

VYPE lecture abstract 2014

TOPIC 31: MODERN COMPILER DESIGN - SECTIONS 3.1.3 – 3.1.4

CYCLE HANDLING & ATTRIBUTE ALLOCATION

TOMÁŠ PLACHÝ

In this lecture, we are going to talk about cycles in grammar. To prevent the attribute evaluator from looping, cycles must be detected. There are two approaches to cycle detection: static and dynamic. We will compare these two approaches and explain basic steps for each type of detection. Then we will talk about attribute allocation in nodes. Attributes can be allocated directly in the node or in the environment and passed by the pointer.

Topic 31: Modern Compiler Design - Sections 3.1.5

MULTI-VISIT ATTRIBUTE GRAMMAR

Tomáš Pramuka

In this lecture, we turn to efficiency problems of multi-visit attribute grammars. The dynamic evaluation of attributes exhibits some serious inefficiencies: repeated testing for availability of values, overhead caused by a complicated flow of control, and repeated traversals over the syntax tree may be needed to obtain all the desired attribute values. These problems can be avoided by implementing a form of static attribute evaluation. First, we need to know what attribute grammar is, which attributes are used with attribute grammars and how attribute evaluation process works. Then, we will talk about multi-visit attribute evaluation as a form of static attribute evaluation. Finally, we will discuss how multi-visit attribute evaluation can be implemented.