1 World state

The world is a list $X = s = [n_1, \ldots, n_n]$ where $1 \leq n_i \leq n$. The queen i is denoted as s_i with a value of n_i.

2 Initial states

$S = [x_0, \ldots, x_n]$ where $0 \leq x \leq n$.

3 Final states

$$\text{threatens}(i, j, s) = (n_i = n_j) \vee (|n_i - n_j| = |i - j|)$$

$$\text{threats} = \sum_{i=0}^{n-1} \sum_{j=i+1}^{n} \text{threatens}(i, j, s)$$

4 Transition function

$$[i, b](s) = \begin{cases} n_i = n_i & \text{if } i \neq j, \\ n_i = n_i + b & \text{if } i = j. \end{cases}$$

where $b \in \{1, -1\}$.