World of Robots

Master 1 Génie Physiologique et Informatique

Lab 4.4 : Helpy, a first prototype

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Class diagram:

Identification of the nature of the different relationships:
The robot class uses functionality present in the patient and drug classes. It uses the methods of these classes to check for contraindications and issue prescriptions. This represents a usage relationship between the robot class and the patient and drug classes

Demonstration of functionalities:

To know if the drug is contraindicated for the patient

- **Pregnant contraindication**

We are going to test what happens when a drug is contraindicated. Let's start with pregnant women. To do this, we create an object of the "Patient" class and set the "enceinte" attribute to "true." We also create an object of the "Drug" class, entering all the required attributes (dosage, active ingredient, number of pills, etc.) and specifying that it is contraindicated for pregnant women. Finally, we create a robot that links the patient to the drug. Once all these objects are created, we click on the "CheckContraindication()" method, and the result returned is "true," indicating that the drug is indeed contraindicated for this woman.

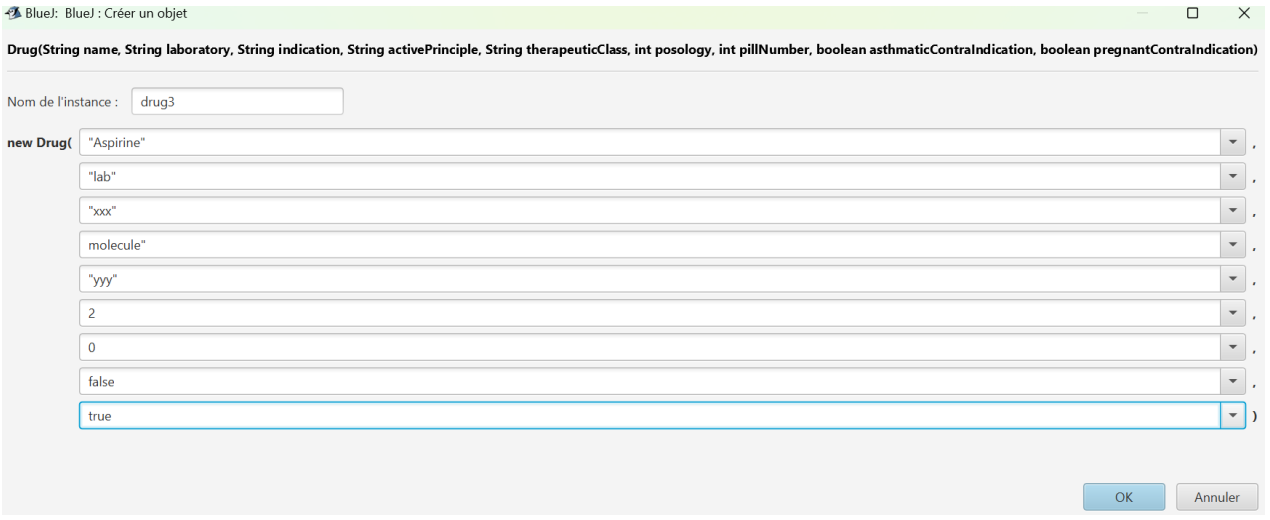


Figure 1: Creation of “drug contraindicated for pregnant poeple” object

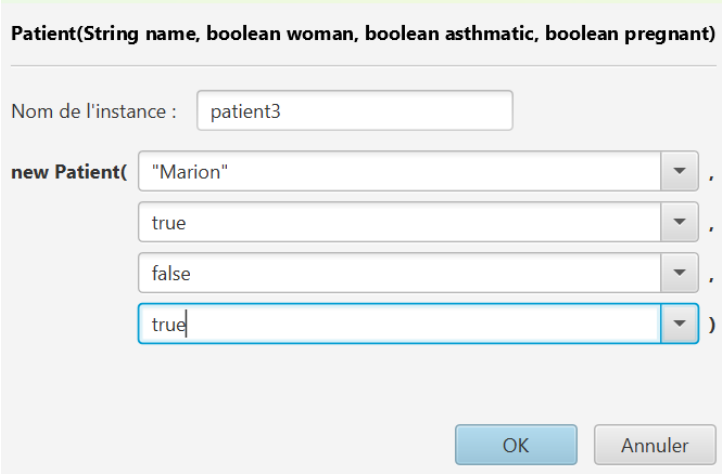


Figure 2: Creation of a “patient pregnant” object

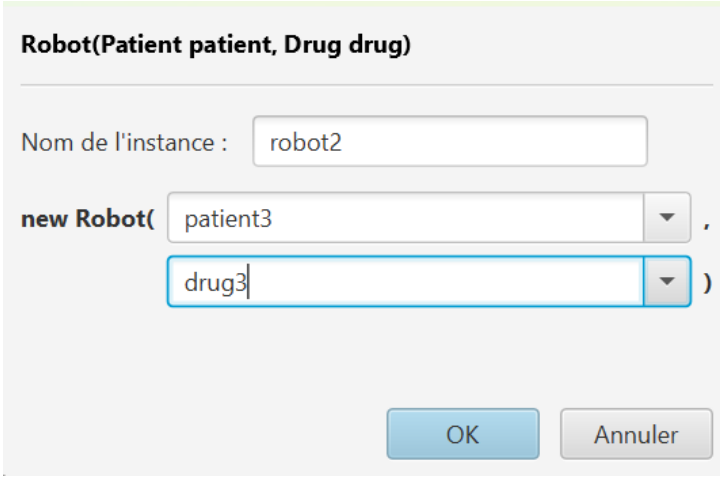


Figure 3: Creation of “robot” object with one drug and one patient

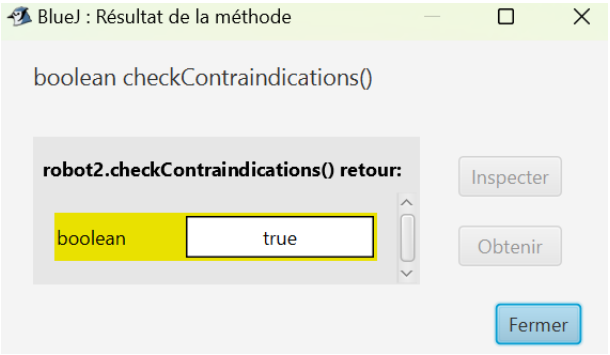


Figure 4: Results of pregnant contraindication

- **Asthmatic contraindication**

The process is the same to check if a drug is contraindicated for an asthmatic person, with the exception that when we create the "Drug" object in the "Drug" class this time, we set the "asthmatic" attribute to "true."

