Local Search- min_conflicts

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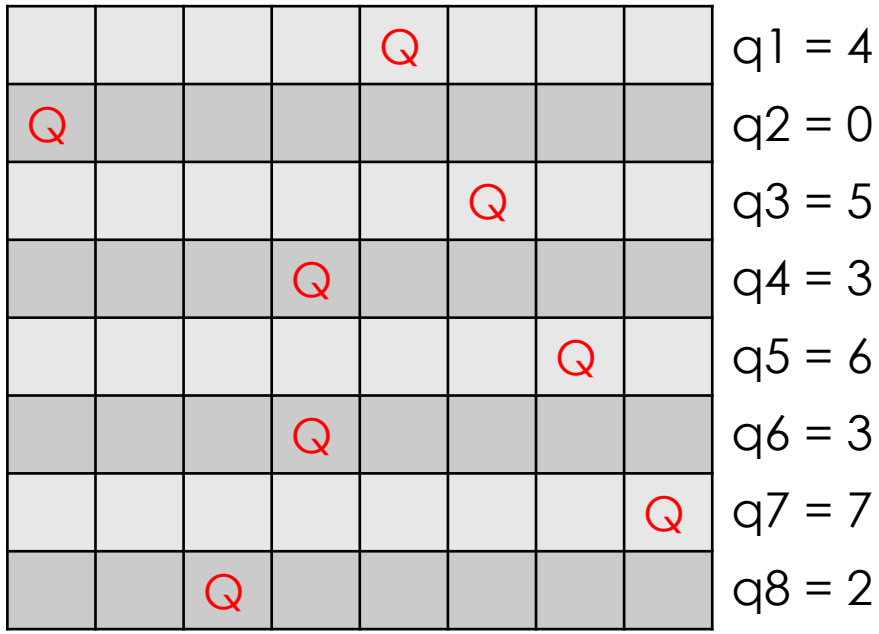
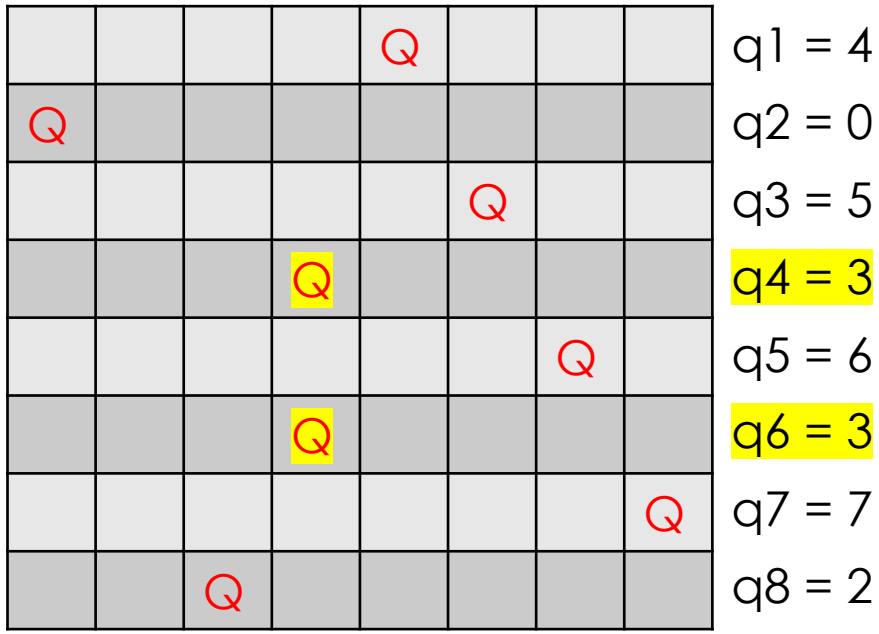
min_conflicts(Local Search for CSP)

- First generate a complete assignment for all variables (this set of assignments may conflict)
- Repeat the following steps until there are no conflicts:
  - Randomly Select a variable that causes conflicts
  - Reassign the value of this variable to another value that with the least constraint conflicts with other variables

