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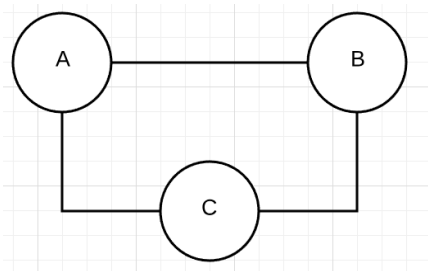
Intro to AI
Homework 4

1.
Variables: A (Alice), B (Bob), C (Charlie)
Initial Domain: [Salad, Pizza, Burger]
Constraints:
    1. *Alice is a vegetarian:*
        a. A ∈ [Salad, Pizza]
    2. *Charlie hates Italian food:*
        a. C ∈ [Salad, Burger]
    3. *Alice, Bob, and Charlie never order the same food*
        a. A != B, B != C, A != C
    4. *Bob always spends more on food than Charlie:*
        a. (B, C) ∈ [(Burger, Salad), (Burger, Pizza), (Pizza, Salad)]
2. Constraint graph:



3. The variables are *not* arc consistent at first.
    a. Apply constraint one: A ∈ [Salad, Pizza]
    b. Apply constraint two: C ∈ [Salad, Burger]
    c. Apply constraint three: A != B, B != C, A != C
    d. Apply constraint four: (B, C) ∈ [(Burger, Salad)]

With the provided constraints, a solution can be found. Since Bob and Charlie must order a burger and salad respectively, Alice must order the Pizza.