

Homework 08

Eight Puzzle

Objective:

- Write an `EightPuzzleDomain` class that implements the `PlanningDomain` interface and an `EightPuzzleState` class that implements the `State` interface as well as overrides `hashCode()` and `toString()`.
- The eight-puzzle is a three-by-three puzzle with at one tile in each position. The tiles are labeled 1-8 as well as a blank tile, which is represented by 0. The solved position is:
0,1,2,
3,4,5
6,7,8
- To take actions, the blank tile can be swapped with one of the tiles immediately above, below, to the left, or to the right of itself.
- Each transition cost is 1.

Requirements:

- **Functionality. (80pts)**
 - No Syntax Errors. (80pts*)
 - *Code that cannot be compiled due to syntax errors is nonfunctional code and will receive no points for this entire section.
 - Write a class called **EightPuzzleDomain** with the following (40pts):
 - Methods – assume all methods are called with valid inputs
 - `nextState`
 - `transitionCost`
 - `isSolved`
 - `getStateActions`
 - Write a class called **EightPuzzleState** with the following: (40pts)
 - Instance variables
 - A two-dimensional three-by-three integer array that represents the state of the eight puzzle with integer values ranging from 0-8, with the zero representing the blank spot
 - Constructor
 - At least one constructor that takes a two-dimensional integer array that represents the state of the eight puzzle
 - Methods
 - `Equals`
 - Can assume that the other state is always an `EightPuzzleState`
 - `hashCode`
 - Override `hashCode` to produce a `hashCode` that is better than just 0 all the time

- toString
 - Returns a string that represents the 3x3 grid.
- Coding Style. (10pts)
 - Code functionality organized within multiple methods other than the main method, and methods organized within multiple classes where appropriate. (5pts)
 - Readable Code. (5pts)
 - Meaningful identifiers for data and methods.
 - Proper indentation that clearly identifies statements within the body of a class, a method, a branching statement, a loop statement, etc.
 - All the above must apply for full credit.
- Comments. (10pts)
 - Your name in every file. (5pts)
 - At least 5 meaningful comments in addition to your name. These must describe the function of the code it is near. (5pts)

Finally:

Upload all java source files (.JAVA extension) to the CSCE Dropbox