CSP
arc consistency

variable to assign
heuristics

arc consistency check $O(n^2 d^3)$

one domain is empty
no more changes
this path will not work
backtrack! → try another solution

DFS "frontier" way
Temporal Constraint Satisfaction Problems
special case CSP

story:
Canadian geese leave before snow.
I took a picture of a C goose in snow.

to program
representation algorithm
\( v_1: \text{geese} \quad 2 \times 2 \)
\( v_2: \text{snow} \)
\( \text{geese} \land \text{snow} \)
\( \text{geese} \land \text{snow} \)

**Interval Algebra**

**Events**

**Temporal Relations**

**Just a joke:**
we do not represent the "length" of the duration.
Notes copied from the board:

Question: Are the 13 relations sufficient to represent everything we would want to represent between two events with non-zero durations?

Student suggestions:
- X and Y do not exist at the same time.
- Y can't follow X.
- X does not equal Y.

Notice that the common theme in the above sentences is the presence of a "not". We handle this by taking every other possibility and combining with an "OR". For example, $X \neq Y$ is represented as:

$$X \lor b, m, o, d, s, f, bi, mi, oi, di, si, fi \rightarrow \text{we need the inverses because both } X \lor Y \text{ and } X \lor Y (Y \lor b \lor X) \text{ ensure } X \neq Y.$$