Class Diagrams

Exercises

University

- In a university there are different classrooms, offices and departments. A department has a name and it contains many offices. A person working at the university has a unique ID and can be a professor or an employee.
- A professor can be a full, associate or assistant professor and he/she is enrolled in one department.
- Offices and classrooms have a number ID, and a classroom has a number of seats.
- Every employee works in an office.

University: solution

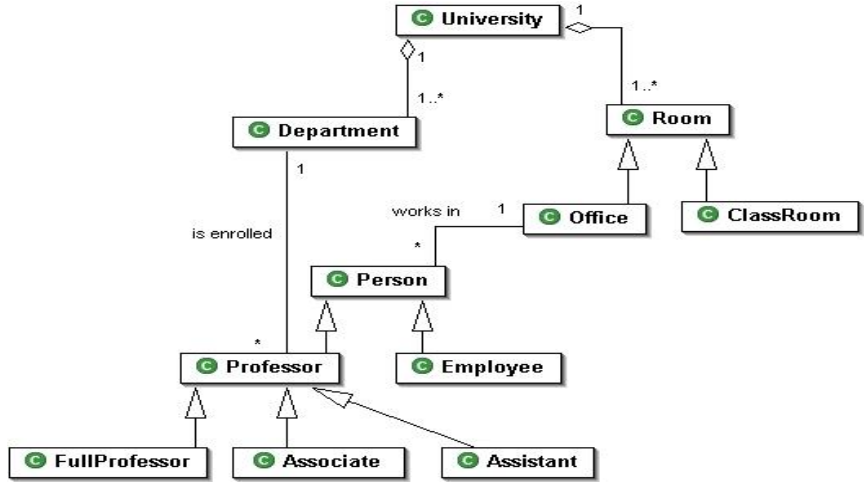

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Diagram made with Omondo UML tool

Movie- Shop

- Design a system for a movie-shop, in order to handle ordering of movies and browsing of the catalogue of the store, and user subscriptions with rechargeable cards.
- Only subscribers are allowed hiring movies with their own card.
- Credit is updated on the card during rent operations.
- Both users and subscribers can buy a movie and their data are saved in the related order.
- When a movie is not available it is ordered .

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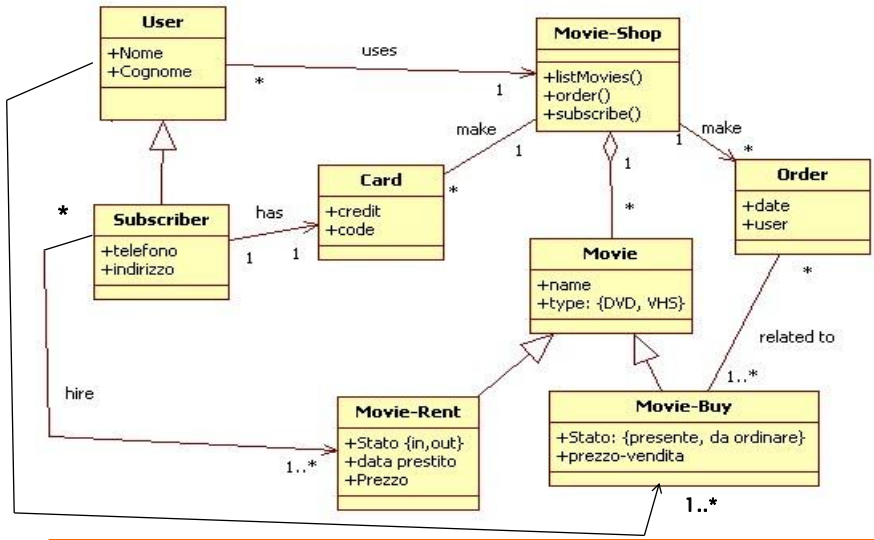
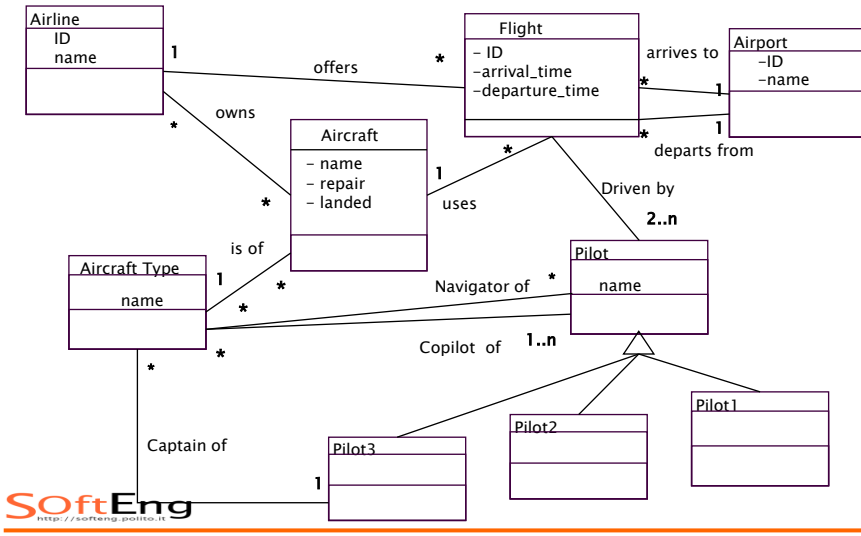
Movie-Shop: solution



