Assignment No. 3

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Title
Implementation of solution of Constraint Satisfaction Problem like
SEND + MORE = MONEY OR CROSS + ROADS = DANGER

FAQs

1. What are other CSPs?

- Sudoku - Filling a 9×9 grid with digits such ~~as~~ that no number repeats in any row, column, or sub-grid.

- N-Queens - Placing N queens on an N×N chessboard such that no 2 queens attack each other.

- Map Colouring - Assigning colours to a map's regions such that no adjacent regions share the same color.

- Job Scheduling - Assigning tasks to time slots or workers, subject to various constraints.

2. What is meant by constraint propagation?

Refers to the process of enforcing constraints early in the problem-solving process to reduce the search space. ~~Python~~

When a variable is assigned a value, this assignment can limit the possible values of other related variables. By propagating these constraints throughout the system, the algorithm can eliminate inconsistent values and make further decisions faster, increasing efficiency.

3. Why can backtracking search be used to solve CSPs?

Because it systematically explores the search space by assigning values to variables one at a time and checking if the assignment is consistent with the constraints.

If a conflict arises, the algorithm backtracks to the previous decision point and tries a different value. This approach ensures all potential solutions are considered while pruning inconsistent paths early, making it efficient for problems like cryptarithmetic puzzles.

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