

CS 480 – Artificial Intelligence: Planning and Control

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Homework: Constraint Satisfaction

Attached is Python code for solving N-queens using simple backtracking, assigning the queen columns row-by-row. You may start with this code for the assignment, or you may translate it into another (normal) programming language.

Make sure your code is clear and well-documented (see the guidelines posted on Blackboard). Points will be deducted for poorly-structured, undocumented, or impossible-to-read code.

1. (20 points) Modify the code to count the total number of assignments attempted during a solution run and print them out.

a. How many assignments are made solving 8-queens? 10-queens? 15-queens? 20-queens?

Solution:

8-queens : 113; total time: 0.000997304916381836

10-queens: 102; total time: 0.0009989738464355469

15-queens: 1359 ; total time: 0.016952991485595703

20-queens- 199635 ; total time: 3.6831483840942383

b. Can you solve 100-queens in a reasonable amount of time? If so, how many assignments are made?

100-queens consumes more time than 5 minutes. Hence it can't be solved in a reasonable amount of time.