Flights

We want to model a system for management of flights and pilots.
An airline operates flights. Each airline has an ID.
Each flight has an ID a departure airport and an arrival airport: an airport as a unique identifier.
Each flight has a pilot and a co-pilot, and it uses an aircraft of a certain type; a flight has also a departure time and an arrival time.
An airline owns a set of aircrafts of different types.
An aircraft can be in a working state or it can be under repair.
In a particular moment an aircraft can be landed or airborne.
A company has a set of pilots: each pilot has an experience level: 1 is minimum, 3 is maximum.
A type of aeroplane may need a particular number of pilots, with a different role (e.g.: captain, co-pilot, navigator): there must be at least one captain and one co-pilot, and a captain must have a level 3.

Flights – solution



Bank system

A bank system contains data on customers (identified by name and address) and their accounts.

Each account has a balance and there are 2 type of accounts: one for savings which offers an interest rate, the other for investments, used to buy stocks.

Stocks are bought at a certain quantity for a certain price (ticker) and the bank applies commission on stock orders.

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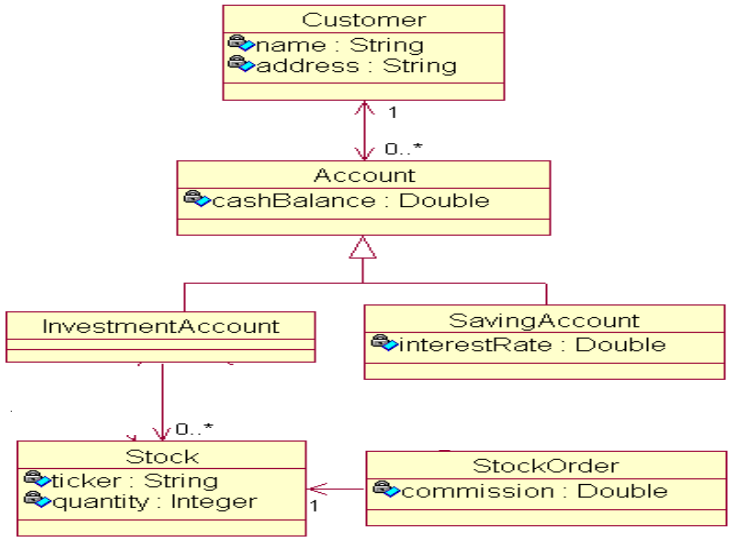
Bank solution



Statecharts

Exercises

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