

# Exercises 18

## inheritance

### Exercise 1.18 - Bank accounts (continued)

We will develop the example of bank accounts being seen in previous exercises. We introduce a new concept: the proxy. In most accounts it holds, a person may have a proxy on behalf of another person. This allows him to make transactions on the account (eg deposits and withdrawals), but it does not give the right to give another proxy to the account. Only holders may give a proxy to an account.

### Exercise 2.18 - Husband and wife

In Java it is possible to have an instance variable in an object, which is of the same type as the object that contains it. This is possible thanks to the notion of reference: the variable does not contain the object itself but a means to find it.

In addition, the null value allows us to create the first object of the class in question. Its variable can not be initialized (except possibly by itself, which is possible).

We will use this opportunity to create a class `UnePersonne`, which contains information such as the name, age and sex of the person and the spouse (husband or wife).

#### Question 18.2.1

Make a first version of the program where only one spouse's name appears in the class `UnePersonne`. The class will include a **method to marry** the person to someone (another instance of the object class `UnePersonne`) and another **to divorce** the person.

There will be exceptions to prevent minors under the age of 18 to marry, to prevent people already married to remarry and to prevent unmarried people to divorce.

#### Question 18.2.2

Change the class obtained in Question 1 by replacing the class name of spouse by a reference to the object that represents the spouse.

It has much more information on the spouse, thereby verifying that the two people are of the opposite sex. You treat it with an exception.

We now seek to ensure that the information of marriage and divorce are **consistent**, ie when **a has spouse b**, **b must have spouse a**. On the other hand, if a divorce b, then b should no longer have spouse a. This implies that methods of marriage and divorce not only change the object to which they are called, but also its own parameters.