Session 4a

Questions & Answers

Q: So no order is also a pre-order? So that is related to the solution of the quiz, where A B (without arrows) was a pre order
A: Yes, these are also called "discrete" partial orders. If you think about it, these satisfy the axioms. Thank you!

Q: Could you please explain again how the partial order relation is defined for disjoint union of posets?
A: Taken from the book. First of all consider that on line 4 there **was** a typo (it should be "bottom" and not "top").
This means, given two posets, the order on their disjoint union is defined as follows. If you take two elements from the disjoint union of the underlying sets, you have the following cases:
   - The two are both originally from P: in this case the relation is the one in P (line 2).
   - The two come from two different sets: No relations (lines 3,4).
   - The two are both originally from Q: in this case the relation is the one in Q (line 5).

$$\leq_{P+Q} : (P + Q) \times (P + Q) \to \mathbf{Bool}$$

$$\langle 1, p_1 \rangle, \langle 1, p_2 \rangle \mapsto (p_1 \leq_P p_2)$$

$$\langle 2, q \rangle, \langle 1, q \rangle \mapsto \bot$$

$$\langle 1, p \rangle, \langle 2, q \rangle \mapsto \bot$$

$$\langle 2, q_1 \rangle, \langle 2, q_2 \rangle \mapsto (q_1 \leq_Q q_2).$$

Thank you, I was confused by the typo. Now it is clear, thanks. A: Yes, sorry for that, will be corrected!