

Chapter4. Syntax-Directed Translation

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NOTE TAKING AREA

Syntax-Directed Definitions

Synthesized or inherited semantics of a construct.

SDD is a context-free grammar together with attributes and rules.

Evaluation Orders for SDD's

Dependency graphs are a useful tool for determining evaluation orders.

If there is any cycle in a dependency graph, we cannot find an order to compute the value of all attribute instances.

A dependency graph depicts the flow of information among the attribute instances in a particular parse tree.

S-attributed SDD's and L-attributed SDD's.

S-attributed SDD can be evaluated by any bottom up order of the parse-tree nodes.

All S-attributes are L-attributed.

Applications of Syntax-Directed Translation

Abstracted syntax tree and parse tree.

Structure of a type: elements and element type.

Syntax-Directed Translation Schemes

Semantic actions in SDT and semantic rules in SDD.

Not all SDT's can be implemented during parsing.

Marker non-terminals.

Use SDT's to implement 2 classes of SDD's:

- LR grammar and S-attributed SDD.
- LL grammar and L-attributed SDD.

CUE COLUMN

SUMMARIES

1. SDD and its contents.
2. Evaluation: dependency graph and S-attributed, L-attributed.
3. Syntax-Directed translation.