Techniques for Automated Testing of Lola Industrial Robot Language Parser

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References:

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Abstract:

The accuracy of parsing execution directly affects the accuracy of semantic analysis, optimization and object code generation. Therefore, parser testing represents the basis of compiler testing. It should include tests for correct and expected, but also for unexpected and invalid cases. Techniques for testing the parser, as well as algorithms and tools for test sentences generation, are discussed in this paper. The methodology for initial testing of a newly developed compiler is proposed. Generation of negative test sentences by modifying the original language grammar is described. Positive and negative test cases generated by Grow, Purdom’s algorithm with and without length control, CDRC-P algorithm and CDRC-P algorithm with length control are applied to the testing of L-IRL robot programming language. For this purpose two different tools for generation of test sentences are used. Based on the presented analysis of possible solutions, the appropriate method can be chosen for testing the parser for smaller grammars with many recursive rules.

Keywords:

parser testing, robot programming, automated testing, grammar-based test generator