

Chapter 7

Conclusion

Graphs are high-level, versatile constructs with widespread practical use. Graph rewriting is a natural way to specify the manipulation of these high-level constructs. These notes have reviewed a variety of notations, mechanisms, and applications for graph rewriting. Graph rewriting is a promising formalism, well-understood theoretically, with the potential to be practically useful in a tremendous variety of application areas.

A major strength of graph transformation is its intuitive appeal. A graph is a natural data structure to use in representing items and their relationships. The initial graph can represent concrete objects and relationships, which are externally available. As the graph is transformed by productions, more abstract objects and relationships can be represented by the graph as well. This versatility of the graph data structure makes graph rewriting an attractive choice for many applications, including the examples discussed here: document image analysis, database applications, re-design of legacy applications, and modelling of visual languages.

Graph productions can be organized into a grammar, in order to define or parse a graph language. In other applications, an input graph is directly transformed into an output graph, using imperative control constructs to order the application of productions. Interactive applications are event-driven, with productions chosen by the interactive commands the user issues. The particular strength of graph transformation is in supporting problem specification and prototype implementation. For example, graph transformation can be used to unambiguously define the syntax of a visual language, and construct a prototype editor for that language. The PROGRES environment provides extensive facilities for anyone wishing to investigate the use of graph transformation.

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