

GRAMMAR ANALYSIS -- "THIS INSTALLATION" -- ANALYZER VERSION OF APRIL 22, 2024.

TODAY IS APRIL 22, 2024.

P R O D U C T I O N S

\$ THIS IS A TEST GRAMMAR WHICH MAY BE USED IN SKELETON
 \$ITERATE
 \$OUTPUT

```

1  <PROGRAM> ::= <STATEMENT LIST>
2  <STATEMENT LIST> ::= <STATEMENT>
3                      | <STATEMENT LIST> <STATEMENT>
4  <STATEMENT> ::= <ASSIGNMENT> ;
5  <ASSIGNMENT> ::= <VARIABLE> = <EXPR>
6  <EXPR> ::= <ARITH EXPR>
7          | <IF CLAUSE> THEN <EXPR> ELSE <EXPR>
8  <IF CLAUSE> ::= IF <BOOLEAN>
9  <BOOLEAN> ::= TRUE
10             | FALSE
11             | <EXPR> <RELATION> <EXPR>
12             | <IF CLAUSE> THEN <BOOLEAN> ELSE <BOOLEAN>
13 <RELATION> ::= =
14             | <
15             | >
16 <ARITH EXPR> ::= <TERM>
17             | <ARITH EXPR> + <TERM>
18             | <ARITH EXPR> - <TERM>
19 <TERM> ::= <PRIMARY>
20         | <TERM> * <PRIMARY>
21         | <TERM> / <PRIMARY>
22 <PRIMARY> ::= <VARIABLE>
23           | <NUMBER>
24           | ( <EXPR> )
25 <VARIABLE> ::= <IDENTIFIER>
26            | <VARIABLE> ( <EXPR> )

```

TIME USED WAS 0.00 SECONDS.

TOTAL TIME IS 0.00 SECONDS.

T E R M I N A L S Y M B O L S

1 ;
2 =
3 <
4 >
5 +
6 -
7 *
8 /
9 (
10)
11 IF
12 _ | _
13 THEN
14 ELSE
15 TRUE
16 FALSE
17 <NUMBER>
18 <IDENTIFIER>

N O N T E R M I N A L S

19 <EXPR>
20 <TERM>
21 <PROGRAM>
22 <BOOLEAN>
23 <PRIMARY>
24 <VARIABLE>
25 <RELATION>
26 <STATEMENT>
27 <IF CLAUSE>
28 <ASSIGNMENT>
29 <ARITH EXPR>
30 <STATEMENT LIST>

<PROGRAM> IS THE GOAL SYMBOL.

TIME USED WAS 0.00 SECONDS.
TOTAL TIME IS 0.00 SECONDS.

	1111111	11122222222223
	1234567890123456	78901234567890
1 ;	Y	
2 =	Y	
3 <	Y	
4 >	Y	
5 +	Y	
6 -	Y	
7 *	Y	
8 /	Y	
9 (Y	
10)	Y	
11 IF	Y	
12 _ _	Y	
13 THEN	Y	
14 ELSE	Y	
15 TRUE	Y	
16 FALSE	Y	
17 <NUMBER>		Y
18 <IDENTIFIER>		Y
19 <EXPR>	Y Y	YYYY YY Y Y
20 <TERM>	Y	YY Y YY
21 <PROGRAM>		Y Y Y Y Y Y
22 <BOOLEAN>	Y Y YY	YYYY YYY Y Y
23 <PRIMARY>	Y	YY YY
24 <VARIABLE>		Y Y
25 <RELATION>	YYY	Y
26 <STATEMENT>		Y Y Y Y
27 <IF CLAUSE>	Y	Y
28 <ASSIGNMENT>		Y Y Y
29 <ARITH EXPR>	Y	YY Y YY Y
30 <STATEMENT LIST>		Y Y Y Y Y

TIME USED WAS 0.00 SECONDS.
 TOTAL TIME IS 0.00 SECONDS.

