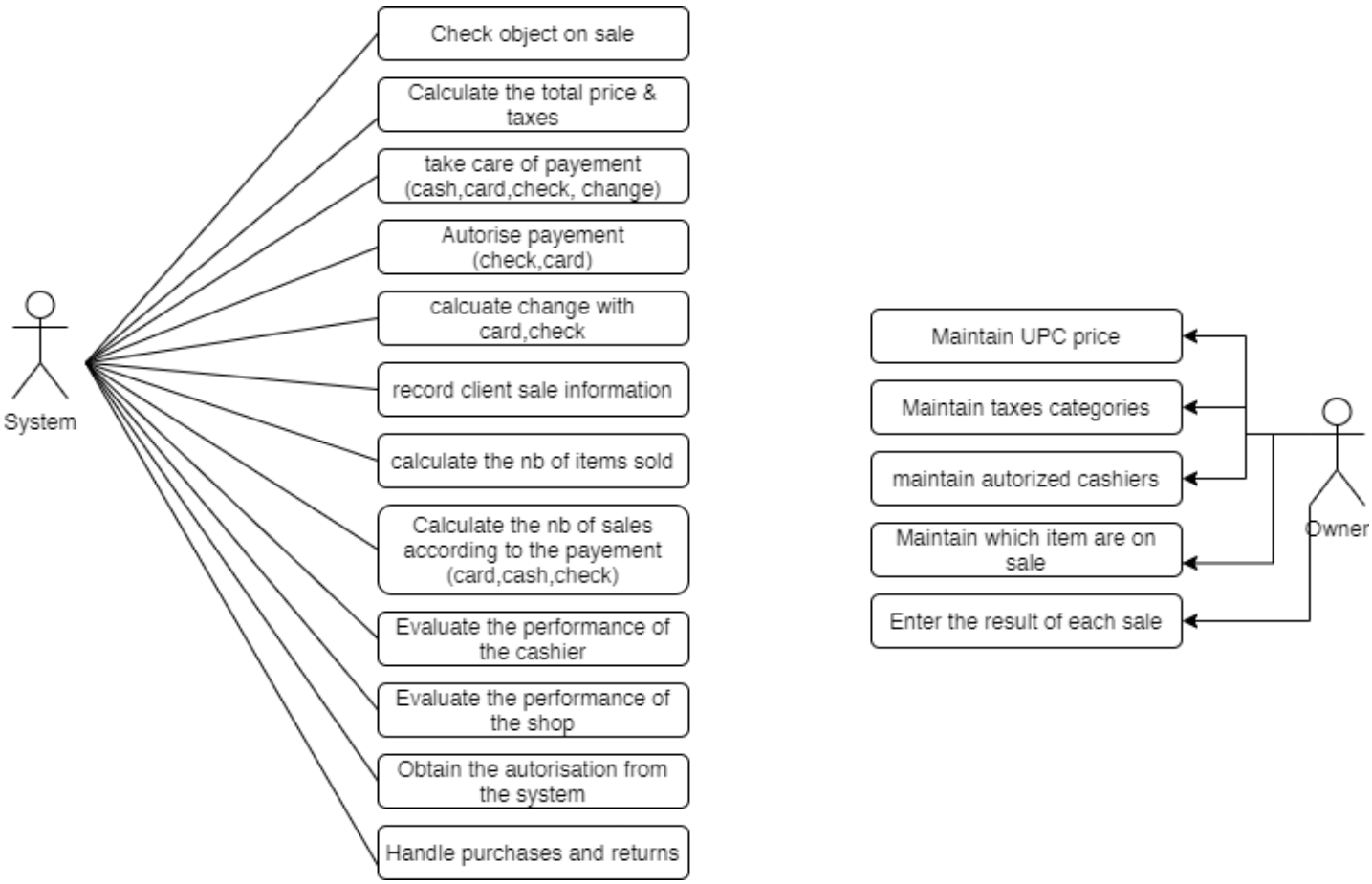
PARTIE B - IDENTIFICATION OF THE USE CASES ACCORDING TO THE CUSTOMER'S NEEDS (CONNIE)

The system must:

