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/*
*
* Patrick Fischer
* Checkpoint #3
* Due 9/29/2016
* Token names must be all capitalized. Non-terminal symbols must be all lowercase.
* Place semicolons under the last |
*/

program : headingstmt datasection algsection endmainstmt;

headingstmt: RWMAIN SEMICOLON;

datasection: DATA COLON
             |DATA COLON decstmtlist
             ;

decstmtlist: decstmtlist decstmt
             |decstmt
             ;

decstmt: RWINT COLON varlist
         |RWREAL COLON varlist
         ;

varlist: varref COMMA varlist
         |varref SEMICOLON
         ;

varref: VAR
        |liststmt
        ;
liststmt: RWLIST LBRACK exp RBRACK SEMICOLON;

algsection: RWALG COLON programbody;

programbody: assignstmt programbody
             |repstmt programbody
             |controlstmt programbody
             |inputstmt programbody
             |outputstmt programbody
             |exitstmt
             ;

assignstmt: varref assign exp SEMICOLON;
```

assign: ASSIGNOP;

repstmt: RWWHILE condstmt SEMICOLON
        |RWCOUNTING varref RWUPWARD varref RWTO varref SEMICOLON
        |RWCOUNTING varref RWDOWNWARD varref RWTO varref SEMICOLON
        |endstmt SEMICOLON
        ;

controlstmt: RWIF condstmt SEMICOLON
            |RWELSE SEMICOLON
            |endstmt SEMICOLON
            ;

conditionals: LESS
            |GREATER
            |LESSEQU
            |GREATEQU
            |EQUAL
            |NOTEQUAL
            |AND
            |OR
            |NOT
            ;

condstmt: exp conditionals exp;

inputstmt: RWREAD VAR SEMICOLON;

outputstmt: RWPRINT printlist;

printlist: CHARSTRING printlist
        |CARRETURN printlist
        |CARRETURN COMMA printlist
        |SEMICOLON
        ;

exitstmt: RWEXIT SEMICOLON;

endstmt: RWEND RWMAIN SEMICOLON
        |RWEND RWIF SEMICOLON
        |RWEND RWWHILE SEMICOLON
        |RWEND RWCOUNTING SEMICOLON
        ;

```
exp: exp ADD term
    |exp MINUS term
    |term
    ;

term: term MULT factor
     |term DIV factor
     |factor
     ;

factor: atom
       |LPAREN exp RPAREN
       ;

commentstmt: COMMENT;
```