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Assignment 6 Report – Cat Simulation

COMP110 Object-oriented Programming

Algorithm Explanation

This program was created to animate a randomly moving cat in a world of blocks. Cat is created by using Cat class.

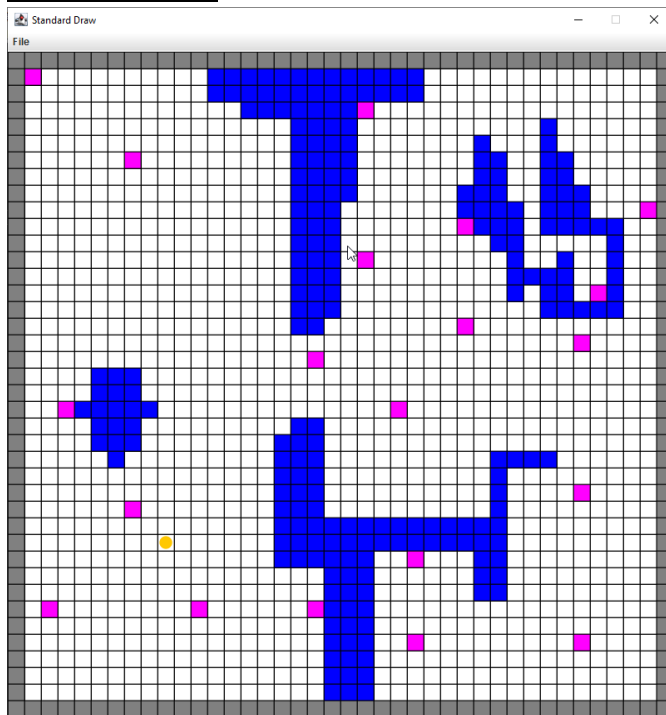
Firstly, the text “world.txt” was read in the correct format to get the numbers of columns and rows; walls, seas, and foods. Separated ArrayLists were used to store the number of walls, seas, and foods. And additional ArrayLists were used to store their x and y coordinates.

An endless while loop was used to draw all the blocks and move the cat. This loop includes some if, else if, else statements to check the specific conditions.

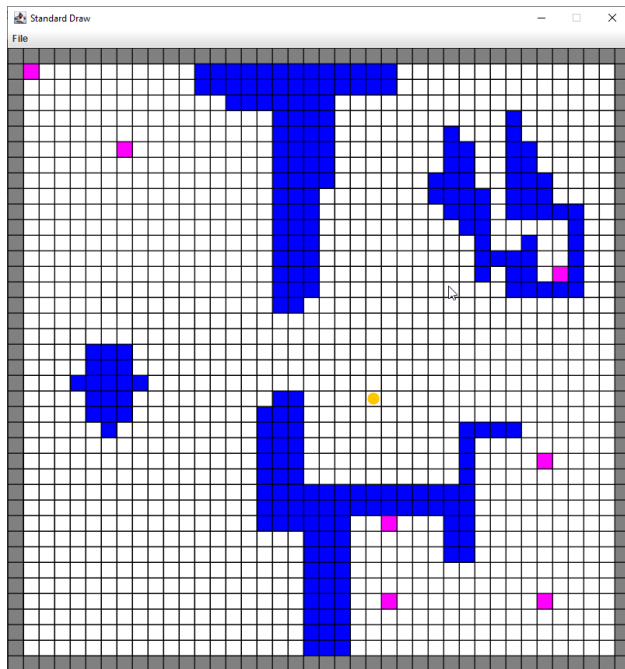
A boolean method “checkValid” was added to check the specific locations. And a method named “findIndex” was added to find specific coordinations' index in ArrayLists.