min_conflicts：Eight-Queen Problem

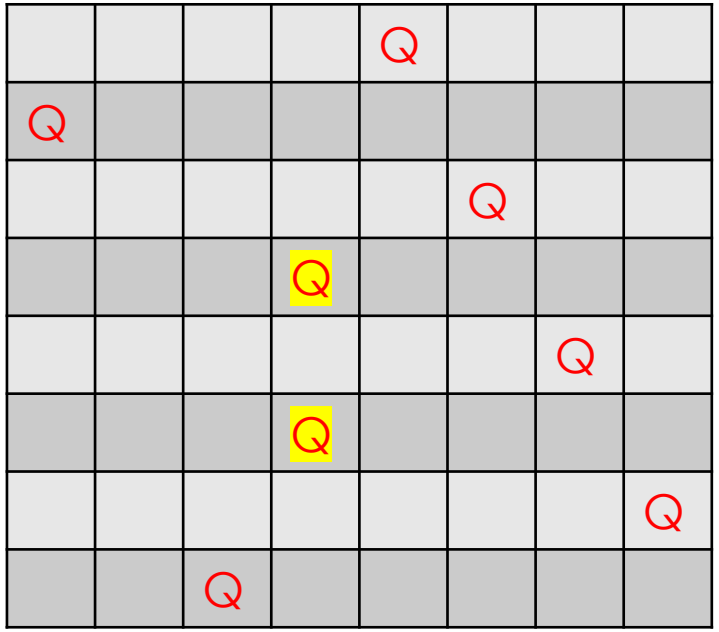




Do an initial complete assignment
(Of course, in most cases this complete assignment will not satisfy all constraints)

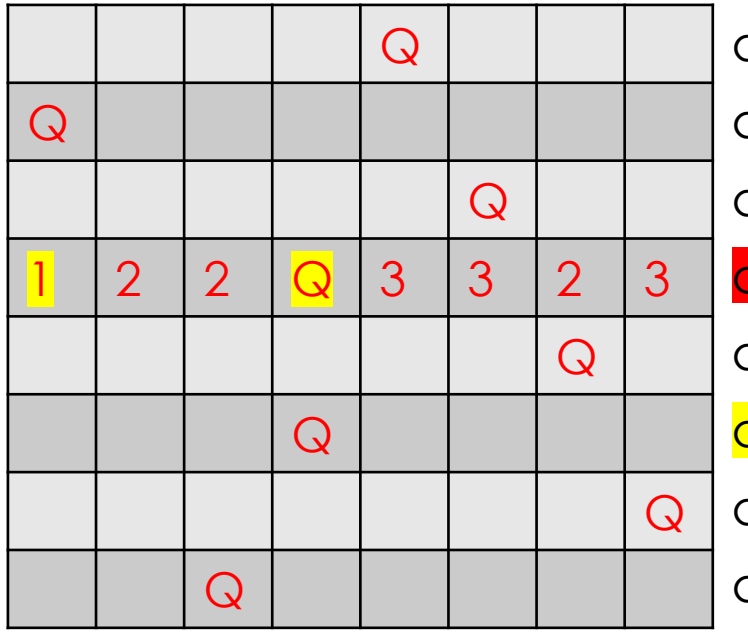
Some conflicted variables: q4 and q6

min_conflicts：Eight-Queen Problem



q1 = 4
q2 = 0
q3 = 5
q4 = 3
q5 = 6
q6 = 3
q7 = 7
q8 = 2

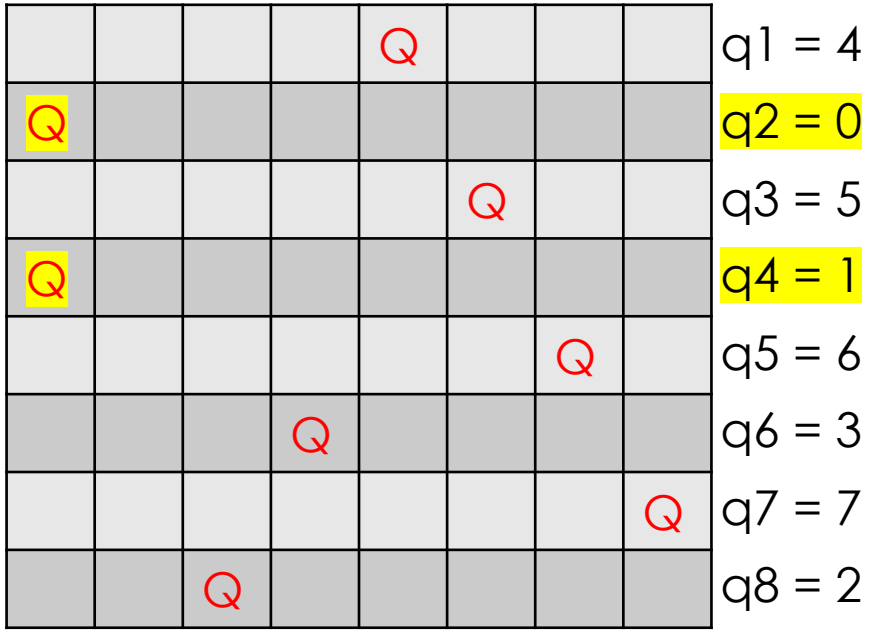
Randomly choose a conflicted variable, for example, q4.