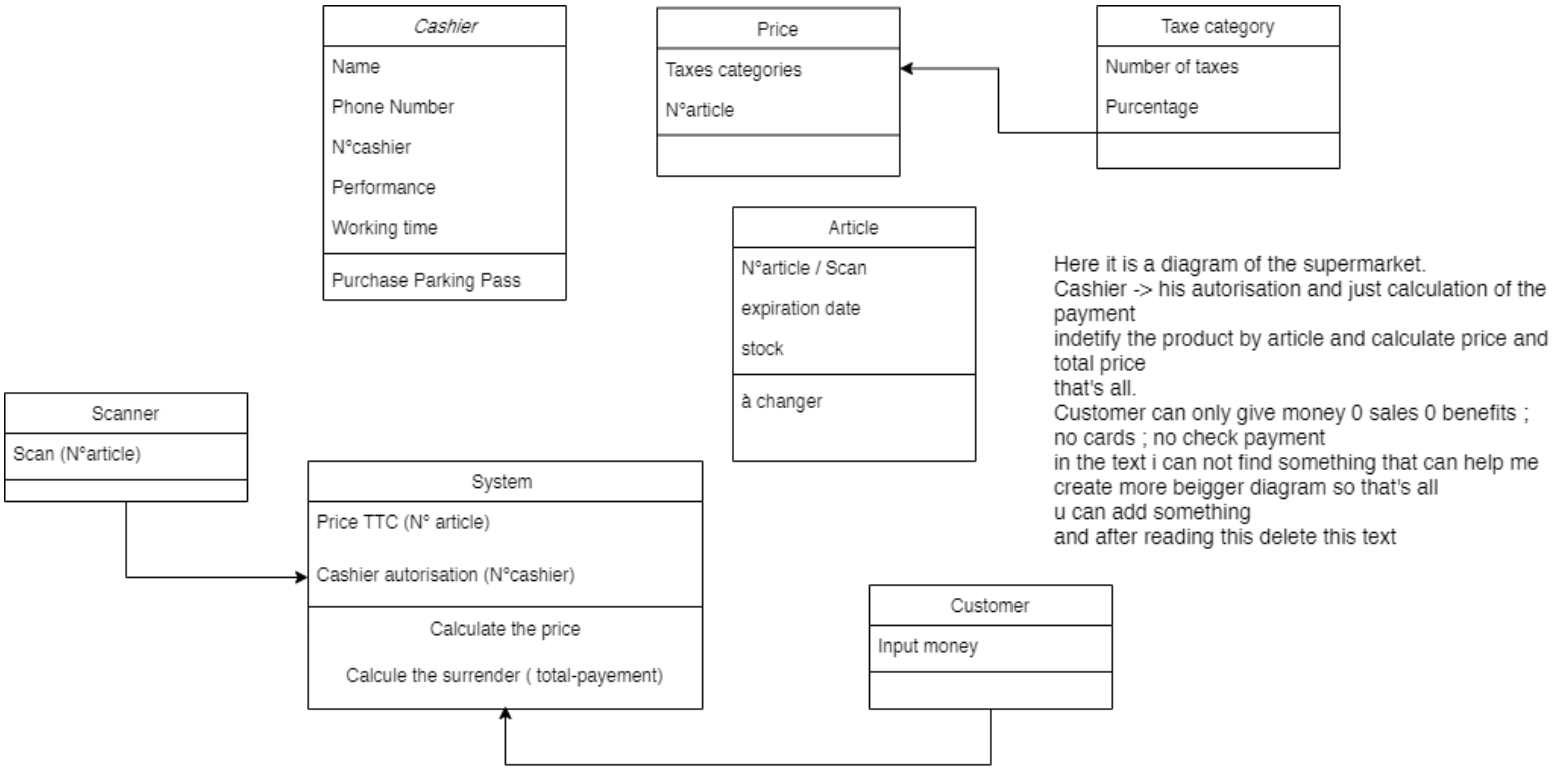
- Make sales
- Scan items and give them a price
- Know if items are on sale
- Automatically total the sale and calculate the tax
- Handle purchases and returns
- Handle payments in cash, check or currency
- Authorize payments by check or card
- Calculate the exchange rate when cash or checks are used
- Record customer information at the time of sale
- Count the number of items sold
- Count how many sales with each payment method (cash, card, change, check)
- Evaluate how well a cashier is performing
- Evaluate how well the store is performing

All these features would save time, reduce the number of errors on prices and reduce the work of labeling items especially when the price changes.