Program Outputs

Starting position:

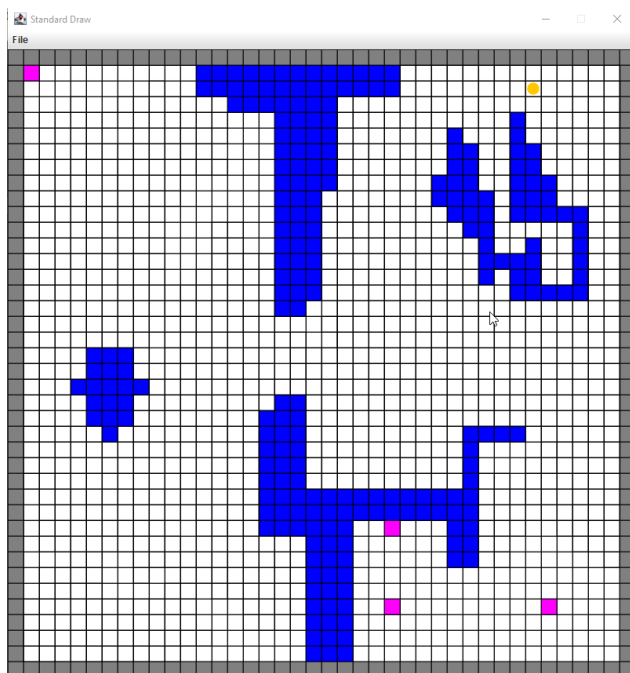


Run-1 (5000 iterations):



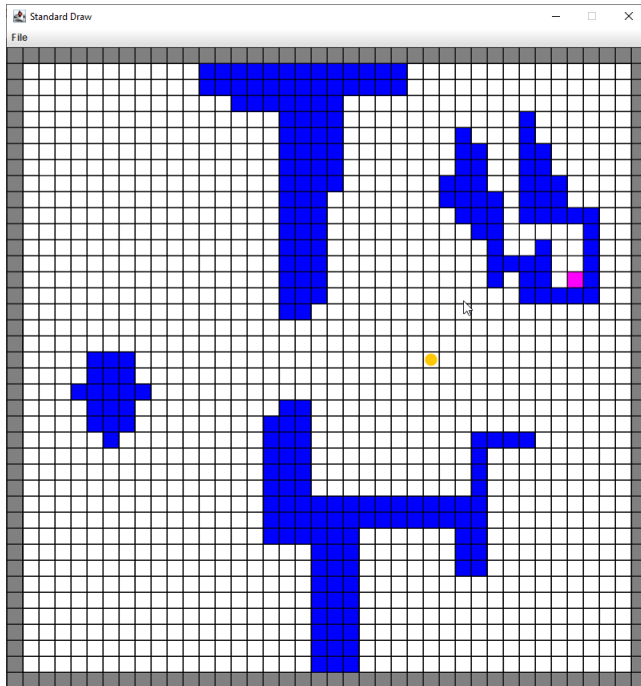
```
in 5000 iterations 13 foods are eaten and there are 7 foods left
```

Run-2 (10000 iterations):



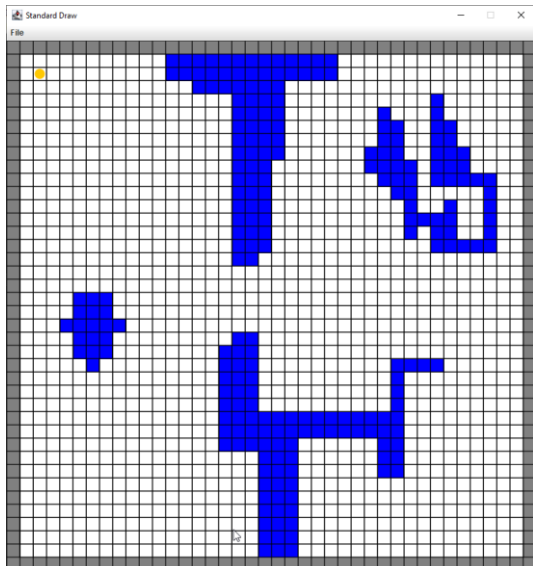
```
in 10000 iterations 16 foods are eaten and there are 4 foods left
```

Run-3 (20000 iterations):



```
in 20000 iterations 19 foods are eaten and there are 1 foods left
```

Run-4 (The case that all foods are eaten):



```
in 44000 iterations 17 foods are eaten and there are 3 foods left  
44590 iterations are needed to eat all foods
```