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SENTENTIAL FORM PRODUCTION:

F11 HAS 321 ELEMENTS.
THE MAXIMUM DEPTH OF RECURSION WAS 22 LEVELS.
894 SENTENTIAL FORMS WERE EXAMINED.

TIME USED WAS 0.02 SECONDS.
TOTAL TIME IS 0.02 SECONDS.

		1111111 11	
		1234567890123456	78
1	;		N
2	=	# #	##
3	<	N N	NN
4	>	N N	NN
5	+	Y	YY
6	-	Y	YY
7	*	Y	YY
8	/	Y	YY
9	(Y Y	YY
10)	NNNNNNNNNN NN	
11	IF	Y Y YY	YY
12	_ _		Y
13	THEN	Y Y YY	YY
14	ELSE	Y Y YY	YY
15	TRUE		NN
16	FALSE		NN
17	<NUMBER>	NNNNNNNN N NN	
18	<IDENTIFIER>	NNNNNNNNNN NN	
19	<EXPR>	N## # N#	
20	<TERM>	NNNNNNYY N NN	
21	<PROGRAM>		N
22	<BOOLEAN>		N#
23	<PRIMARY>	NNNNNNNN N NN	
24	<VARIABLE>	N#NNNNNNYN NN	
25	<RELATION>	Y Y	YY
26	<STATEMENT>		N
27	<IF CLAUSE>		Y
28	<ASSIGNMENT>	Y	
29	<ARITH EXPR>	NNNNYY N NN	
30	<STATEMENT LIST>		N

TABLE ENTRIES SUMMARY:

389
 47 Y
 93 N
 11 #

TIME USED WAS 0.01 SECONDS.
 TOTAL TIME IS 0.03 SECONDS.

C1 TRIPLES FOR STACKING DECISION:

```

1  N FOR + <VARIABLE> =
2  N FOR - <VARIABLE> =
3  N FOR * <VARIABLE> =
4  N FOR / <VARIABLE> =
5  Y FOR ( <EXPR> )
6  Y FOR IF <EXPR> =
7  Y FOR IF <EXPR> <
8  Y FOR IF <EXPR> >
9  N FOR IF <VARIABLE> =
10 Y FOR _|_ <VARIABLE> =
11 Y FOR THEN <EXPR> =
12 Y FOR THEN <EXPR> <
13 Y FOR THEN <EXPR> >
14 Y FOR THEN <EXPR> ELSE
15 Y FOR THEN <BOOLEAN> ELSE
16 N FOR THEN <VARIABLE> =
*** ERROR, STACKING DECISION CANNOT BE MADE WITH (2,1) CONTEXT:
17 # FOR ELSE <EXPR> =
*** ERROR, STACKING DECISION CANNOT BE MADE WITH (2,1) CONTEXT:
18 # FOR ELSE <EXPR> <
*** ERROR, STACKING DECISION CANNOT BE MADE WITH (2,1) CONTEXT:
19 # FOR ELSE <EXPR> >
20 N FOR ELSE <EXPR> )
21 N FOR ELSE <EXPR> ELSE
22 N FOR ELSE <BOOLEAN> ELSE
23 N FOR ELSE <VARIABLE> =
24 N FOR <EXPR> = (
25 N FOR <EXPR> = IF
26 N FOR <EXPR> = <NUMBER>
27 N FOR <EXPR> = <IDENTIFIER>
28 Y FOR <VARIABLE> = (
29 Y FOR <VARIABLE> = IF
30 Y FOR <VARIABLE> = <NUMBER>
31 Y FOR <VARIABLE> = <IDENTIFIER>
32 N FOR <RELATION> <EXPR> ELSE
33 Y FOR <STATEMENT LIST> <VARIABLE> =

```

259 ENTRIES FOR 33 TRIPLES.

TABLE ENTRIES SUMMARY:

```

15  Y
15  N
3   #

```

TIME USED WAS 0.01 SECONDS.

TOTAL TIME IS 0.04 SECONDS.