PARTIE C - A USE CASE DIAGRAM



PARTIE D - A GLOBAL CLASS DIAGRAM OF THE BUSINESS OBJECTS MODELING THE EXISTING SYSTEM

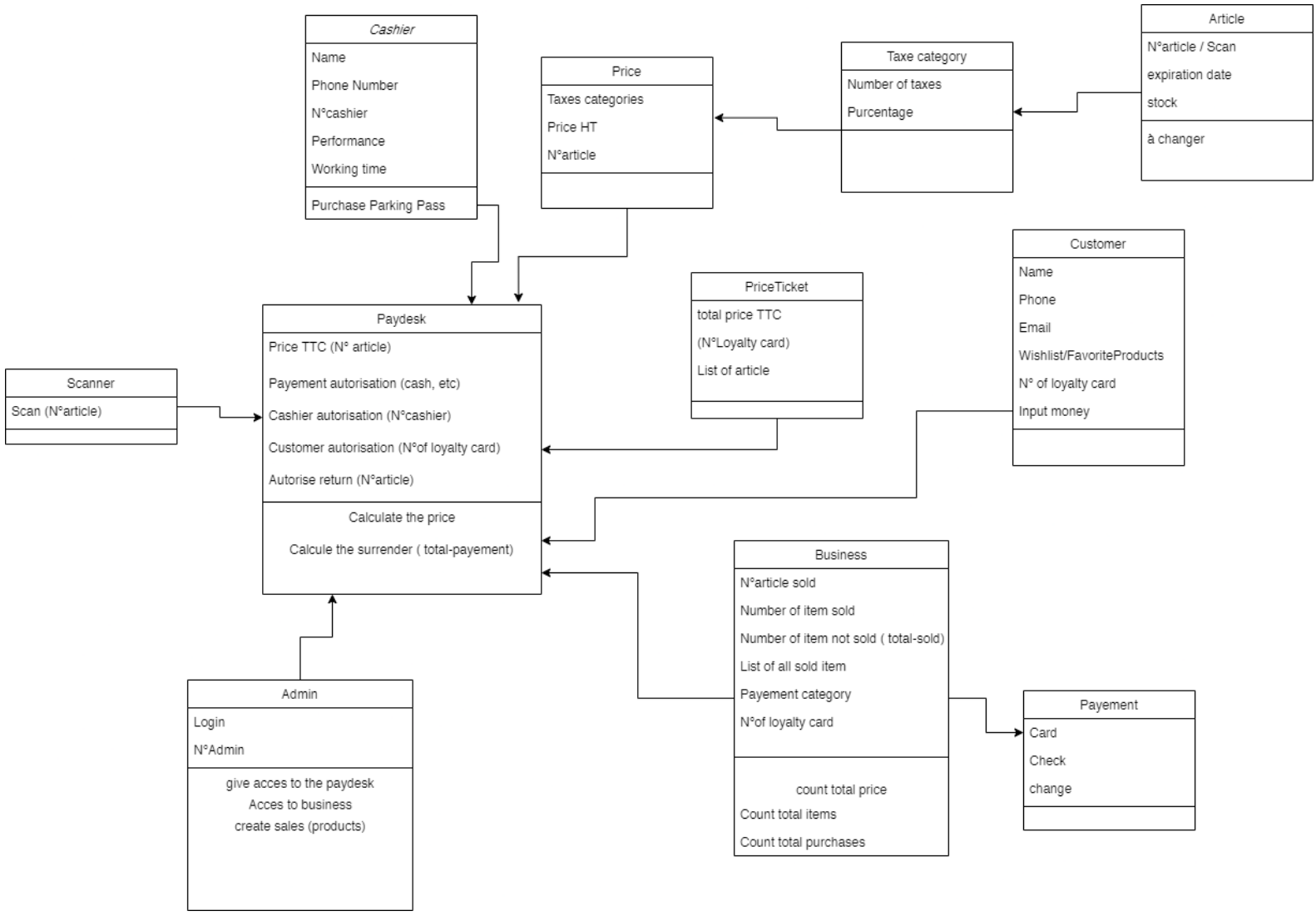


PARTIE E - IDENTIFY THE MAIN NON-FUNCTIONAL CONSTRAINTS AND RISKS:

