Graph Hierarchical Layout Algorithm

Asked 7 years, 1 month ago Active 5 months ago Viewed 3k times

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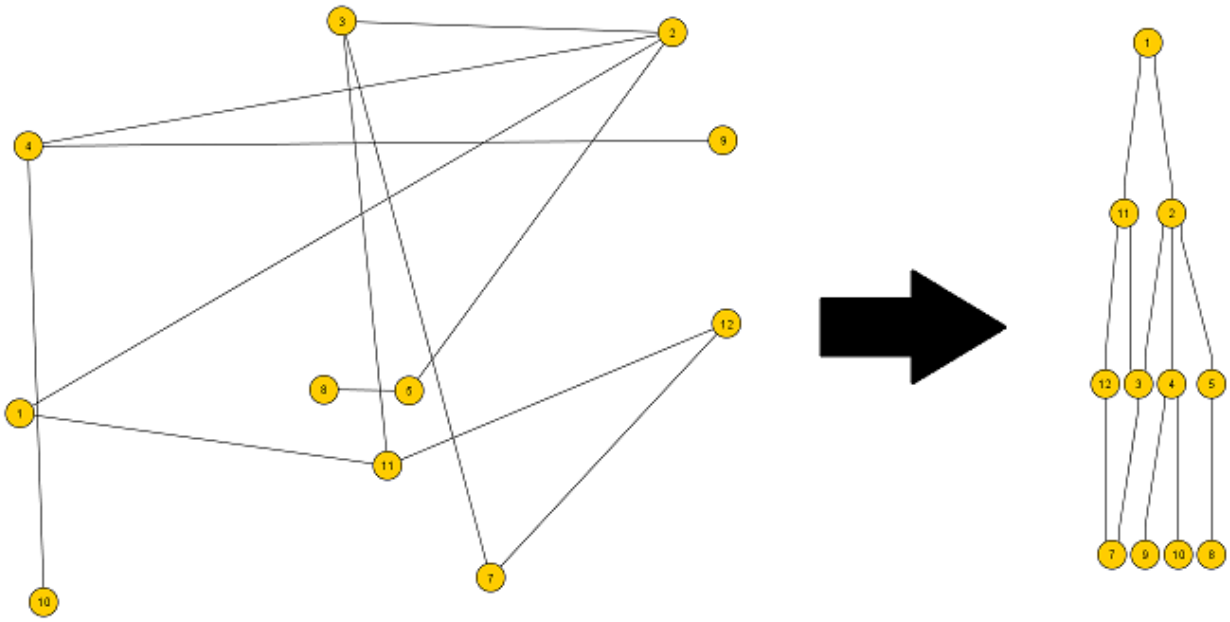
There are many tools and SDKs which layout a graph. ogdf, GraphViz, mxGraph, yEd...



One of useful layouts is "Hierarchical Layout". But there is no pure algorithm or pseudo code to describe it. Even, There is not a clear definition of this type of layout. Is anyone know about the algorithm?

c# java c++ layout graph

edited Feb 25 '13 at 9:29

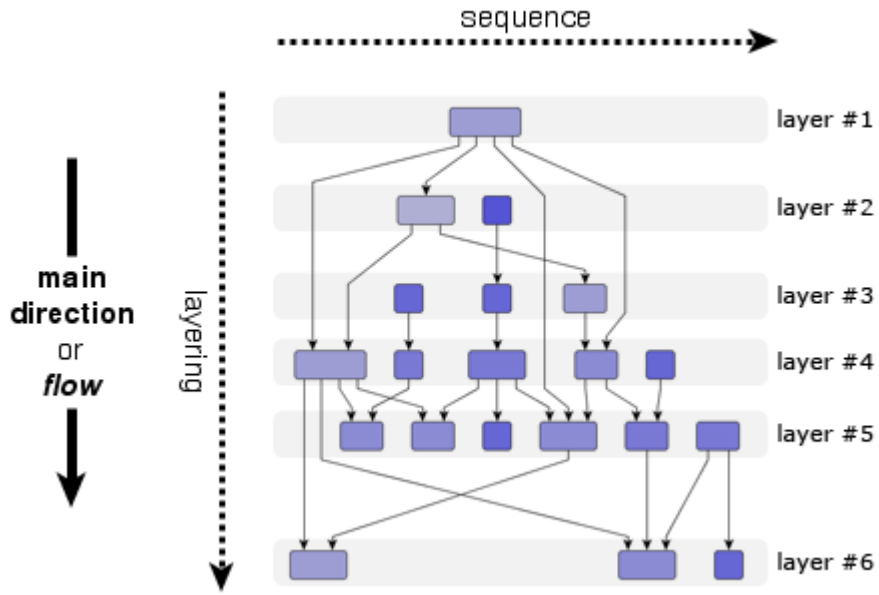
asked Dec 13 '12 at 13:43

masoud

48.2k 13 112 180

1 Answer

11



(source: yworks.com)

Simple hierarchical layout algorithm is visualisation of the ASAP sheduling algorithm (check this lecture [link]), so it'd be better to read it, on my view.

BTW your picture is not fully correct - the proposed visualisation is only one of the possible ones.

Imagine, that you have list of node and you know dependence between them.

Node list

```
node4
node2
node5
node1
node3
node6
```

Dependency list

```
node1 -> node2
node2 -> node4
node3 -> node5
node1 -> node3
node3 -> node6
```

- As your first step, you should find nodes with no dependance - this would be your layer#1 nodes. Draw them.
- Then find all nodes that depends on layer#1 nodes - this would be your layer#2 nodes.
- And the same thing for the layer#2 and etc. Finally, you'll get:

```
      node1
     /     \
  node2   node3
   /     /    \
node4 node5 node6
```

edited Aug 28 '19 at 3:38

Glorfindel
18.1k 11 55 81

answered Dec 13 '12 at 14:09

Evgeny Gavrin
6,459 1 19 26

I check for cycles first with a modified Depth First Search (DFS), e.g. geeksforgeeks.org/detect-cycle-in-a-graph As BPMN networks are likely to have a few cycles when gateways are involved, you may run a pruning algorithm before the DFS to ignore the flows from a gateway back to a previous activity for the layouting (only). – B--rian Jan 2 at 20:06