Page No. 1
Date

Dr.D.Y.PATIL
Varale Campus

Assignment No:- 3

Title:- N-Queens Problem using CSP.

Problem:- Implement a solution for a constraint satisfaction Problem using Branch and Bound and Backtracking for n-queen's problem or a graph coloring problem.

Objective :-

*To understand the n-Queen's Problem and Constraint Satisfaction Problem.

*To implement a n-queen problem or graph coloring problem using backtraking or branch and bound.

Theory :-

Constraint Satisfaction Problem (CSP) in Artificial Intelligence.

Finding a solution that meets a set of constraints is the goal of constraint satisfaction problem (CSPs), a type of A.I issue. Finding values for a group of variables that fulfill a set of restriction or rules in the aim of constraint problem.

Variables:-

The thing that need to be determined are variables. Variables in a CSP are the objects that must have a values assigned to them in order to satisfy a particular set of constraint.

Domain: The range of potential values that a variable can have is represented by domains.

Constraints:-

The guidelines that control how variables relate to one another are known as constraints. Constraints in a CSP define the range of possible values for variables.

CSP algorithm:-

The backtracking algorithm:-

Is a depth first search algorithm that methodically investigate the search space of potential solution up until a solution is discovered that satisfies all restrictio

The forward checking :-

Is a variation of the backtracking algo that condenses the search space using a type of local consistency. For each unassigned variable, the methods keeps a list of remaining values and applies local constraints to eliminate inconsistent value.

N Queen Problem using Branch And Bound :-

The N queen puzzle is the problem of placing N chess queens on an N×N chessboard so that no two queens threaten each other. Thes, a solution requires that no two queens share the row, column or diagonal.

In a backtracking solution, we backtrack when we backtrack when we hit a dead end. In Branch and Bound solution, going to hit a dead end.

Let's begin by describing the backtracking solution. The idea is to place queens one by one in different in different columns, starting from the left most column. When we place a queen in a queen in a column, we check for clashes

with already placed queens. In the current column, if we find a row for which there is no Department of Artificial Intelligence and Data Science.

Conclusion :-

We have understood concept of CSP and implemented an n queens problem.

Coding fficiency	Viva	Timely Completion	Total	Dated Sign of Course In-charge
5	3	2	10	

TS	PR	UC	VA	RN	Total
(2)	(2)	(2)	(2)	(2)	(10)
01	02	02	02	02	09 / 10