The system must:

- Obtain authorization from one or more payment system authorizations
- Maintain UPC (universal product code) based pricing
- Maintain tax categories
- Maintain authorized cashiers (administrator system)
- Maintain which items are on sale (view all stock, database)
- Enter the results of each shop and cashier sale (general history)

PARTIE F - FIRST VERSION OF THE UML DIAGRAM OF THE SYSTEM:



PARTIE G - ANALYSIS OF THE USE CASES BY ORDER OF PRIORITY OF APPEARANCE

The system must be able to answer the need:

I) A customer who comes to buy X items with different taxes having a loyalty card and paying by: card and/or cash and/or check

II) A customer who returns X items and wants to be reimbursed by card or check or cash with a ticket

There are 2 more rare cases that we could develop:

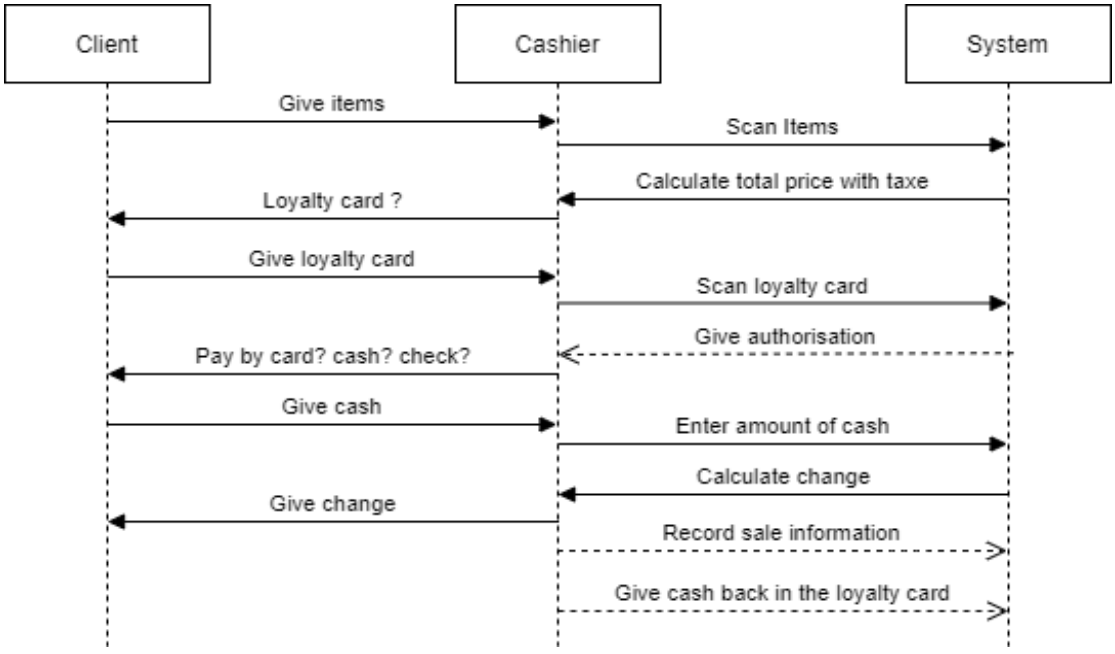
III) A customer who comes to buy X items with different taxes don't have a loyalty card and paying by card and/or cash and/or check

IV) A customer who returns X items and wants to be reimbursed by card or check or cash with his loyalty card

