29/04/2018

Muhammed Enes TOPTAŞ

PROJECT REPORT

Project #2 - Snakes!

Project Implementation:

game package:

I have copied this package from the first Project. I only changed the order of redraw() and timerTick() so when the game is ran you can actually see the first tick (otherwise you miss the first tick)

main package-Main class :

Game starts here, one can change the game's width, height, size of each square and game speed from here. First snake gets created here at (4,1).

player package-SnakeSimulator class: extends GridGame class

This class implements the game logic, timerTick method is the loop game is played on. Inside this method, there is a map of every snake and according to that map AI decides where the snake can go and calls move() method to move snake. If snake's head is at the same square as the food, it calls grow() method. If snake's size reaches 8, it calls reproduce() method. Map gets updated after every move.

The AI is also implemented here, by goToFood(Snake creature) method. Inside this method, based on the differences of coordinates of the food and the snake, a list gets created and one of the elements of that list gets returned randomly.

For example, if Snake's head is at position (20,15) and food is at position (13,10) → 20-13=7 → Food is at left of the snake so check the left square → if it is empty add it to list, if not don't add→ 15 – 10=5 → Food is above the snake so check the upper square → if it is empty add it to list, if not don't add → If list is not empty, return one of the elements (choose randomly), if list is empty check if there are any free directions snake can go (by using canIMove method) →If there are any free directions, return one of them (choose randomly). Else return null(don't move)

project package-Snake class:

This class implements the snakes and their actions. It has 2 constructors, one is used at the very beginning and the other is used in reproductions. It has a LinkedList called snake which is essentially a collection of Body instances. It has 3 methods; move, grow and reproduce.

move() method keeps the coordinates(int tempx, int tempy) of the snake's head then directly changes head's position according to the argument it got. Then inside a for loop it keeps the coordinates of the second body part(element) of the snake as well(int temp2x, int temp2y). After that it equalizes the second body part's coordinates to head's (which are the tempx and tempy) and then it equalizes tempx and tempy to temp2x and temp2y, so next body part will take the previous body part's coordinates. It returns the last part's coordinates so if there is a consumption, the new part will be located there.

grow() method simply adds a new body part to the snake by adding one more Body to snake LinkedList.

reproduce() method creates a new LinkedList named baby and removes the last 4 part of the parent snake and adds them to the baby snake. After that returns new Snake with "baby" LinkedList.

project package-Body class: **implements Drawable interface**

This class stores snake's parts' coordinates and implements draw method for them(paints square blue). Used as LinkedList's elements.

project package-Head class: **extends Body class implements Drawable interface**

This class extends Body class with only difference in draw method(paints red instead of blue)

project package-Food class: **implements Drawable interface**

This class stores coordinates of food and implements draw method for it (paints small square yellow).

ui package:

I have copied this package from the first Project.

Some other information:

Snake's head is colored **RED**

Snake's other parts are colored **BLUE**

Food is colored YELLOW

Game grids size can be changed inside main class when creating SnakeSimulator instance. Size of each square and game speed are also changeable there. Speed = ticks per second
SnakeSimulator game = new SnakeSimulator(width,height,size of squares, speed)