ANALYSIS OF (2,1) CONFLICTS:

THE TRIPLE ELSE <EXPR> = MUST HAVE THE VALUE N FOR

```

7  <EXPR> ::= <IF CLAUSE> THEN <EXPR> ELSE <EXPR>
   IN THE CONTEXT IF ... =
   IN THE CONTEXT THEN ... =
   IN THE CONTEXT ELSE ... =

```

THE TRIPLE ELSE <EXPR> = MUST HAVE THE VALUE Y FOR

```

11 <BOOLEAN> ::= <EXPR> <RELATION> <EXPR>
    IN THE CONTEXT ELSE ... THEN
    IN THE CONTEXT ELSE ... ELSE

```

THE TRIPLE ELSE <EXPR> < MUST HAVE THE VALUE N FOR

```

7  <EXPR> ::= <IF CLAUSE> THEN <EXPR> ELSE <EXPR>
   IN THE CONTEXT IF ... <
   IN THE CONTEXT THEN ... <
   IN THE CONTEXT ELSE ... <

```

THE TRIPLE ELSE <EXPR> < MUST HAVE THE VALUE Y FOR

```

11 <BOOLEAN> ::= <EXPR> <RELATION> <EXPR>
    IN THE CONTEXT ELSE ... THEN
    IN THE CONTEXT ELSE ... ELSE

```

THE TRIPLE ELSE <EXPR> > MUST HAVE THE VALUE N FOR

```

7  <EXPR> ::= <IF CLAUSE> THEN <EXPR> ELSE <EXPR>
   IN THE CONTEXT IF ... >
   IN THE CONTEXT THEN ... >
   IN THE CONTEXT ELSE ... >

```

THE TRIPLE ELSE <EXPR> > MUST HAVE THE VALUE Y FOR

```

11 <BOOLEAN> ::= <EXPR> <RELATION> <EXPR>
    IN THE CONTEXT ELSE ... THEN
    IN THE CONTEXT ELSE ... ELSE

```

TIME USED WAS 0.01 SECONDS.
TOTAL TIME IS 0.05 SECONDS.

CONTEXT CHECK FOR EQUAL AND EMBEDDED RIGHT PARTS:

THERE ARE 100 AND 86 VALID CONTEXTS, RESPECTIVELY, FOR
26 <VARIABLE> ::= <VARIABLE> (<EXPR>)
24 <PRIMARY> ::= (<EXPR>)
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 30 AND 30 VALID CONTEXTS, RESPECTIVELY, FOR
17 <ARITH EXPR> ::= <ARITH EXPR> + <TERM>
16 <ARITH EXPR> ::= <TERM>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 30 AND 30 VALID CONTEXTS, RESPECTIVELY, FOR
18 <ARITH EXPR> ::= <ARITH EXPR> - <TERM>
16 <ARITH EXPR> ::= <TERM>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 64 AND 64 VALID CONTEXTS, RESPECTIVELY, FOR
20 <TERM> ::= <TERM> * <PRIMARY>
19 <TERM> ::= <PRIMARY>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 64 AND 64 VALID CONTEXTS, RESPECTIVELY, FOR
21 <TERM> ::= <TERM> / <PRIMARY>
19 <TERM> ::= <PRIMARY>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 2 AND 2 VALID CONTEXTS, RESPECTIVELY, FOR
3 <STATEMENT LIST> ::= <STATEMENT LIST> <STATEMENT>
2 <STATEMENT LIST> ::= <STATEMENT>
THEY CAN BE RESOLVED BY LENGTH.

C2 PRODUCTION CHOICE FUNCTION:

; AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

4 <STATEMENT> ::= <ASSIGNMENT> ;
THERE WILL BE NO CONTEXT CHECK.

= AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

13 <RELATION> ::= =
THERE WILL BE NO CONTEXT CHECK.

< AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

14 <RELATION> ::= <
THERE WILL BE NO CONTEXT CHECK.

> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

15 <RELATION> ::= >
THERE WILL BE NO CONTEXT CHECK.

) AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

26 <VARIABLE> ::= <VARIABLE> (<EXPR>)
THERE WILL BE NO CONTEXT CHECK.