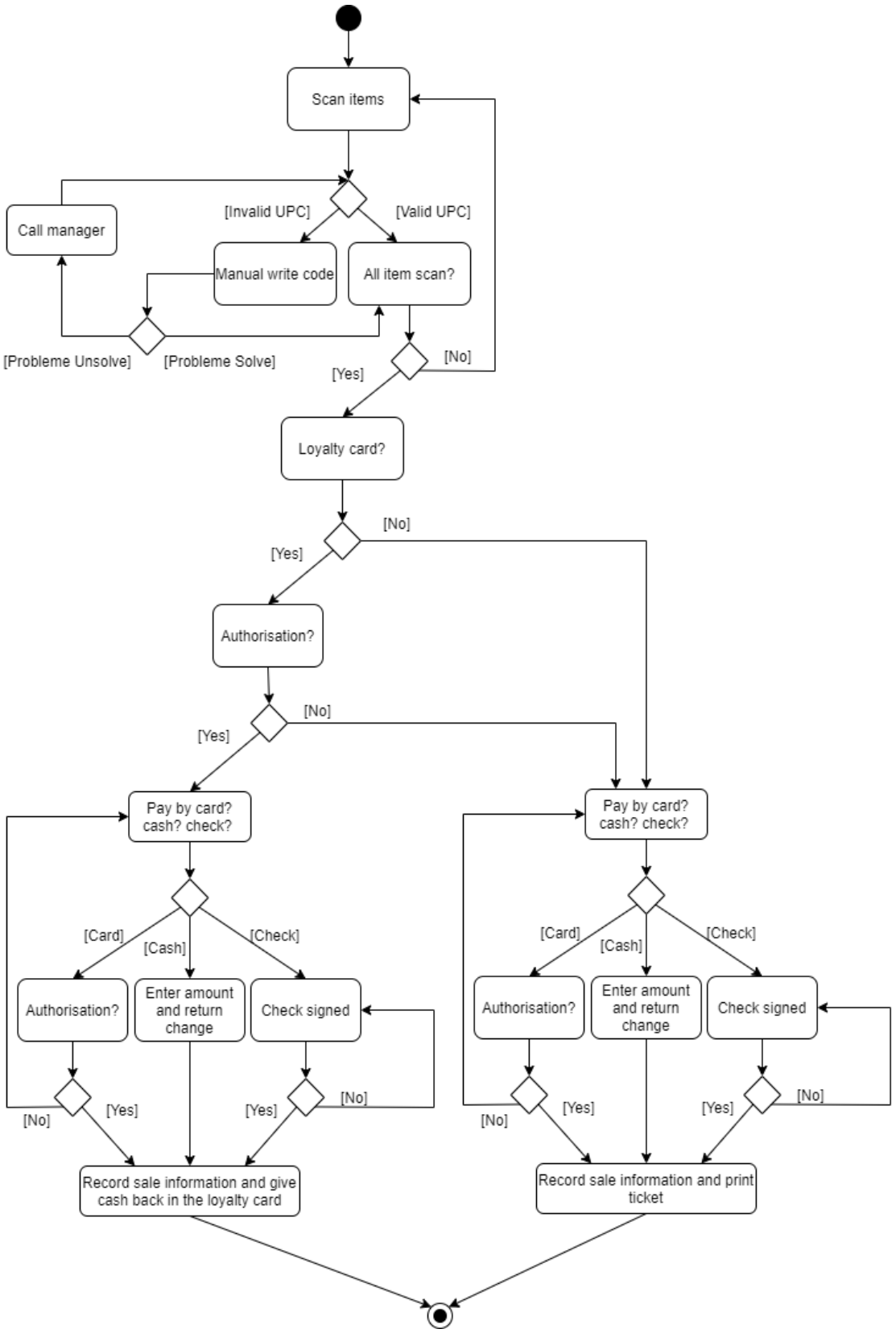
I - A customer who comes to buy X items with different taxes having a loyalty card and paying by card and/or cash and/or check

In this case, if the client has a loyalty card, the system doesn't print a ticket, all information is in the loyalty card and it preserves the environment.

I.a. - System sequence diagram



I.b. - Activity diagram



I.c. - User interface drawing

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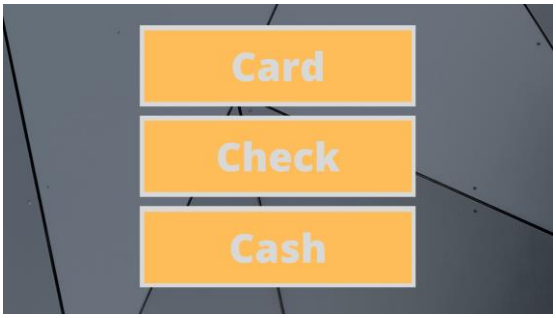

