


### AI Project 2023-2024:

You will implement a game. The aim is to move the robot from the current room (source) to the destination room (goal).

You are free to use any programming language for implementation. If there exists a GUI then you will get more points.

 <b>A</b>	<b>B</b>	<b>C =GOAL</b>
<b>D</b>	<b>E</b>	<b>F</b>
<b>G</b>	<b>H</b>	<b>I</b>

### **Requirements of the Game:**

**R1.** There will be 9 rooms in the game. (They will be located in 3x3 structure as given in example)

**R2.** The source and goal rooms will be given by the user.  
*Example : Source= A, Goal =C in given figure.*

**R3.** The walls between the rooms will be given by the user.

*Example: For the given figure on the right side:*

*AD- wall*

*GH- wall*

*BC- wall*

*EF- wall*

**R4.** The robot can be moved up, down, right, or left. The costs are  
right or left move → cost =2  
up or down move → cost =1

**R5.** The user will choose one of the search strategies: uniform cost and A\* search (use Hamming distance as heuristics).

**R6.** The searching will go on till 10<sup>th</sup> expanded node. The program will print out each expanded state and compare it with the given goal state.

Each student must prepare an individual report and has to demonstrate how his/her program works with a 3-minute screen and audio recording. (due date 21.12.2023).

In the report, you must define the game, clearly state the requirements that you satisfied, give an example execution for each algorithm, draw the generated tree (all states and costs must be given), and show the contents of fringe in each step.

And you must be ready to present your work on 21.12.2022.

!! Do not forget user will provide

1. Initial state
2. Goal state
3. The walls
4. Search algorithm