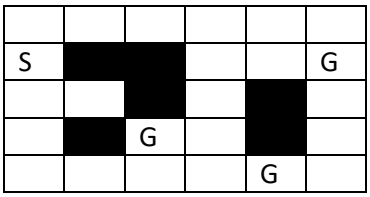
Programming Assignment 1 : Robot path planning using A* search

This is a robot path planning problem on a grid with obstacles. The following figure shows such a grid with obstacles at 6 cell locations. You are to write a code to perform a Brach and Bound search to find the shortest cost path from start location S to any one of the goal locations marked by G. Assume the robot can move to the cell up, down, left or right to the current cell in one move. The cost for moving to the up or down locations is 2 and the cost for moving to the left or right locations is 1.



The input for the above grid will as follows:

5 6 // number of rows and number of columns of the grid
3 1 //sources (S) cell number
3 //number of goals
2 6 //goal cell
4 3 //goal cell
6 5 //goal cell
6 // number of blocked cells. remaining input is the list of the cell numbers that are blocked
2 2
4 2
2 3
3 3
3 5
4 5