

Modelling and Solving Exercises in MiniZinc - 3

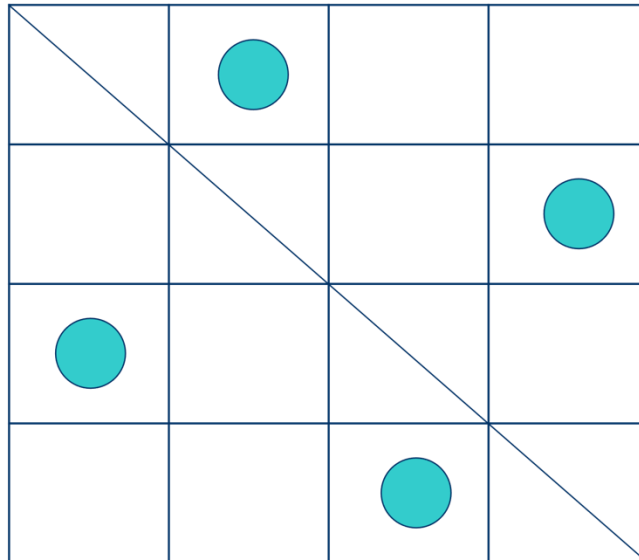


N-Queens

- See the search annotations of MiniZinc in the Reference Manual (S4.2.1.2).
- Using the alldifferent model (without symmetry breaking), search for **a solution** for $N = 30, 35, 45, 50$, using the following 6 variable - value ordering heuristics of Gecode:
 - input order – min value, input order – random value
 - smallest domain – min value, smallest domain – random value
 - domWdeg – min value, domWdeg – random value
- Compare the number of failures.
 - Why do some heuristics give the same results?

Optimal N-Queens

- Add an objective to the alldiff model:
 - Minimize the total distance of the queens to the main diagonal



Optimal N-Queens

- Search for the optimal solution to the 50-queens problem using Gecode, with a time limit of 5 mins (300 secs).
- Experiment with the following search strategies:
 - the default search;
 - the domWdeg-random value heuristic;
 - by adding restarting (Luby strategy with $L = 250$) to the previous;
 - by adding LNS (fixing the 85% of the variables) to the previous.
- Compare the number of failures and the objective value.

LNS in MiniZinc

- See the search annotations of MiniZinc in the Reference Manual (S4.2.1.2).
- Kicks in with restarting.