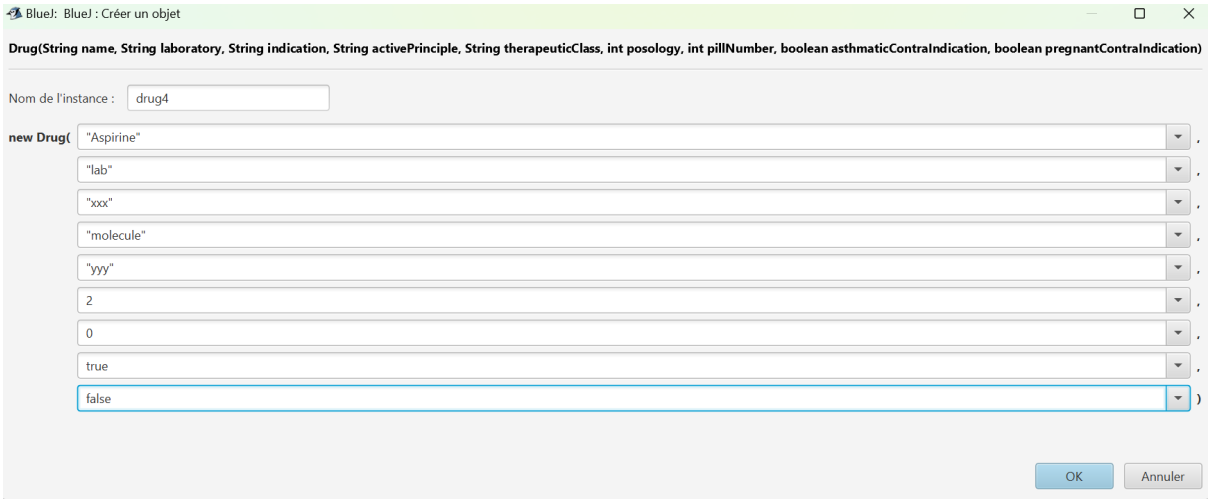


Figure 5: Creation of “drug contraindicated for asthmatic people”object

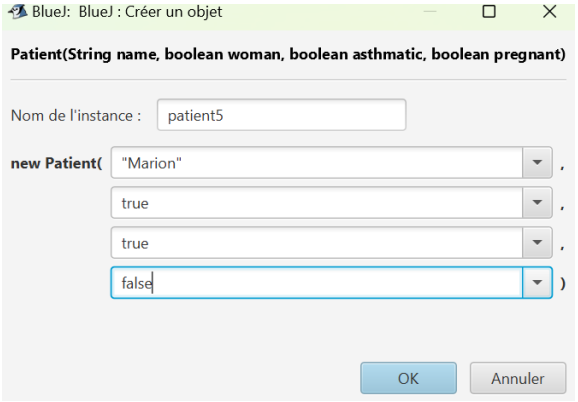
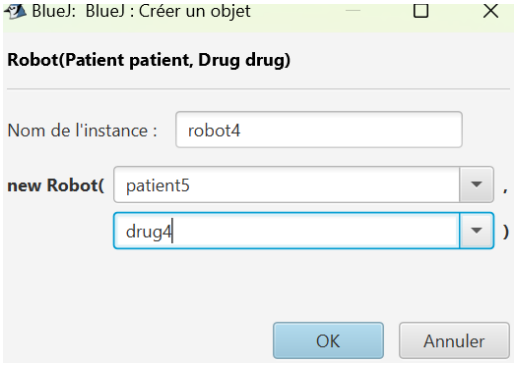


Figure 6: Creation of “patient asthmatic” object



Figures 7: creation of the robot object with the patient object and the drug object already created

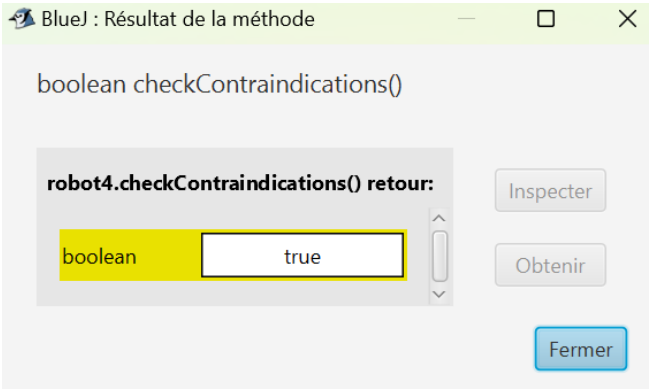


Figure 8: Results of asthmatic contraindication

- **Any contraindication**

To conclude with contraindications, we created a "patient" object who is neither pregnant nor asthmatic to verify that in this case, the boolean returned is "false," which means that he is not affected by the contraindications of the medication.

