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N-queen problem solving using

1. Steepest Ascent Hill climbing and
2. Simulated Annealing Algorithm

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| N | Average iteration  (HC) | Average  Conflicts  (HC) | Minimum  Conflict  (HC) | Average iteration  (SA) | Average  Conflicts  (SA) | Minimum  Conflict  (SA) |
| 4 | 2.4 | 0.6 | 0 | 84.4 | 0.0 | 0 |
| 6 | 6.4 | 2.7 | 0 | 11095.7 | 0.0 | 0 |
| 8 | 12 | 4.9 | 0 | 55022.4 | 5.9 | 1 |
| 10 | 17.6 | 7.5 | 0 | 105022.4 | 15.7 | 3 |
| 12 | 4.1 | 4.5 | 3 | 50000.0 | 12.5 | 4 |

**Discussion:**

We can observe that when steepest ascent hill climbing algorithm does not always give global maxima. Rather, it gives local maxima when there is no best neighbor from current node. But it would be better if we search globally to find global maxima.

Simulated annealing algorithm attempts to tease out correct solution by making risky moves at first and slowly making more conservative moves. Generally, it gives optimal result, if number of iteration is high.