TDT4205 Problem Set 4

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1 Syntax-directed definitions

An SDD is S-attributed if every attribute is synthesized. An attribute is synthesized if it is associated with the head of its corresponding production, and its computation only depends on the body of its production.

An L-attributed SDD is a more general class, where attributes need not be synthesized, as they can also be inherited under certain conditions. An attribute associated with a symbol in a production body, can be inherited from inherited attributes associated with the production head. It can also be inherited from any attributes associated with other symbols to the left of it in the body. Finally it can inherit from any attribute associated with its own symbol, given that no dependency cycles result from this.

2 Inference rules

We assume x:int and y:float, and build the proof tree for the statement.

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