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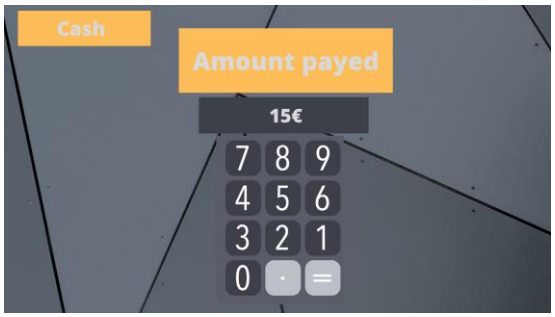

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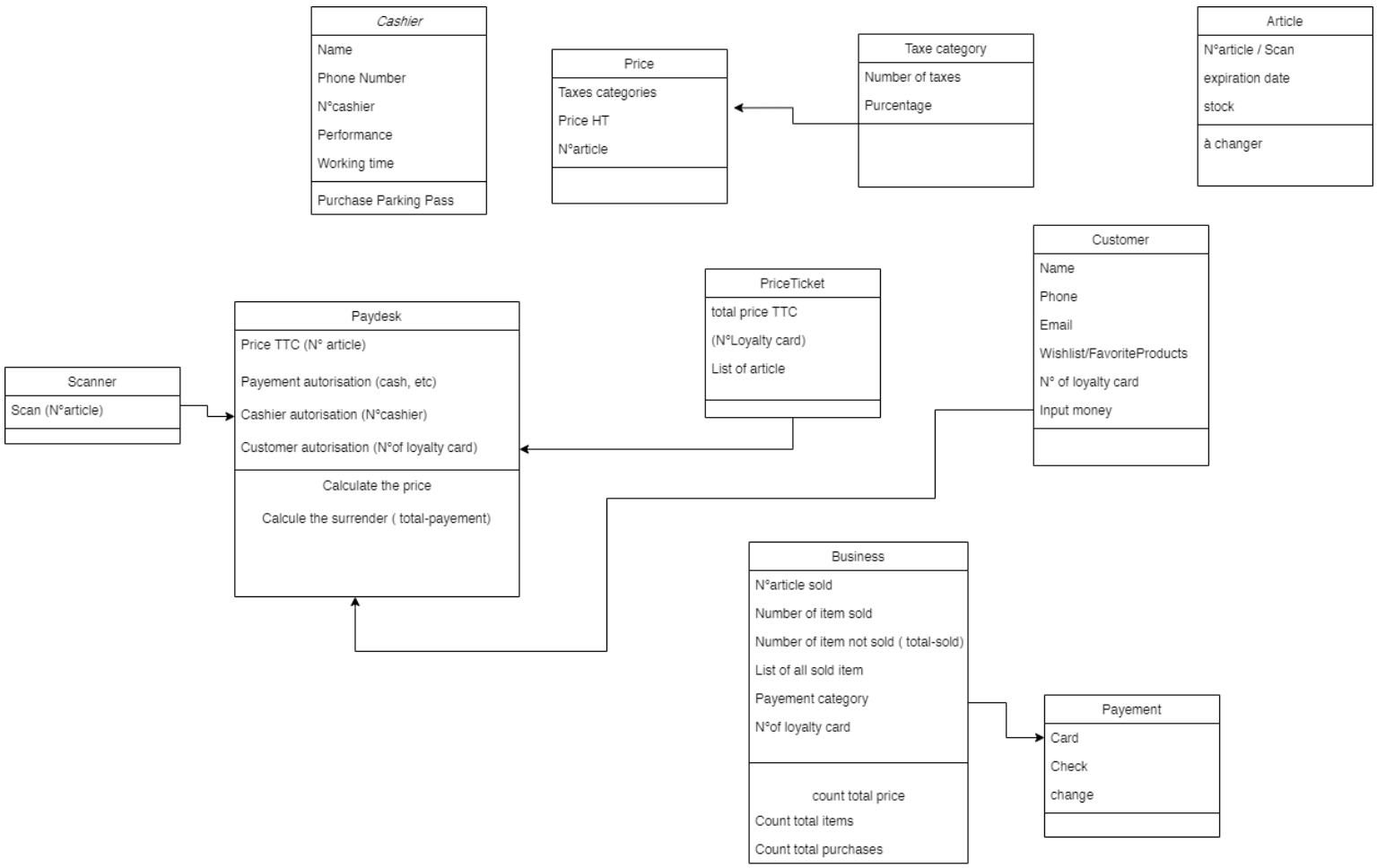
I.d. - Main non-functional constraints, main risks