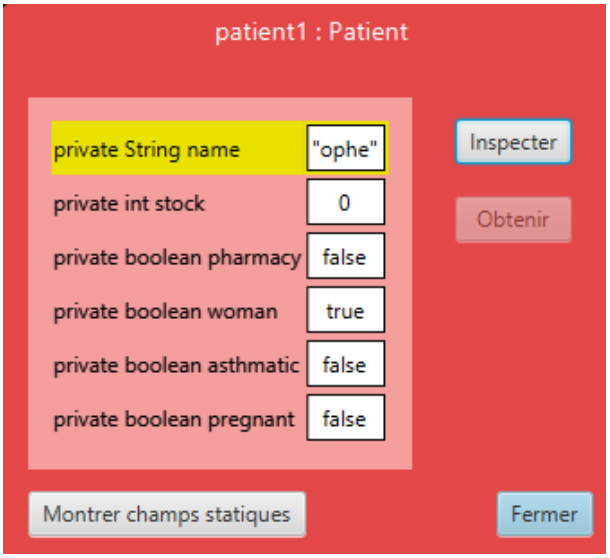


Figure 7: Creation of a “normal patient” object

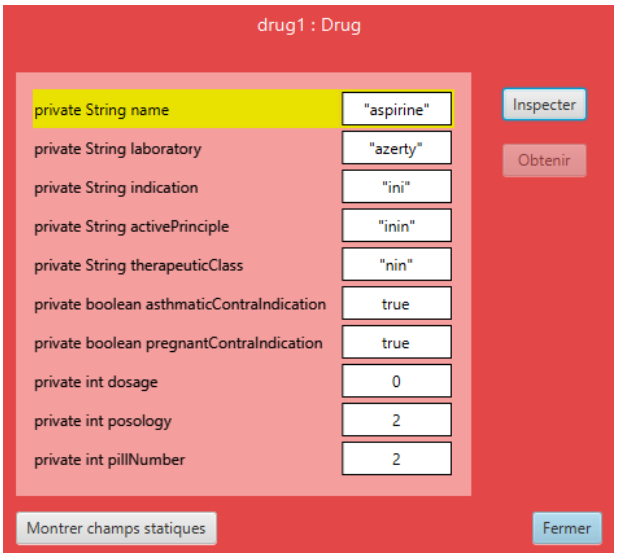


Figure 8: Creation of “drug contraindicated for pregnant people and asthmatics” object

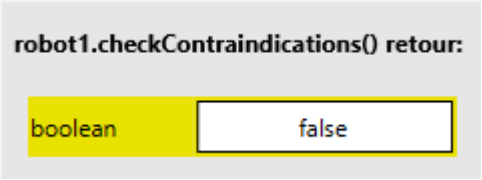


Figure 9: Results

To buy new drugs if necessary

Furthermore, we entered "0" as the number of pills available in the patient's stock for the same medication. However, the dosage for this medication is 2 pills per day. If we check using the "VerifStockDrug()" method, the result returned is "Purchase new Aspirin tablets," for example.

```
Drug drug2 = new Drug("Aspirine", "lab", "jsp", "molecule", "ddzd", 2, 0, true, false);
Patient patient2 = new Patient("Marion", true, false, true);
Drug drug3 = new Drug("Aspirine", "lab", "xxx", "molecule", "yyy", 2, 0, false, true);
Patient patient3 = new Patient("Marion", true, false, true);
Robot robot2 = new Robot(patient3, drug3);
robot2.checkContraindications()
    returned boolean true
robot2.verifstockDrugs();
Acheter de nouveaux comprimés de Aspirine.
```

Figure 10: Results when there is enough medication

Now, if we add 2 more medications to the stock, still with the same dosage, this time the message returned is "You have enough medication."

```
robot2.verifstockDrugs();
Vous avez assez de médicament
```

Figure 11: Results when there is not enough medication

Drug delivery

The robot needs to deliver the correct pill number of the drug to the patient. After the delivery, the pill number needs to be adjusted with the quantity taken. If we don't have enough pill numbers, we need to inform the patient (like the example in the figures 12 and 13).

