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1  Dan Wortmann
2  CS 536 - Fall 2015
3  HW4
4  -----
5  Q1.
6
7  CFG Productions:           Translation Rules
8  -----
9  program →
10 MAIN LPAREN RPAREN LCURLY list RCURLY
11                               { program = main(){list.trans} }           S0
12
13 list → list oneItem
14                               { list1.trans = list2.trans oneItem.trans } S1
15     | epsilon
16                               { list1.trans = [] }                       S2
17
18 oneItem → decl
19                               { oneItem.trans = decl.trans }             S3
20     | stmt
21                               { oneItem.trans = stmt.trans }             S4
22
23 decl → BOOL ID SEMICOLON
24                               { decl.trans = BOOL.value ID.value; }       S5
25     | INT ID SEMICOLON
26                               { decl.trans = INT.value ID.value; }       S6
27
28 stmt → ID ASSIGN exp SEMICOLON
29                               { stmt.trans = ID.value = exp.trans; }     S7
30     | IF LPAREN exp RPAREN stmt
31                               { stmt1.trans = if(exp.trans) stmt2.trans } S8
32     | LCURLY list RCURLY
33                               { strn.trans = {list.trans} }              S9
34
35 exp → exp PLUS exp
36                               { exp1.trans = exp2.trans + exp3.trans }    S10
37     | exp LESS exp
38                               { exp1.trans = exp2.trans < exp3.trans }    S11
39     | exp EQUALS exp
40                               { exp1.trans = exp2.trans == exp3.trans }    S12
41     | ID
42                               { exp.trans = ID.value }                   S13
43     | BOOLLITERAL
44                               { exp.trans = BOOLLITERAL.value }          S14
45     | INTLITERAL
46                               { exp.trans = INTLITERAL.value }           S15
47
48 Wasn't exactly sure as to what we need to do fro the set notation since I wasn't
49 in class during the career fair week...
50 I wrote an expression that describes a 'used' variable, as long as it's
51 within the following set constraints:
52
53 (S0 n S1) n { (S4 U S7 U S8 U S9) n (S10 U S11 U S12) }

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