The main non-functional constraints are related to the hardware. As an input, the system must be able to read and interpret the barcodes thanks to a UPC code system, it will be necessary to have a mobile and immobile scan for more facility. Moreover, the system must be able to interact with the POS terminal to obtain the authorization of the bank to debit the card. It is necessary to encrypt the personal data on the loyalty card which are linked to a database also encrypted. At the exit, the system must be able to unblock the cash register when the customer pays in cash to give it back.

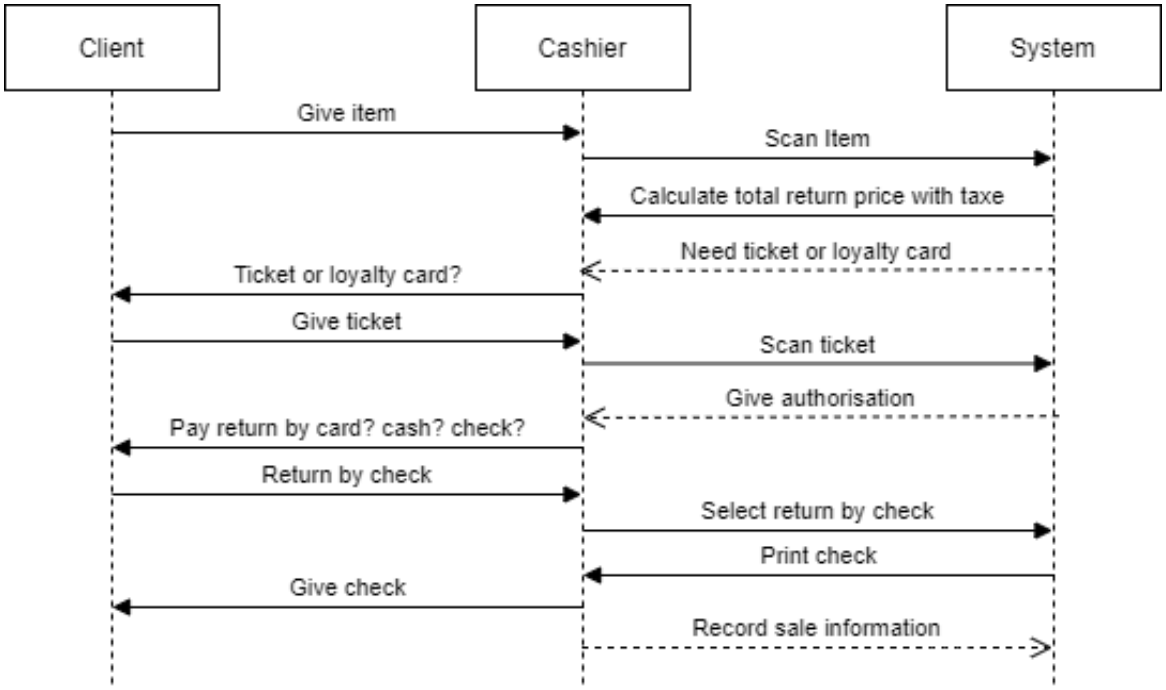
The main risk of this case is that the system does not manage to find the correspondence of the barcode, so the cashier can enter the code manually then if it still does not work, it will be necessary to call the manager who has the right (via authentication by magnetic card) to enter only the price of the object without scanning or indicating what it is.

