

1 Theory

1.1

An SDD that involves only synthesized attributes is called S-attributed. A synthesized attribute is an attribute that gets its value from itself or its children. In an L-attributed SDD, every attribute must be either synthesized, or inherited with the rules as follows: suppose there is a production $A \rightarrow X_1X_2 \cdots X_n$, and that there is an inherited attribute $X_i a$ computed by a rule associated with this production. Then the rule may use only:

1. Inherited attributes associated with the head A .
2. Either inherited or synthesized attributed associated with the occurrences of symbols X_1, X_2, \dots, X_{i-1} located to the left of X_i .
3. Inherited or synthesized attributes associated with this occurrence of X_i itself, but only in such a way that there are no cycles in a dependency graph formed by the attributes of this X_i .

1.2

Given the inference rules $\frac{E1:TE2:T}{E1>E2:bool}$ and $\frac{C:boolE1:TE2:T}{(C)?E1;E2:T}$ and the premises that $2 : int$ and $3.14 : float$

With the judgements $x : int$ and $y : float$

We can show

$$\frac{\frac{x:int \quad 2:int}{x>2:bool \quad y:float \quad 3.14:float}}{(x>2)?y; 3.14:float}$$