cmpe480 - 2024 Fall - HW2

Submit two unzipped files: name-lastname.pdf and name-lastname.py

Pdf file: Provide a general description. Then provide example runs: Given the problem, provide problem.txt. Given the problem, provide the number of expanded nodes and the solution.

Tiebreaker: Use alphanumeric ordering.

Write down a generic code to solve a given CSP. There are three CSPs:

- P1: n queens problem.
- P2: Map coloring problem. (Australian map with n colors)
    - Color names: c1, c2, c3, … cn
- P3: TO + TO = FOR problem
    - n:0 TO + TO = FOR problem
    - n:1 TWO + TWO = FOWR problem
    - n:2 TXWO + TXWO = FOWXR problem
    - n:3 TYXWO + TYXWO = FOWXYR problem

> python3.10.9 name-lastname.py <n> P1/P2/P3 problem.txt

Creates problem.txt file that includes:

- The variables
- The domains
- The constraints

All problems should be represented using a common encoding that can be processed by your CSP solver.

> python3.10.9 name-lastname.py MRV DH LCV CP problem.txt

Report to standard output:
Number of expanded nodes
Solution

Depending on the arguments apply none, one or all of the following:

- MRV: Minimum Remaining Values
- DH: Degree Heuristic
- LCV: Least Constraining Value
- CP: Constraint Propagation