24 <PRIMARY> ::= (<EXPR>)
THERE WILL BE NO CONTEXT CHECK.

TRUE AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

9 <BOOLEAN> ::= TRUE
THERE WILL BE NO CONTEXT CHECK.

FALSE AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

10 <BOOLEAN> ::= FALSE
THERE WILL BE NO CONTEXT CHECK.

<NUMBER> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

23 <PRIMARY> ::= <NUMBER>
THERE WILL BE NO CONTEXT CHECK.

<IDENTIFIER> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

25 <VARIABLE> ::= <IDENTIFIER>
THERE WILL BE NO CONTEXT CHECK.

<EXPR> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

7 <EXPR> ::= <IF CLAUSE> THEN <EXPR> ELSE <EXPR>
THERE WILL BE NO CONTEXT CHECK.

5 <ASSIGNMENT> ::= <VARIABLE> = <EXPR>
THERE WILL BE NO CONTEXT CHECK.

11 <BOOLEAN> ::= <EXPR> <RELATION> <EXPR>
THERE WILL BE NO CONTEXT CHECK.

<TERM> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

17 <ARITH EXPR> ::= <ARITH EXPR> + <TERM>
THERE WILL BE NO CONTEXT CHECK.

18 <ARITH EXPR> ::= <ARITH EXPR> - <TERM>
THERE WILL BE NO CONTEXT CHECK.

16 <ARITH EXPR> ::= <TERM>
THERE WILL BE NO CONTEXT CHECK.

<BOOLEAN> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

12 <BOOLEAN> ::= <IF CLAUSE> THEN <BOOLEAN> ELSE <BOOLEAN>
THERE WILL BE NO CONTEXT CHECK.

8 <IF CLAUSE> ::= IF <BOOLEAN>
THERE WILL BE NO CONTEXT CHECK.

<PRIMARY> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

20 <TERM> ::= <TERM> * <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

21 <TERM> ::= <TERM> / <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

19 <TERM> ::= <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

<VARIABLE> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

22 <PRIMARY> ::= <VARIABLE>
THERE WILL BE NO CONTEXT CHECK.

<STATEMENT> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

- 3 <STATEMENT LIST> ::= <STATEMENT LIST> <STATEMENT>
THERE WILL BE NO CONTEXT CHECK.
- 2 <STATEMENT LIST> ::= <STATEMENT>
THERE WILL BE NO CONTEXT CHECK.

<ARITH EXPR> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

- 6 <EXPR> ::= <ARITH EXPR>
THERE WILL BE NO CONTEXT CHECK.

<STATEMENT LIST> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

- 1 <PROGRAM> ::= <STATEMENT LIST>
THERE WILL BE NO CONTEXT CHECK.

TIME USED WAS 0.01 SECONDS.
TOTAL TIME IS 0.06 SECONDS.

ANALYSIS COMPLETE FOR ITERATION 1
*** 3 ERRORS WERE DETECTED.

GRAMMAR MODIFICATION TO ATTEMPT TO RESOLVE CONFLICTS:

```
27 <ELSE1> ::= ELSE
 7 <EXPR> ::= <IF CLAUSE> THEN <EXPR> <ELSE1> <EXPR>
28 <ELSE2> ::= ELSE
12 <BOOLEAN> ::= <IF CLAUSE> THEN <BOOLEAN> <ELSE2> <BOOLEAN>
```

TIME USED WAS 0.00 SECONDS.

TOTAL TIME IS 0.06 SECONDS.

