Abstract of Compilers Lab

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1 Introduction

We were a group of two students,developed compiler for a simple programming language.Project was done as a part of compilers lab, CS3091 at NIT Calicut in our sixth semester.

2 Features of the compiler

- Does all the basic arithmetic operations.
- Method handling.
- Recursion.
- Supports arrays.
- All loops are legal

3 Tools Used

- LEX (Lexical analyzer).
- YACC (Yet another compiler compiler).
- XSM (Experimental string machine,machine on which we ran our operating system).
- EXPOS (Operating system that we used,our compiler runs in this os).

4 Front end

Initially we decided on the features to be implemented as a part of design.Accordingly we have done lexical analysis using LEX.A lexical analyzer specific to our programming language was developed by us using regular expression specification which is converted to c implementation of corresponding finite state machine which when compiled yields lexical analyzer.Tokenization was done at this phase.Using YACC we developed a parser based on CFG (context free grammar) that we have written earlier.Syntax and semantic analysis were done in this phase.After successful parsing, an abstract syntax tree is generated which will be final output in front end.We were able to do syntax,semantic and intermediate representation properly because of syntax directed translation provided by YACC.

5 Back end

Intermediate code, which is the output of front end was converted to assembly language that is compatible with the XSM architecture.Prior to this all the basic evaluations are done here and final result is stored.Label translation was done (linking) thereby generating final executable code. This code when run on XSM machine which uses EXPOS, produces required results.