

A Syntax Directed Environment for Tabular Form Processing

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1. Introduction

We deal with tabular forms and their mechanical manipulating problems based on attribute graph grammars. For this purpose, we employ graph grammars. Attribute graph grammars formulate syntactic structure and visual structure among items in forms, universally by syntax with attribute rewriting rules. In this paper, we propose a universal processing system for tabular forms based on attribute graph grammars.

2. Tabular Forms and Their Syntax

We review tabular forms for program specification and graph grammar HNGG, concerning to tabular forms. We consider here a program specification language called Hiform based on ISO6592.

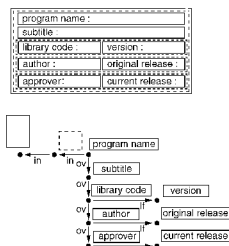
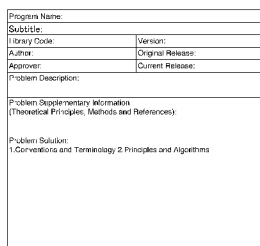


Figure 1. A specification form Figure 2. Nested diagram and marked graph

We consider an *attribute edNCE graph grammar* called HNGG = $\langle G_N, A_N, F_N \rangle$ that generates nested tabular forms in Hiform form [1, 2]. Underlying graph grammar $G_N = (\Sigma_N, \Delta_N, \Gamma_N, \Omega_N, P_N, S_N)$ is an *edNCE context-free graph grammar*.

3. System Overview

Our system is constructed on a graph parsing engine for Hiform.

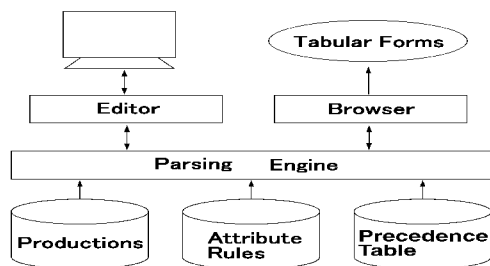


Figure 3. System Overview

This engine is constructed on three parts, which are productions for diagram syntax, attribute rules for calculating values of diagram's layout information and precedence table for diagram parsing.

Parsing engine generates derivation tree by syntax analysis of marked graph at first. Next, by attribute evaluation for the derivation tree, an attribute marked graph is generated. The attribute marked graph has layout information. Tabular form is generated with this flow by Browser.

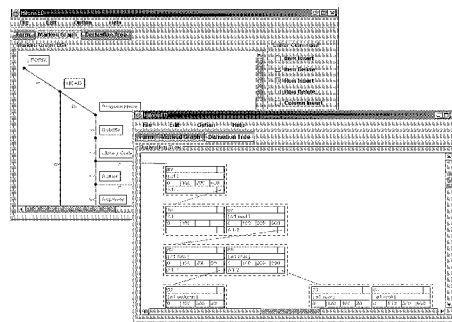


Figure 4. An Execution Screen of Parsing Engine: A marked graph and its derivation attribute marked tree

Our syntax directed editor executes editing manipulations on sequences of production instances [3].

4. Conclusions

We proposed syntactic diagram designing environment (cf. [1]), based on attribute NCE graph grammars.

Reference

- [1]T. Arita, K. Tomiyama, T. Yaku, Y. Miyadera, K. Sugita, K. Tsuchida, Syntactic Processing of Diagrams by Graph Grammars, Proc. IFIP WCC ICS 2000,145-151 (2000).
- [2]T. Arita, A Precedence Attribute NCE Graph Grammar for Hiform, <http://www.hichart.org/keyaki/archive/HC00-001>
- [3]K. Tomiyama et al., Syntactic Editing for Nested Tabular Forms, <http://www.hichart.org/keyaki/archive/HC00-002>