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COTC23

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Assignment NO:04.

Aim:-

To solve an N-queen problem using constraint satisfaction.

Theory:

Introduction:

1) The problem is to search out all ways of placing N non-attacking queens on an N by N board. A queen attacks all cells in the same row, column, and their diagonal

2) Therefore, the target is to put N queens on an n by n board in such the simplest way that no 2 queens are on identical rows columns or diagonals.

3) In chess, a queen will move as much as she pleases, horizontally, vertically, or diagonally. A chess board has four rows four column. The quality four by queens' drawback asks the way to place four queens on a standard chess board so none of them will hit the other in one move.

4) To place N queens on an NXN chessboard so that no two queens are attacking one another i.e.
   i) They are not on the same row.
   ii) They are not in the same column.
   iii) They are not on the same diagonal.

Algorithm:-

The idea is to queens one by one differen. columns, starting from the left-most column when we place a queen in a column. we chec for clashes with already placed queens. In the current column, if we find a row for which there in no clash, we mark this row and column as part of the solution. If we do not find such a row due to clashes, then we backtrack and return false.

1) Start
2) Start in the leftmost column.
3) If all queens are placed return true.
4) Try all rows in the current column.

a) If the queen can be placed safely in this row then mark this as part of the solution and recursively check if placing queen here leads to a solution.

b) If placing queen in leads to a solution then return true.

c) If placing queen doey not lead to a solution then unmark this and go to step (a) to try other rows.

5) If all rows have been tried and nothing worked, return false to trigger backtracking
6) Stop.

conclusion :-

Thus we successfully implemented N queens or 4 queens problem using constraint satisfaction.

Implement Map

4. B) coloring problem

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Aim:- To implement map coloring problems

Theory:-

Graph coloring (also know as vertex coloring) is a technique for coloring the vertex so that no two adjacent vertices have the same color..

conclusion:-

Thus, we have implemented N queens problem using colasing problem.