**Fish Kingdom**

**Program Description:**

**Table 1. Conditions of method implementation**

|  |  |  |  |
| --- | --- | --- | --- |
|  | eat()\* | sleep() | grow() |
| Herbivores | Hunger > 7  &  Food type is “Plant” | Tiredness > 6 | Hunger < 5  &  Tiredness < 5 |
| Carnivores | Hunger > 6  &  (Food type is “Meat”  Or  Fish slower and smaller by 2 points ) \*\* | Tiredness > 7 | Hunger < 6  &  Tiredness < 5 |
| Omnivores | Hunger > 7  &  ( Food of any type  Or  Fish of slower speed and size up till 2 points bigger) \*\*\* | Tiredness > 7 | Hunger < 7  &  Tiredness < 8 |

**Table 2. Actions taken in the method if the conditions were met**

|  |  |  |  |
| --- | --- | --- | --- |
|  | eat()\* | sleep() | grow() |
| Herbivores | Hunger decreases by food size | Tiredness decreases by 3 | Size, hunger and tiredness increase by 1 |
| Carnivores | Hunger decreases by food size or fish size according to what was eaten  &  Tiredness increases by 1/3 of meal size (use *floor* to keep Tierdness an integer) | Tiredness decreases by 2 | Size increases by 2,  hunger by 3 |
| Omnivores | Hunger decreases by food size or fish size according to what was eaten  &  Tiredness increases by 1 | Tiredness decreases by 4  &  Hunger increases by 2 | Size and speed increase by 1  Hunger and tiredness increase by 2 |

\* eat() updates lastMeal with the food. If the food type was “Plant” or “Meat”, just store “Plant” or “Meat” in lastMeal and replace the food object that was eaten with null. If the food was fish, store in lastMeal the string “fish” concatenated with the array index of the fish that was eaten and turn the isDead to true.  
\*\* decision whether food or fish is eaten is chosen randomly.   
\*\*\* choice of meal depends on preferredMeal but meeting the conditions in the table. If preferredMeal in not available, you should choose it randomly.  
Note: each method updates the lastAction field in the fish object to the method’s name.

1. The “step” method:   
   “step” method passes one unit of time. In a step, every fish does **only** one of 3 possible things: eat, sleep or grow.  
   Each fish has different precedence order.  
   Herbivores: sleep, grow, eat  
   Carnivores: eat, sleep, grow  
   Omnivores: grow, eat, sleep
   1. If the method’s conditions are not met, the fish moves to the next method in its order.
   2. If none is met the fish does nothing.
   3. If a fish is dead it does nothing in the step method.