

CSC384 - Introduction to Artificial Intelligence  
Sample CSP Problems  
(Winter 2018)

## 1 Constraint Satisfaction Problems

1. *True or False:* Deleting values from the domains of CSP variables that prevent the constraint graph from being arc consistent will never rule out a possible solution to the CSP.
2. State the condition under which an constraint that operates over two variables  $(X, Y)$  is generalized arc consistent.
3. Consider a CSP with the following variables and constraints:
  - Variables  $A, B, C, D, E$  with all variables having the domain  $1, 2, 3, 4$
  - Constraints:
    - $E - A$  is even.
    - $C \neq D$
    - $C > E$
    - $C \neq A$
    - $B > D$
    - $D > E$
    - $B > C$

Draw these variables and constraints as a constraint graph. Then, perform GAC-Enforce to create a graph that is generalized arc consistent. Write the domains for each variable that exist after you've completed GAC-Enforce.