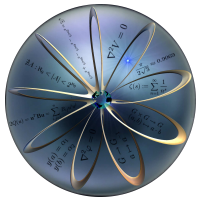

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locally finite poset

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Defines	locally finite

A poset P is *locally finite* if every interval $[x, y]$ in P is finite. For example, $\mathbb{Z}$ with the usual order is locally finite but not finite, while $\mathbb{Q}$ is neither.

Every locally finite poset is also chain finite, but the converse does not hold. To see this, define a partial order on $\mathbb{N}$ by the rule that $k \leq \ell$ if and only if $k = 0$ or $\ell = 1$. Thus 0 is the minimum element, 1 is the maximum element, and the remaining elements form an infinite antichain. Every bounded chain in this poset is finite but the entire poset is an infinite interval, so the poset is chain finite but not locally finite.