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Del 2.1: Object-Oriented Concept note+s

Members Group 5 :

DEVOUCOUX Grégoire (Scribe) - LASFAR Nisrine - HACQUART Virgile - ROUIBAH Bilal (Group Leader) - ILEKTI Linda (Time Keeper)

Purposes of the project :

This project focuses on developing an interactive application called the "World of Robots." The application generates a window that represents a virtual world where robots can autonomously navigate and interact. Users can create new robots and control their movements. There are certain rules: if robots collide with each other or exit the boundaries of the world, they will be destroyed.

Robot class :

- Each robot has a different color decided when created by the system user.

Name :

- Each robot has a name of at least 3 characters with no spaces on the first one, no “-” and space next to each other.
- At the creation of the object Robot, we name it inevitably.
- Presence of name setter and name getter.

Position and movement :

- Presence of movement methods specific to each robot. For example, one robot can only move 1 square per 1 square or one robot can move only in a horizontal plan.
- Each robot when created has a start position chosen randomly in the Canva by a method.
- Presence of xPosition setter, yPosition setter, xPosition getter, yPosition getter.
- Presence of moveVertical, moveHorizontal.

Security :

- Method to avoid collision between robots and potentially change their movements if a collision is expected.
- Method to destroy robots when there is a collision between them.
- Method to destroy a robot leaving the canva’s boundaries.
- methods following Asimov’s rules to avoid collision between robots.

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Canvas class :

- A graphical framework named “RobotCanvas”.
- It will display the map of the world of “WorldOfRobots” and the different robots that will evolve in this map with defined boundaries.
- Robots should be able to move through their internal xPosition and yPosition values.

Robot class attributes:

1. Attribute name: **yPosition / xPosition**
    a. Type: integer
    b. Short description: give the position of the robot in the Canva.
2. Attribute name: **Color**
    a. Type: string
    b. Short description: this attribute defines the color of the robot.
3. Attribute name: **Security**
    a. Type: boolean
    b. Short description: shows the life state of the robot, true = destructed and false = alive.

4. Attribute name: **Robot**
    a. Type : constructor
    b. Short description : create a robot, make it visible, assign name and assign a color

Class method:

1. Method name: **MouvHorizontale**
    a. Category: modifier
    b. Signature: public void Mouvhorizontale(int amount);
    c. Short description: this method allows the robot to perform a horizontal movement.

1. Method name: **MouvVertical**
    a. Category: modifier

b. Signature: public void MouvVertical(int);

c. Short description: this method allows the robot to perform a vertical movement.

3. Method name: **Watch**

a. Category: getter

b. Signature: public watch(boolean);

c. Short description: this method determine if an robot is on the same square than an other robots or if it leave the area

4. Method name: **Delete**

a. Category: modifier

b. Signature: public void Delete(boolean);

c. Short description: this method suppress robots with a security attribute = TRUE