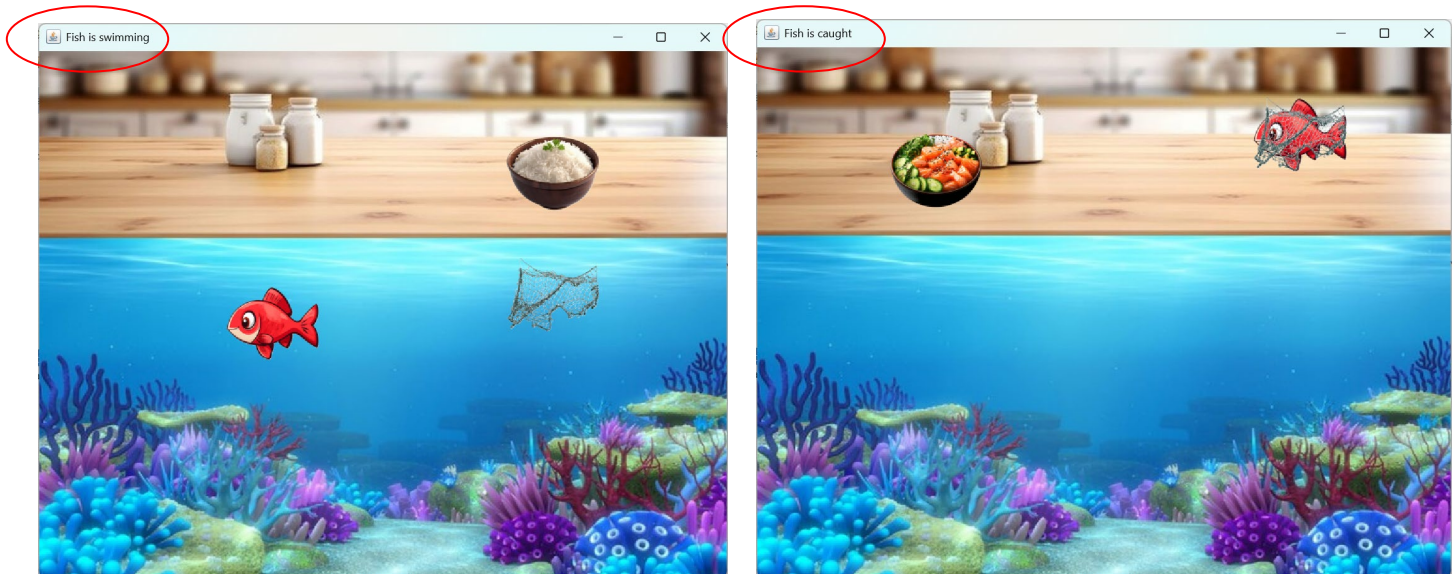


### Exercise 8 (10 points) - can be done individually or in pair

- The first lines of all source files must be comment containing names & IDs of all members. Also create file readme.txt containing names & IDs of all members.
- Put all files (source, input, output) in folder **Ex8\_xxx** where **xxx = your full ID**. That is, your source files must be in package Ex8\_xxx and input/output files (if there is any) must be read from/write to this folder. From now on, you'll get point deduction for wrong package & folder structure.
- The group representative zips Ex8\_xxx & submits it to Google Classroom. The other members submit only readme.txt. Email submission is not accepted.
- The exercise is graded only once, and after graded, members can't be added.

=====

All source files and resources folder must be placed in folder Ex8\_xxx.



Complete classes MainApplication and other classes of custom labels (FishLabel, Netlabel, and BowlLabel) to make the program work as follows.

#### 1. class FishLabel extends BaseLabel

- 1.1 When not caught in the net (not overlapping with netlabel) → it can move by arrow keys UP/DOWN/LEFT/RIGHT. Its icon will also change to left/right facing accordingly.
  - When reaching the left/right end of the frame, it'll appear on the opposite side.
  - It can move up/down only in the sea. So, when reaching the top/bottom of the sea, it won't appear on the opposite site.
  - It won't respond to ESC key.
- 1.2 When caught in the net (overlapping with netlabel) → it can't move by arrow keys, but can be dragged along with the net within the whole frame.
  - When touching the bowl (overlapping with bowlLabel), the bowl's icon will change to sashimi bowl.
  - When pressing ESC, it will escape from the net to a random location in the sea.

#### 2. class NetLabel extends BaseLabel implements MouseMotionListener

- 2.1 It can be dragged only inside frame's area, in both sea and kitchen.
- 2.2 Once overlapping with the fish → the fish will be dragged around with it until pressing ESC.

3. `class BowlLabel extends BaseLabel`

- 3.1 It can move by alphabet keys: A for left, D for right. When reaching the left/right end of the frame, it'll appear on the opposite side.
- 3.2 When overlapping with the fish, its icon will change to sashimi bowl.
- 3.3 When pressing ESC, its icon will change back to rice bowl.

4. `class MainApplication extends JFrame implements KeyListener`

- JLabel cannot hear KeyEvent. We have to make JFrame hear & handle KeyEvent on its behalf. We need different sets of keys for fishLabel and bowlLabel, but JFrame will handle KeyEvent to move only 1 of them at a time.

5. You can add move variables/methods or make further modification to any class as needed.

**Note:** to check whether 2 labels overlap

```
if ( this.getBounds().intersects(otherLabel.getBounds()) )
{
    otherLabel.doSomething();
    this.doSomething();
}
```