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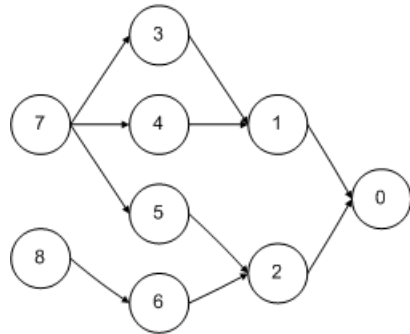
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Graph-structured stack

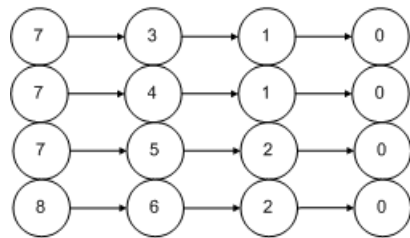
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In [computer science](#), a **graph-structured stack** is a [directed acyclic graph](#) where each directed [path](#) represents a [stack](#). The graph-structured stack is an essential part of [Tomita's algorithm](#), where it replaces the usual [stack](#) of a [pushdown automaton](#). This allows the algorithm to encode the nondeterministic choices in parsing an [ambiguous grammar](#), sometimes with greater efficiency.

In the following diagram, there are four stacks: {7,3,1,0}, {7,4,1,0}, {7,5,2,0}, and {8,6,2,0}.



Another way to simulate nondeterminism would be to duplicate the stack as needed. The duplication would be less efficient since vertices would not be shared. For this example, 16 vertices would be needed instead of 9.



References [\[edit\]](#)

- Masaru Tomita. *Graph-Structured Stack And Natural Language Parsing*. Annual Meeting of the Association of Computational Linguistics, 1988.



*This [computer science](#) article is a **stub**. You can help Wikipedia by [expanding it](#).*

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