

Durga Software Solutions

Project Contest

Java Interpreter/Lexical Analyzer

This project will be to write an interpreter for a small language with the grammar I have attached. This language has only 1 data type, integer, and the only identifiers are single letter (i.e. there are only 26 possible identifiers). This language has the following properties:

not case sensitive

must have white space (blank characters, tab characters, and end of line characters) between every lexeme

The interpreter will parse a program in this language and build some intermediate data structures. These data structures will then be interpreted to execute the program. The parsing algorithm should detect any syntactical or semantic error. The first such error discovered should cause an appropriate error message to be printed, and then the interpreter should abort. Run-time errors should also be detected with appropriate error messages being printed.

<program> → program id <compound_statement>

<statement> → <if_statement> | <assignment_statement> | <while_statement> | <print_statement> | <compound_statement>

<compound_statement> → begin <statement_list> end

<statement_list> → <statement> | <statement> ; <statement_list>

<if_statement> → if <boolean_expression> then <statement> else <statement>

<while_statement> → while <boolean_expression> do <statement>

<assignment_statement> → id := <arithmetic_expression>

<print_statement> → print id

<boolean_expression> → <operand> <relative_op> <operand>

<operand> → id | constant

<relative_op> → < | <= | > | >= | = | /=

<arithmetic_expression> → <operand> | <operand> <arithmetic_op> <operand>

<arithmetic_op> → + | - | * | /

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