	1111111	1112222222222333
	1234567890123456	7890123456789012
1 ;	Y	
2 =	Y	
3 <	Y	
4 >	Y	
5 +	Y	
6 -	Y	
7 *	Y	
8 /	Y	
9 (Y	
10)	Y	
11 IF	Y	
12 _ _	Y	
13 THEN	Y	
14 ELSE	Y	
15 TRUE	Y	
16 FALSE	Y	
17 <NUMBER>		Y
18 <IDENTIFIER>		Y
19 <EXPR>	Y Y	YYYY YY Y Y
20 <TERM>	Y	YY Y YY
21 <PROGRAM>		Y Y Y Y Y Y
22 <BOOLEAN>	Y Y YY	YYYY YYY Y Y
23 <PRIMARY>	Y	YY YY
24 <VARIABLE>		Y Y
25 <RELATION>	YYY	Y
26 <STATEMENT>		Y Y Y Y
27 <IF CLAUSE>	Y	Y
28 <ASSIGNMENT>		Y Y Y
29 <ARITH EXPR>	Y	YY Y YY Y
30 <STATEMENT LIST>		Y Y Y Y Y
31 <ELSE1>	Y	Y
32 <ELSE2>	Y	Y

TIME USED WAS 0.01 SECONDS.
 TOTAL TIME IS 0.07 SECONDS.

SENTENTIAL FORM PRODUCTION:

F11 HAS 362 ELEMENTS.
THE MAXIMUM DEPTH OF RECURSION WAS 23 LEVELS.
1055 SENTENTIAL FORMS WERE EXAMINED.

TIME USED WAS 0.00 SECONDS.
TOTAL TIME IS 0.07 SECONDS.

		1111111 11		
		1234567890123456	78	
1	;		N	N
2	=	# #		##
3	<	N N		NN
4	>	N N		NN
5	+	Y		YY
6	-	Y		YY
7	*	Y		YY
8	/	Y		YY
9	(Y Y		YY
10)	NNNNNNNNNN	NN	
11	IF	Y Y	YY	YY
12	_ _			Y
13	THEN	Y Y	YY	YY
14	ELSE	N N	NN	NN
15	TRUE		NN	
16	FALSE		NN	
17	<NUMBER>	NNNNNNNN	N NN	
18	<IDENTIFIER>	NNNNNNNNNN	NN	
19	<EXPR>	N###	# N#	
20	<TERM>	NNNNNNYY	N NN	
21	<PROGRAM>		N	
22	<BOOLEAN>		N#	
23	<PRIMARY>	NNNNNNNN	N NN	
24	<VARIABLE>	N#NNNNNNYN	NN	
25	<RELATION>	Y Y		YY
26	<STATEMENT>		N	N
27	<IF CLAUSE>		Y	
28	<ASSIGNMENT>	Y		
29	<ARITH EXPR>	NNNNYY	N NN	
30	<STATEMENT LIST>		N	Y
31	<ELSE1>	Y Y		YY
32	<ELSE2>	Y Y	YY	YY

TABLE ENTRIES SUMMARY:

415
 51 Y
 99 N
 11 #

TIME USED WAS 0.02 SECONDS.
 TOTAL TIME IS 0.09 SECONDS.

C1 TRIPLES FOR STACKING DECISION:

```

1  N FOR + <VARIABLE> =
2  N FOR - <VARIABLE> =
3  N FOR * <VARIABLE> =
4  N FOR / <VARIABLE> =
5  Y FOR ( <EXPR> )
6  Y FOR IF <EXPR> =
7  Y FOR IF <EXPR> <
8  Y FOR IF <EXPR> >
9  N FOR IF <VARIABLE> =
10 Y FOR _|_ <VARIABLE> =
11 Y FOR THEN <EXPR> =
12 Y FOR THEN <EXPR> <
13 Y FOR THEN <EXPR> >
14 Y FOR THEN <EXPR> ELSE
15 Y FOR THEN <BOOLEAN> ELSE
16 N FOR THEN <VARIABLE> =
17 N FOR <EXPR> = (
18 N FOR <EXPR> = IF
19 N FOR <EXPR> = <NUMBER>
20 N FOR <EXPR> = <IDENTIFIER>
21 Y FOR <VARIABLE> = (
22 Y FOR <VARIABLE> = IF
23 Y FOR <VARIABLE> = <NUMBER>
24 Y FOR <VARIABLE> = <IDENTIFIER>
25 N FOR <RELATION> <EXPR> ELSE
26 Y FOR <STATEMENT LIST> <VARIABLE> =
27 N FOR <ELSE1> <EXPR> =
28 N FOR <ELSE1> <EXPR> <
29 N FOR <ELSE1> <EXPR> >
30 N FOR <ELSE1> <EXPR> )
31 N FOR <ELSE1> <EXPR> ELSE
32 N FOR <ELSE1> <VARIABLE> =
33 Y FOR <ELSE2> <EXPR> =
34 Y FOR <ELSE2> <EXPR> <
35 Y FOR <ELSE2> <EXPR> >
36 N FOR <ELSE2> <BOOLEAN> ELSE
37 N FOR <ELSE2> <VARIABLE> =

