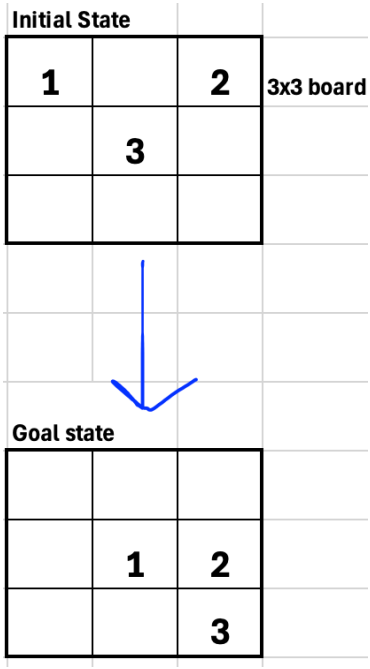
# AI Project1 2024-2025:




You will implement a 3x3 board game. The aim is reaching to the goal state where Tile #1, #2 and #3 are located on the board.

**Requirements**

1. The initial and goal states will be given by user

2. The tiles can be moved up, down, right, or left.

3. The game will begin by the move of Tile #1 (if required) and go on with the moves of other tiles in order.

   For example:

   1st step: move Tile #1
   2nd step: move Tile #2
   3th step: move Tile #3
   4th step: move Tile #1
   5th step: move Tile #2
   6th step: move Tile #3
   ……..

4. Distance(cost) between two neighboring states will be measured based on the move costs as given below

   right or left move → cost =2
   up of down move → cost =1

5. The A* search will be implemented with Manhattan distance as heuristics.

6. The expansion will go on till 10th expanded node. The program will print out each expanded state and compare it with given goal state.

You are free to use any programming language for implementation.

**Due date 09.12.2024**

**Evaluation criteria / Rubric:**

You must upload your report (70pts) + code (30pts) to Blackboard till 09.12.2024

1) In your code, you need to specify which part is written for which requirement (code-20pts, comments-10pts).

2) You must prepare a report that includes

- definition of the game (5pts)
- the list of requirements (you must mention which requirements are mentioned or not) (each requirement-10pts)
- an example execution (by hand → provide the generated tree (all states and costs must be given) that is generated, show the contents of fringe in each step). (5pts)