**Coding Assignment 2**

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**Q1 & Q2.** Implementation source code can be found in semi-magic.py

**Q3.**

These are the results from the experiment in Q2:

Normal backtracking search:

number of assignments 120

WITH VARIABLE ORDERING

Backtracking search with minimum remaining values heuristic:

number of assignments 78

WITH VALUE ORDERING

Backtracking search with least constraining values:

number of assignments 120

WITH INFERENCE

Backtrackingsearch with forward checking:

number of assignments 3

Backtrackingsearch with arc consistency:

number of assignments 3

WITH MULTIPLE HEURISTICS

Backtracking search with minimum remaining values heuristic, least constraining values and forward checking:

number of assignments 3

Backtracking search with minimum remaining values heuristic, least constraining values and arc consistency:

number of assignments 3

It seems that the inference heuristics are the most relevant in reducing the number of assignments attempted by each algorithm.

Coupling them together with variable ordering or domain ordering heuristics did not help as much.

This is expected as ARC3-consistency and forward checking allow for early failure detection and allow us to reduce the number of assignments attempted.