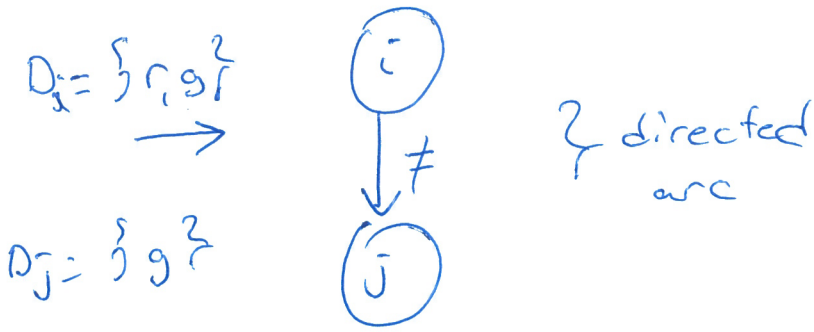
CS5811
Sept. 19, 2016
Monday (1)

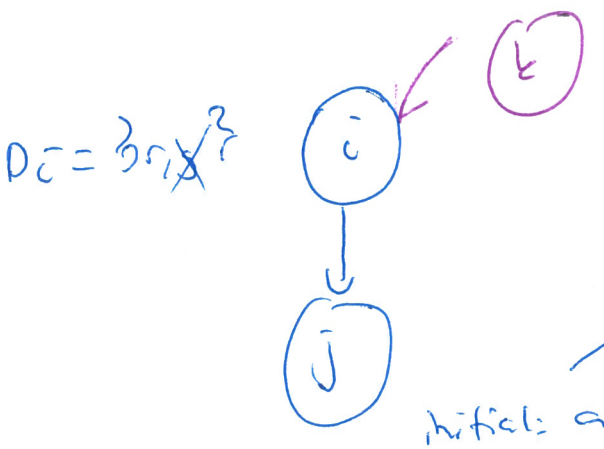
Arc consistency



} directed arc

~~r~~ ✓

} detect inconsistency and correct that by removing the value(s) that cause the inconsistency.



$\{b, ~~r~~\}$
X

set of arcs to be checked

$\{(\quad), (i, j),$

initial: all arcs

$(\quad, i)$

reinsert if i loses values

How long does it take to check a single arc for consistency

d values in each domain

n: # of vars
d: # of domain values

~~d^n~~ d^2

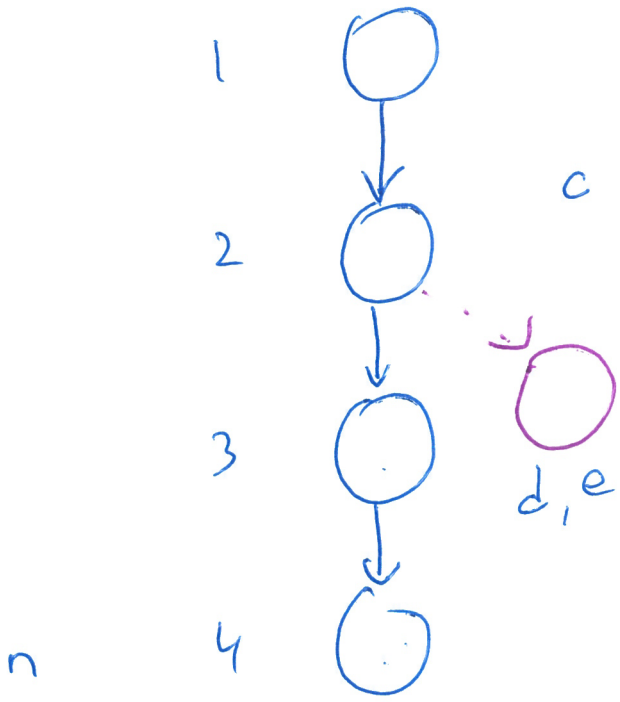
$n^2 d^3$

d^n arcs.

n^2 arcs.

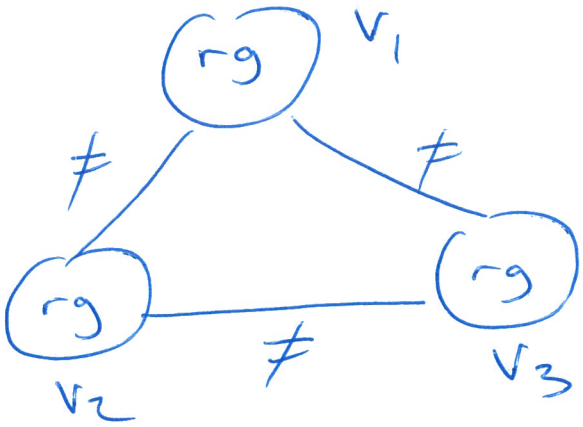
d reinsertions.

Tree structured CSPs



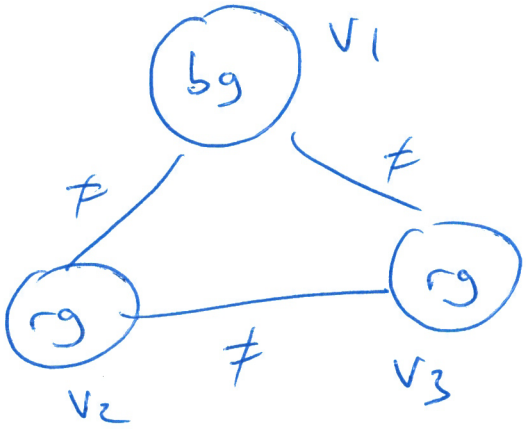
After "going up" with arc consistency no need for a search simply go from root to leaves and make assignment

After arc-consistency



Is this graph arc consistent? Yes

0 solutions

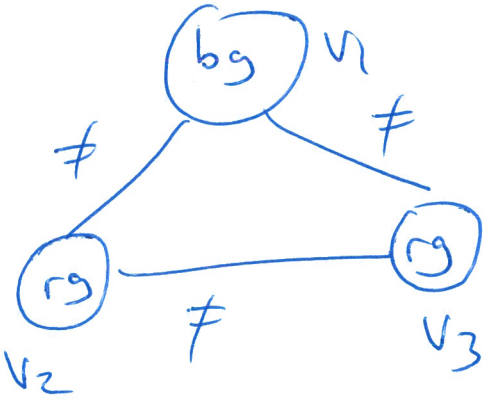


Is this graph arc consistent? Yes.

multiple solutions

2 solutions

V_1	V_2	V_3
b	r	g
b	g	r



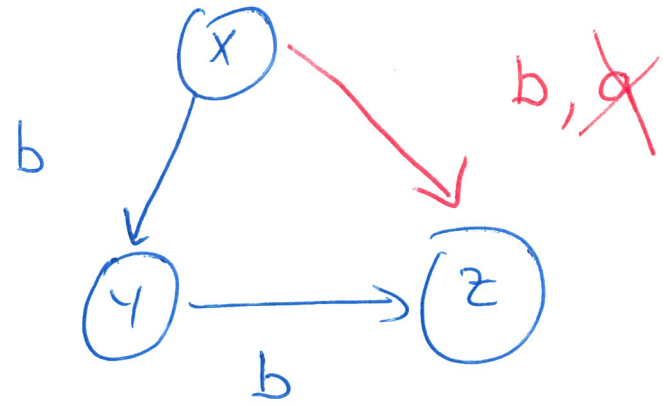
One more constraint

V_1 = blue, V_3 = red is not allowed

rules out second solution

1 solution.

Path consistency for IA (Interval Algebra)



inference b