Script **generated by TTT**

Title: Petter: Compiler Construction (18.06.2020) - 35: Local Dependency Graph

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Observations

- the *local* attribute equations need to be evaluated using a *global* algorithm that knows about the dependencies of the equations
- in order to construct this algorithm, we need
  1. a sequence in which the nodes of the tree are visited
  2. a sequence within each node in which the equations are evaluated
- this *evaluation strategy* has to be compatible with the *dependencies* between attributes

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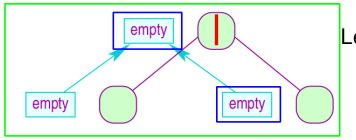
We visualize the attribute dependencies $D(p)$ of a production p in a *Local Dependency Graph*:



Let $p = N_0 \mapsto N_1 | N_2$ in

$$D(p) = \{ \quad (empty[1], empty[0]), \\ (empty[2], empty[0])\}$$

$\rightsquigarrow$ arrows point in the direction of information flow

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⚠ the global dependencies change with each particular syntax tree

- in the example, the parent node is always depending on children only
  $\leadsto$ a depth-first post-order traversal is possible
- in general, variable dependencies can be much *more complex*