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Supervised Work 1: Use Case Diagram

Exercise 1:

We aim to automate the management of a university library. This library is managed by a **manager,** responsible for **registrations** and **reminders** to readers when they have to return their books beyond the authorized deadline. Librarians are in charge of **managing book loans, returns,** as well as **the acquisition** of new books.

There are three **categories of subscribers:**

-First, **Students** who only have to pay a fixed amount for one year in order to have access to all library services.

- Access to the library is free for all **teachers**.

- Finally, it is possible to authorize **students from another university** to exceptionally register as subscribers upon payment of a fee.

The number of external subscribers is limited each year to approximately 10% of subscribers. A new consultation service for the general catalog of books must be implemented. The books, often acquired in multiple copies, are stored on shelves in the library. Each copy is identified by a reference, managed in the catalog, and the code of the department (shelf) where it is stored. Each subscriber cannot borrow more than three books. The borrowing period for a book is three weeks, however it can be exceptionally extended to five weeks.

Question: It is requested to develop the use case diagram of this system.

Exercise 2:

A travel agency organizes trips where **accommodation is in a hotel.** The travel organization task is broken down into three tasks, modeled by the three use cases: booking a hotel room, booking a taxi, and booking a train ticket. Provide use case diagram for the following cases:

1. The customer must **have a taxi available** when **arriving at the station** to get to the hotel.

2. Some clients ask the travel agent to provide a detailed invoice. This gives rise to a new use case called 'Provide an detailed invoice'. How can this case be related to existing cases?

3. Travel is either by plane or train. How to model this statement?

Exercise 3

In a school, we want to manage the **reservation of** classrooms as well as **educational equipment** (laptop or video projector). Only **teachers** are authorized to **make reservations** (**subject to availability of the room or equipment**). The **room schedule** can be **consulted** by **everyone** (teachers and students). However, **the time summary per teacher** (calculated from the room schedule) can only be consulted by teachers. Finally, for each training there is a **responsible teacher** who alone can **edit the** timetable summary for the entire training.

Exercise 4

Analyze the use case diagram in Figure 1, checking in particular whether it correctly specify the statement below, indicate what problems you see there and what corrections you would make.
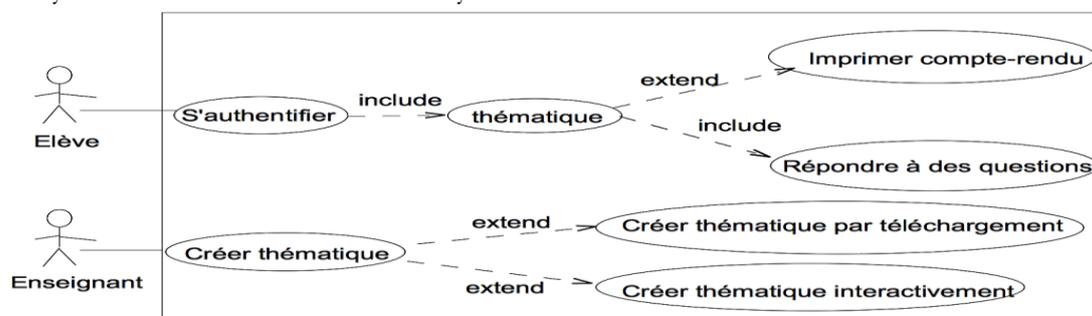

Figure 1: Use case diagram

Statement: We define a use case diagram for question-and-answer software, so that students can test their knowledge of mathematics.

- A student can work on a theme only after authentication. Working on a theme includes answering questions. After their work, the student can, if they wish, print a report.

- A teacher can create a theme. There are only two ways to create a theme, either by downloading a text already written in a predefined format, or interactively. **Good luck**