

**A weak ordering data type is based on a weak ordering relation  $P$ :**

**for any  $a, b, c \in A$ ,**

- 1.  $P(a, b) \vee P(b, a)$ ,**
- 2.  $P(a, b) \& P(b, c) \Rightarrow P(a, c)$ .**

**The difference between partial ordering and weak ordering is illustrated by noting that any  $a$  and  $b$  can be compared by a weak ordering, but in partial ordering some  $a$  and  $b$  may not be comparable.**