

# Funcons-beta: Graphs \*

The P<sub>L</sub>anCompS Project

Graphs.cbs | PLAIN | PRETTY

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## Graphs

[ *Type* directed-graphs  
*Funcon* is-cyclic  
*Funcon* topological-sort ]

*Meta-variables*  $GT <: \text{ground-values}$

*Type* directed-graphs( $GT$ )  $\rightsquigarrow$  maps( $GT$ , sets( $GT$ ))

directed-graphs( $GT$ ) models directed graphs with vertices of type  $GT$ , represented as maps from vertices to the set of vertices to which the vertex has an edge. E.g., the graph

(1)--->(2)

would be represented as  $\{1 \mapsto \{2\}, 2 \mapsto \{\}\}$

*Built-in Funcon* is-cyclic( $_ : \text{directed-graphs}(GT)$ ) :  $\Rightarrow$  booleans

*Built-in Funcon* topological-sort( $_ : \text{directed-graphs}(GT)$ ) :  $\Rightarrow (GT)^*$

topological-sort( $DG$ ) returns a topological ordering of the vertices of the graph  $DG$ , as a sequence of vertices, provided that  $DG$  is not cyclic.

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\*Suggestions for improvement: [plancomps@gmail.com](mailto:plancomps@gmail.com).  
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.