Assertion Language for Debugging of List Data Structures

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***Abstract*—**

This project provides the design of a formal assertion language to check a linked data structures created using pointers at the run-time. The assertion language contains such means as aggregate operation to create a set of nodes that could be achieved from the particular pointer, quantifiers over sets of nodes, and PASCAL boolean expressions. Characteristic properties of such data structures as simple linked list, circular list, binary tree, double -linked list, and similar list data structures can be formalized in this language.

Prototype implementation of the assertion checker can automatically instrument the source text of PASCAL program in such a way that the assertion will be checked at the run time. This tool may be useful for testing and debugging of programs working with complex list structures.