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pure poset

Canonical name	PurePoset
Date of creation	2013-03-22 17:19:47
Last modified on	2013-03-22 17:19:47
Owner	mps (409)
Last modified by	mps (409)
Numerical id	4
Author	mps (409)
Entry type	Definition
Classification	msc 06A06

A poset is *pure* if it is finite and every maximal chain has the same length. If P is a pure poset, we can create a rank function r on P by defining $r(x)$ to be the length of a maximal chain bounded above by x . Every interval of a pure poset is a graded poset, and every graded poset is pure. Moreover, the closure of a pure poset, formed by adjoining an artificial minimum element and an artificial maximum element, is always graded.

The face poset of a pure simplicial complex is pure as a poset.