I.e. - A class diagram of the case objects

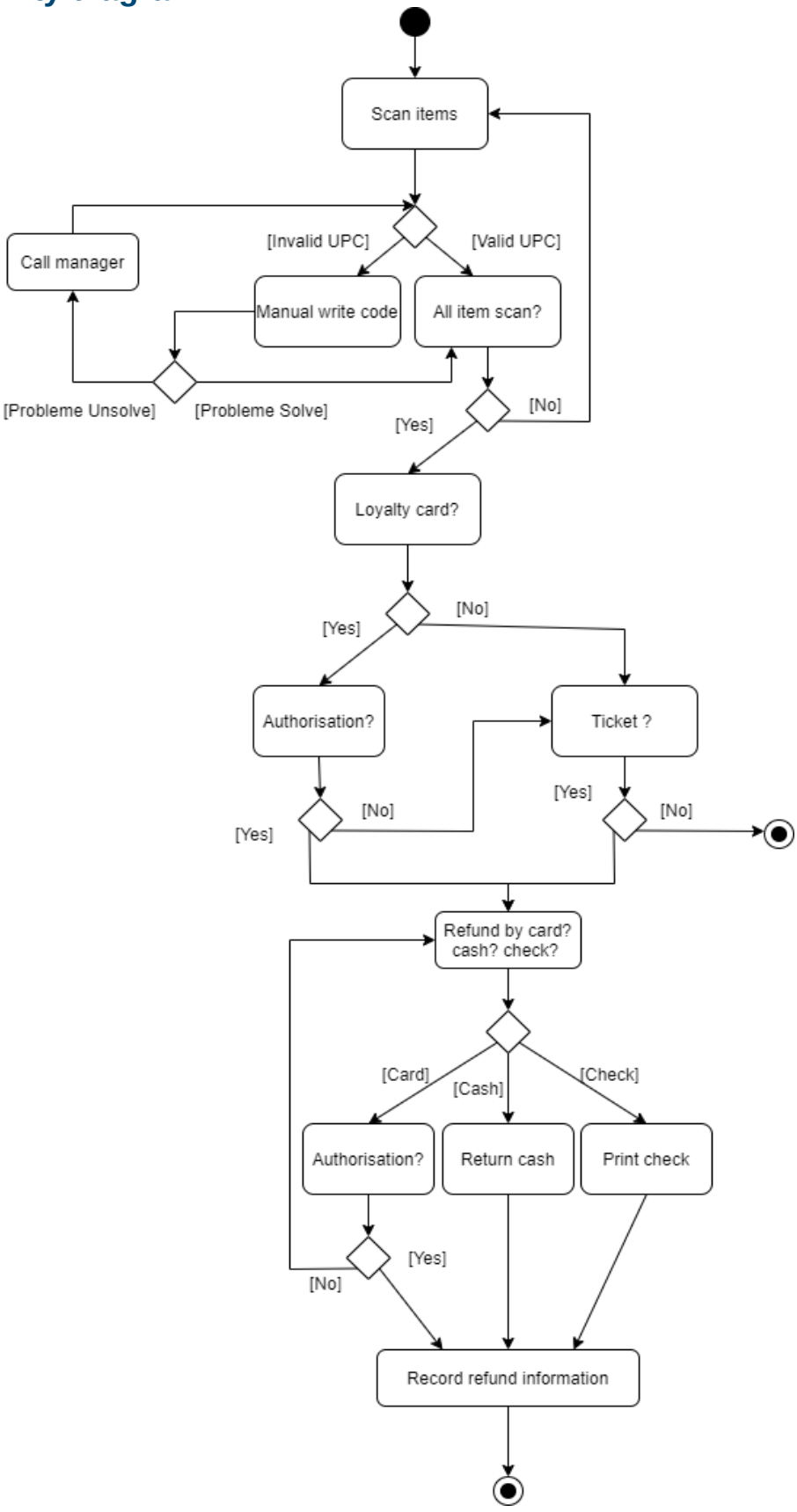


II - A customer who returns X items and wants to be reimbursed by card or check or cash with a ticket

II.a. - System sequence diagram



II.b. - Activity diagram



II.c. - User interface drawing

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II.d. - Main non-functional constraints, main risks

The main non-functional constraints are related to the hardware. As an input, the system must be able to read and interpret the loyalty card by magnetic stripe to access the customer's purchase information. The system must also be able to control the amount of paper and be able to print checks for refunds, as well as have the authorization to credit bank cards.

The main risk in refunds is the case where the customer returns items for a large amount of money that would empty the cash register or make it difficult to trade afterwards (impossible to return change). Therefore, the system should only allow refunds in the amount of 40% of the whole sum from the storage of money. Also, after a return, the system must add this transaction to take out the money and edit the storage with the returned items.

II.e. - A class diagram of the case objects