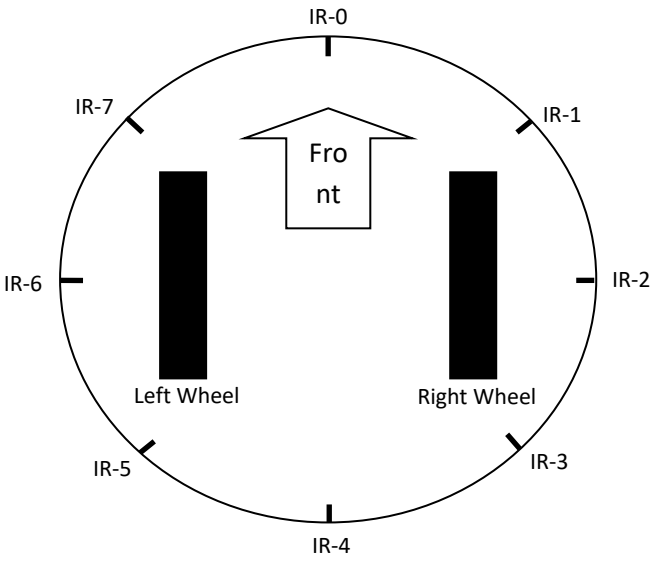
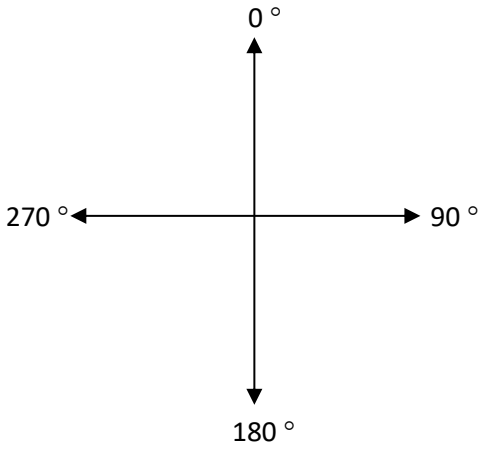
IRP-AML-Assignment#1
(Simple Reactive/Functional Control (PyRCSimbot))

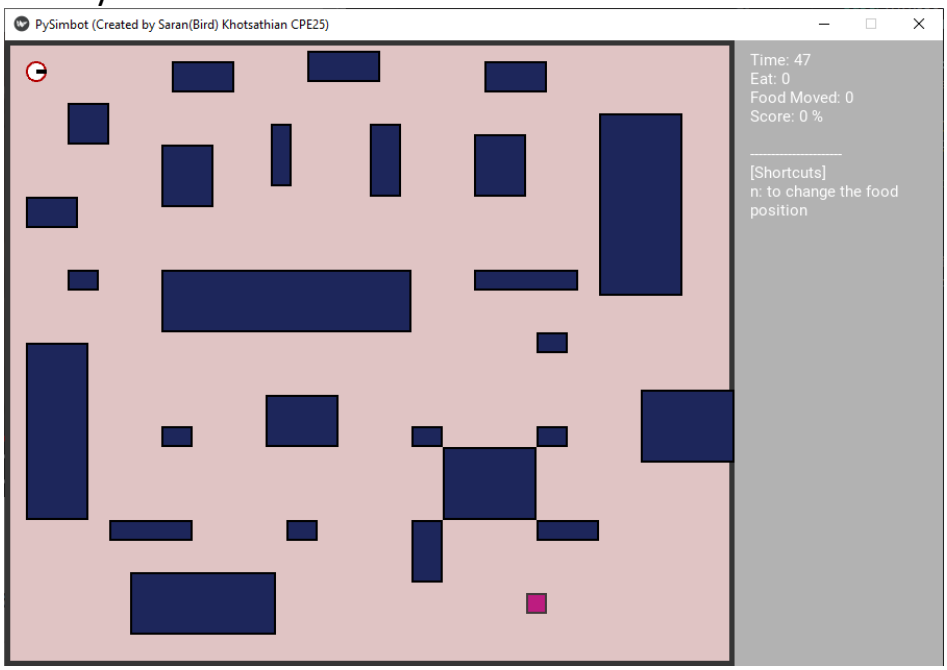
Let's design a reactive control for **a very simple simulated robot** (**PyRCSimbot**: you can download from the class website). In this assignment, we will give you simulation robot codes (in python, of course), which you will work on it. There are some limitations and specifications about the robot we are using, as follows…

- The robot has only 8 infrared sensors (IR-0, IR-1, IR-2, …, IR-7) locating around the robot. Each sensor reads the distance to the nearest object in its direction. The possible value is 0 to 100 pixels. It means the sensors are only checked for the 100 pixels ahead in its direction.
    - The sensory information can be gathered by calling **self.distance()**. For example IR = **self.distance()**. Then, the updated sensory information are in a array variable of IR[8]. The index is used relating to sensor's position on the robot. For example, we use IR[0] keeps the information of sensor IR-0.
- The direction of the robot is referred to its head position which is referred to 0 degree. The other directions are then referred in clockwise direction.
    - In addition, the robot can smell for direction of food. By calling **self.smell()**, the robot can get the direction of food referred to the heading position of the robot.
    - For the actions, there are 3 commands available to use. There are **self.move(distance)**, **self.turn(angle)**. Please use only these commands.
        - Note :
            - positive angle is clockwise
            - default distance = 1
            - distance should not more than 10
    - The robot program should be written in a file named **run.py**. You can do or modify whatever you want to program it moving.
    - The environment is shown below. The robot is a circle with a small circle on it. The small circle indicates the heading position of the robot. There are 26 obstacle boxes on the field. The robot cannot move pass it. If the robot is forced to move into the obstacle it will force to return the previous position. The green square on the right is the food and it can be smelled by the robot. The robot will get a direction (reference to the direction of its heading) to the food when it tries to smell.





- The environment is static. All obstacles are not moving during execution. The food is also not moving. The robot start position and head direction are the same every execution.



- Your task is

Writing a reactive control program with limited capacities; so that the robot has to move pass the obstacles toward the food as fast as it can.

- When we talking about reactive control, we are talking about the system that uses the current input information to select the actions without looking ahead or planning.

Please do it wisely and the most importance thing is please do it by yourself.

Don't use any random function. Let's have fun with it. Don't worry about the score toward your robot performance. I love to see you efforts in solving the problem the most. At the end, you will learn a lot. ☺