Algorithms

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Abstract

A collection of algorithms typed in LaTeX.

Contents

1 Topological Sort

We can get topological ordering of a DAG using DFS or BFS.

Algorithm 1 DFS for topological sort

```
1:  procedure DFS-LOOP(Graph G)
2:      mark all nodes unexplored
3:      current_label ← n                          ▷ To keep track of ordering
4:      for each vertex v ∈ G do
5:          if v is not explored then              ▷ in some previous DFS call
6:              DFS(G,v)
7:
8:  procedure DFS(Graph G, Start vertex s)
9:      mark s explored
10:     for every edge (s, v) do
11:         if v not yet explored then
12:             DFS(G,v)
13:     set f(s) = current_label
14:     current_label--
```

Algorithm 2 BFS for topological sort

```
1:  procedure BFS(Graph G)
2:      counter ← 0
3:      create a queue box
4:      for each vertex v ∈ G do
5:          if the indegree of v == 0 then
6:              put v into the box
7:      while box is not empty do
8:          pop a vertex v out of box
9:          increment counter
10:         set f(v) = counter
11:         for each (u, v) do
12:             decrement the indegree of u
13:             if the indegree of u == 0 then
14:                 put u into the box
15:     if counter ≠ number of vertices in G then
16:         exception(the graph has cycle)
```