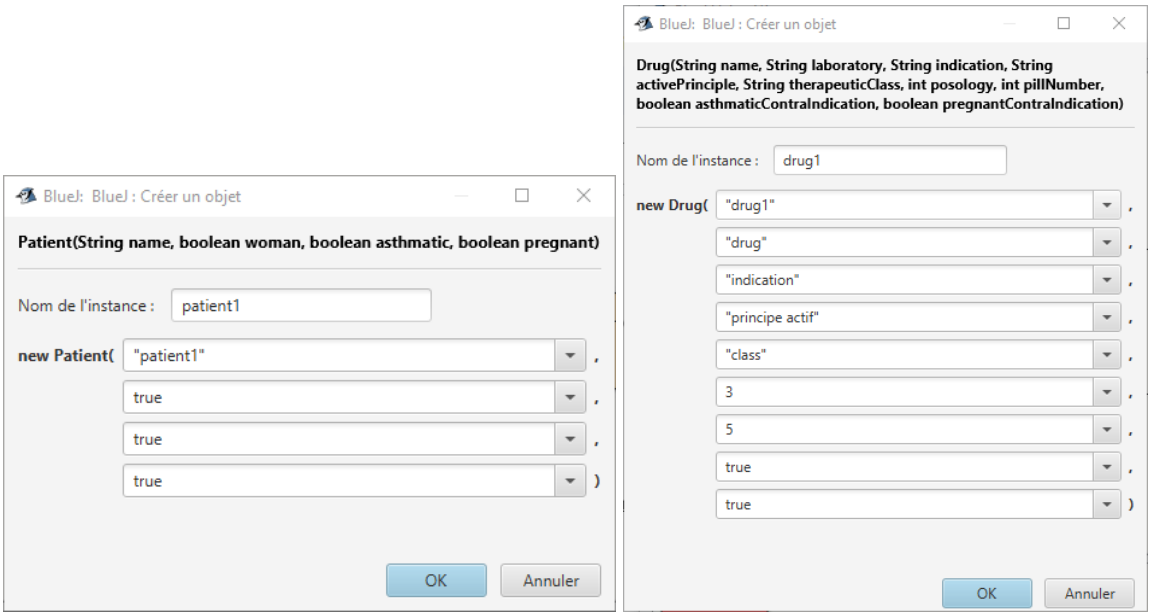


Figure 12 : Creation of patient and drug instance

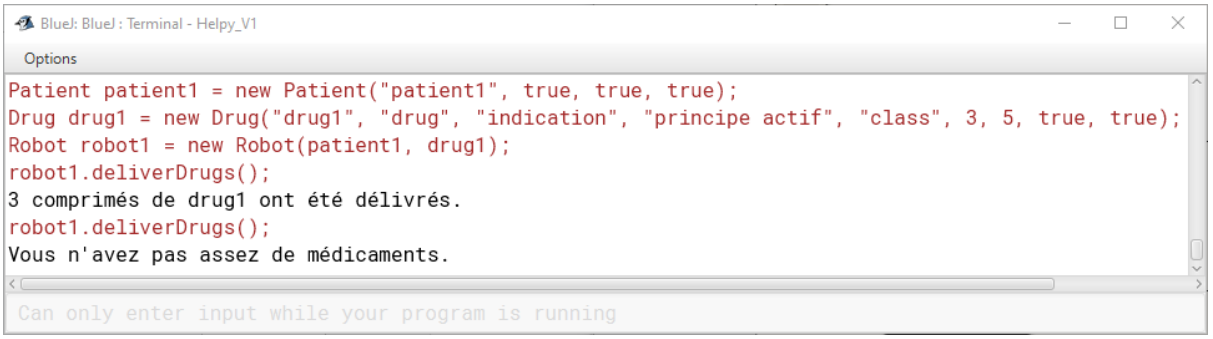


Figure 13 : Results of the drug delivery