Artificial Intelligence 1
Programming Assignment 1

Instructions:

(1) Any kind of plagiarism will not be accepted. We will strictly follow the institute plagiarism policy.

(2) Programming Languages allowed: C, C++, Java, Python

(3) Exact details of the input and output format of the program is given on the HackerRank.

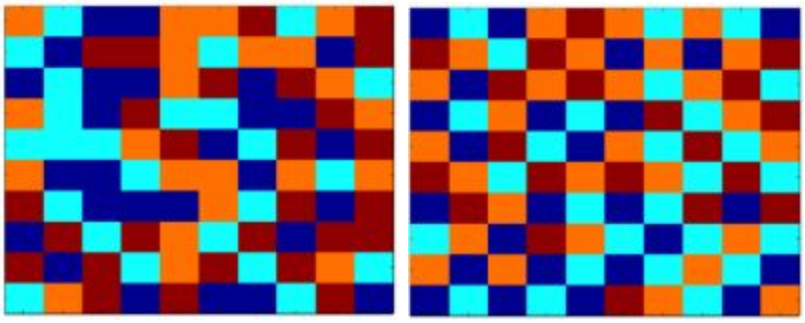
Question 1

Implement A* algorithm on the graph given as input. Your code should output the sequence of nodes expanded and the total cost of the final path.

Note: Your code should be generalized for any graph given as input.

Question 2

For an NXN board with N^2 cells, coloured with four colours (as discussed in the class). Use a genetic learning approach to colour the square board where no adjacent cells should have the same colour. (Hint: in class, we did it for N = 10)



Input Output

Note: Your code should be generalized for any value of N.

Submission:

(1) You need to submit a Report(.pdf file) in the classroom containing:

1. For question 1, run your code on the graph given in question 1 of theory assignment. Define an admissible heuristic and record your results.
2. For question 2, explain the fitness function and the genetic learning approach adopted by you.

(2) You need to submit both the codes on the HackerRank platform. Your codes will be auto-evaluated and will be tested against multiple test cases.
https://www.hackerrank.com/ai-1-assignment-1

(3) Signup on HackerRank using your iitj e-mail id and fill your details in the following sheet:
https://docs.google.com/spreadsheets/d/1K55I14FooG7ybH6Fkg0lioNguLxjIJjTGkk3CeZLeFA/edit?usp=sharing