**ABSTRACT**

A Constraint Satisfaction Problem (CSP) is a very powerful framework for representing and solving constraint problems. Many real world computational problems in Artificial Intelligence and other areas of computer science can be formulated as CSPs. Problems such as scheduling and timetabling in operations research, map-coloring problem and Boolean satisfiability are some of the examples that can be represented and solved with a CSP framework. Solving a CSP is about searching for a solution in a huge search space. Very often, much search efforts are wasted on the part of the search space that does not lead to a solution. Therefore many search algorithms and heuristic techniques have been proposed to solve CSPs efficiently by reducing the search space.

Backtracking algorithm is the naive technique to solve most of the CSPs. An improvement of backtracking algorithms has been added in this thesis. Moreover, Backjumping Algorithm based on conflict set has been well implemented. General Binary CSP Solving Agent has been proposed with backtracking algorithms. But, these algorithms are generally difficult to understand how they process. So, step by step simulation of N-Queens problem has been made to aid the easy understanding of CSPs processes.

This simulator can not only show the movement of Queens piece but also log the previous movement in the simulation-log. It can also be adjusted the speed of Queens piece movement in five modes in order to see clearly the movement of Queens. The proposed CSP solving agent can also solve other Binary CSPs not just N-Queens problem. In this thesis, experiments have been conducted on totally seven binary CSPs. The Constraint Solver has been programmed using Java programming language.