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Updated GridWorld Part 3

Follow through the GridWorld Activities described in the GridWorld Case Study Student Manual with Appendixes doc found on Canvas.

1. How does Location implement the compareTo and equals methods?

.equals returns true if both objects are in the same row as each other

.compareTo compares two objects, returning a negative number if obj1 has a smaller row than obj2, returns 0 if they have the same rows and columns, and a positive integer if obj1 has a larger row than obj2.

For questions 2-6, the following statements have been run:

Location loc1 = new Location(5, 7);

Location loc2 = new Location(7, 5);

2. How would you access the row value for loc1?

loc1.getRow()

3. What is the value of b after the following statement is executed?

Boolean b = loc1.equals(loc2);

b = false

4. What is the value of loc after the following statement is executed?

Location loc = loc2.getAdjacentLocation(Location EAST);

Location loc = Location(7,6)

5. What is the value of dir after the following is executed?

int dir = loc1.getDirectionToward(new Location(7, 9));

dir = 135

6. What is the value of dir after the following is executed?

int dir = loc1.getDirectionToward(new Location(6, 5));

dir = 225

read through p. 21 –

7. Grid contains method declarations, but no code is supplied in the methods. Why? Where can you find the implementation of these methods?

Grid is an interface. All it’s subclasses make the methods listed in the Grid class.

You can find the implementations of these methods in the subclasses, BoundedGrid and UnboundedGrid.

8. Why do the methods that return multiple objects return them in an ArrayList instead of in an array?

Arrays have a fixed size, while arraylist sizes can be modified.

read through p. 25 –

9. Which methods of the Grid interface are invoked by the canMove method and why?

isValid() and get() are called by the canMove method in order to see if the bug’s movement is valid and to get the location of the bug.

10. Which methods inherited from the Actor class are invoked in the canMove method?

getLocation() getDirection() getGrid()

11. What happens in the move method when the location immediately in front of the bug is out of the grid?

The bug will disappear from the grid

Read through p.28.

Revisiting the ZBug:

Make the ZBug class and ZBugRunner so that when ZBugRunner is run, 5 ZBugs appear randomly on a 20 by 20 grid. Each ZBug should be a different color and each should have a different size of a Z they make (one makes one of length 2, one of length 3, one of length 4, one of length 5 and one of length 6). They should all make Z’s as best they can. If a ZBug gets stuck on a border and cannot continue making its Z, it should stay where it is (i.e. not disappear). Upload these 2 java classes so that they run in the “projects” folder (the same one with BoxBug).

ADVANCED: Once you have that working, improve it so that when the five Zbugs are created and put on the grid, none of them will be within 5 spaces of the bottom or right edge (so that I can see their full Z).