Complete lattice:

A lattice is complete if each of its non-empty subsets has a least upper bound and a greatest lower bound.

Bounded lattice:

A lattice L is said to be bounded if it has both LUB & GLB. If L is a bounded lattice then $\forall a \in L$, $0 \le a \le 1$, $a \oplus 0 = a$, $a * 0 = 0$.
$a \oplus 1 = 1$, $a * 1 = a$.

Note:

In a bounded lattice $(L, *, \oplus, 0, 1)$ an element $b \in L$ is called a complement of an element $a \in L$ if $a * b = 0$ & $a \oplus b = 1$

Distributive lattice:

A lattice $(L, *, \oplus)$ is called a distributive lattice if for any $a, b, c \in L$

$$a * (b \oplus c) = (a * b) \oplus (a * c)$$

$$a \oplus (b * c) = (a \oplus b) * (a \oplus c)$$

Modular lattice:

A lattice $(L, *, \oplus)$ is called modular if for all $x, y, z \in L$

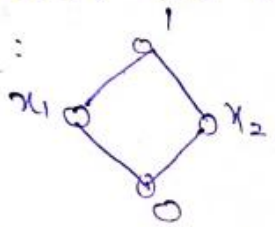
$$x \leq z \Rightarrow x \oplus (y * z) = (x \oplus y) * z$$

$$x \geq z \Rightarrow x * (y \oplus z) = (x * y) \oplus z$$

Complemented lattice:

A lattice $(L, *, \oplus, 0, 1)$ is said to be complemented lattice if every element of L has atleast one complement

Eg:



Complement of x_1 is x_2

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