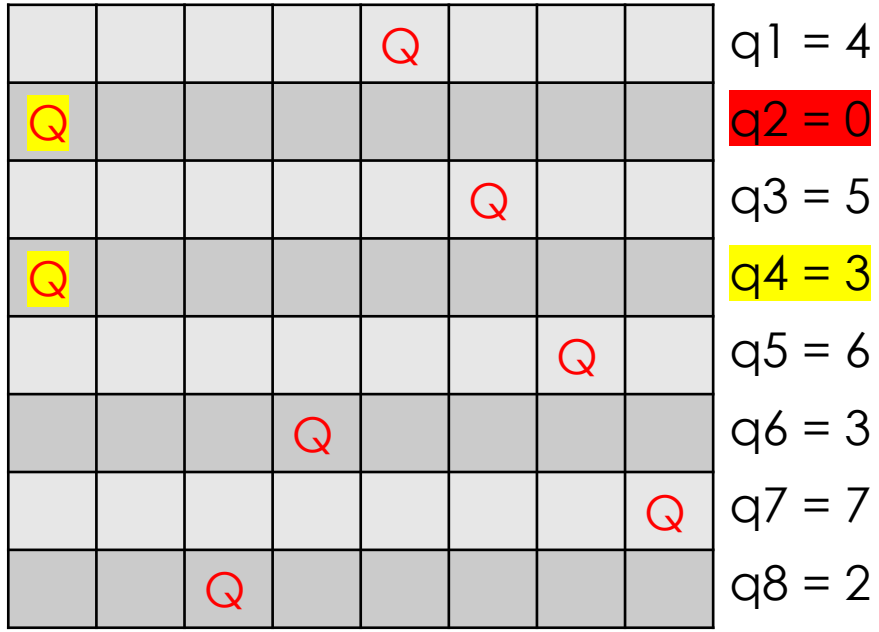
q1 = 4
q2 = 0
q3 = 5
q4 = 1
q5 = 6
q6 = 3
q7 = 7
q8 = 2

Change to the position with the minimum conflict value.
Set q4 = 1.

min_conflicts：Eight-Queen Problem



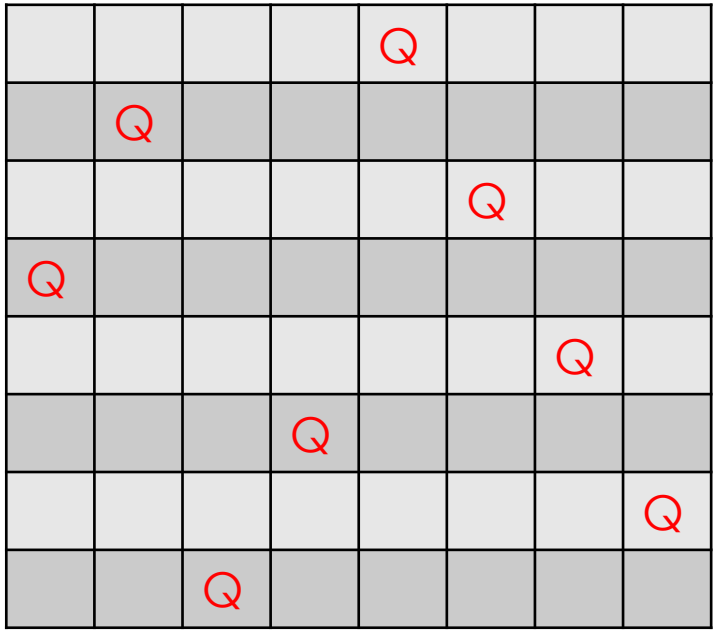
Some conflicted variables: q2 and q4



Randomly choose a conflicted variable

				Q				q1 = 4
Q	0	2	3	2	2	2	2	q2 = 1
					Q			q3 = 5
Q								q4 = 3
						Q		q5 = 6
			Q					q6 = 3
							Q	q7 = 7
		Q						q8 = 2

Change to the position with the minimum conflict value.
Set q2 = 1.



No conflict. Stop.