hw2_csps_q7_arc_consistency_properties

Question 7: Arc Consistency Properties

0.0/6.0 points (graded)

Assume you are given a CSP and you enforce arc consistency. Which of the following are true?

- [ ] If the CSP has no solution, it is guaranteed that enforcement of arc consistency resulted in at least one domain being empty.
- [ ] If the CSP has a solution, then after enforcing arc consistency, you can directly read off the solution from resulting domains.
- [x] In general, to determine whether the CSP has a solution, enforcing arc consistency alone is not sufficient; backtracking may be required. ✔
- [ ] None of the above.

Option 1: Consider the following CSP: Three variables, A, B, C, each with domains {1,2}. The only constraint is that no two variables can have the same value. Enforcing arc consistency will not eliminate any value from any domain, because arc consistency only considers two variables at a time.
Option 2: Consider the above CSP, except now each variable has domain {1,2,3}. Arc consistency will again fail to remove a value from any of the domains.
Option 3: It is generally necessary to backtrack even when running arc consistency.
Option 4: Hopefully, having gotten this far in the solution, you can see that this choice is wrong.

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Answers are displayed within the problem

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