```

281 ENTRIES FOR 37 TRIPLES.

TABLE ENTRIES SUMMARY:

```

18  Y
19  N
0   #

```

TIME USED WAS 0.01 SECONDS.

TOTAL TIME IS 0.10 SECONDS.

CONTEXT CHECK FOR EQUAL AND EMBEDDED RIGHT PARTS:

THERE ARE 108 AND 93 VALID CONTEXTS, RESPECTIVELY, FOR
26 <VARIABLE> ::= <VARIABLE> (<EXPR>)
24 <PRIMARY> ::= (<EXPR>)
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 4 AND 6 VALID CONTEXTS, RESPECTIVELY, FOR
27 <ELSE1> ::= ELSE
28 <ELSE2> ::= ELSE
THEY CAN BE RESOLVED BY (1,0) CONTEXT.

THERE ARE 35 AND 35 VALID CONTEXTS, RESPECTIVELY, FOR
17 <ARITH EXPR> ::= <ARITH EXPR> + <TERM>
16 <ARITH EXPR> ::= <TERM>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 35 AND 35 VALID CONTEXTS, RESPECTIVELY, FOR
18 <ARITH EXPR> ::= <ARITH EXPR> - <TERM>
16 <ARITH EXPR> ::= <TERM>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 71 AND 71 VALID CONTEXTS, RESPECTIVELY, FOR
20 <TERM> ::= <TERM> * <PRIMARY>
19 <TERM> ::= <PRIMARY>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 71 AND 71 VALID CONTEXTS, RESPECTIVELY, FOR
21 <TERM> ::= <TERM> / <PRIMARY>
19 <TERM> ::= <PRIMARY>
THEY CAN BE RESOLVED BY LENGTH.

THERE ARE 2 AND 2 VALID CONTEXTS, RESPECTIVELY, FOR
3 <STATEMENT LIST> ::= <STATEMENT LIST> <STATEMENT>
2 <STATEMENT LIST> ::= <STATEMENT>
THEY CAN BE RESOLVED BY LENGTH.

C2 PRODUCTION CHOICE FUNCTION:

; AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

4 <STATEMENT> ::= <ASSIGNMENT> ;
THERE WILL BE NO CONTEXT CHECK.

= AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

13 <RELATION> ::= =
THERE WILL BE NO CONTEXT CHECK.

< AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

14 <RELATION> ::= <
THERE WILL BE NO CONTEXT CHECK.

> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

15 <RELATION> ::= >
THERE WILL BE NO CONTEXT CHECK.

) AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

26 <VARIABLE> ::= <VARIABLE> (<EXPR>)
THERE WILL BE NO CONTEXT CHECK.

24 <PRIMARY> ::= (<EXPR>)
THERE WILL BE NO CONTEXT CHECK.

ELSE AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

27 <ELSE1> ::= ELSE
(0,1) CONTEXT WILL BE CHECKED. LEGAL RIGHT CONTEXT:
... (
... IF
... <NUMBER>
... <IDENTIFIER>

28 <ELSE2> ::= ELSE
THERE WILL BE NO CONTEXT CHECK.

TRUE AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

9 <BOOLEAN> ::= TRUE
THERE WILL BE NO CONTEXT CHECK.

FALSE AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

10 <BOOLEAN> ::= FALSE
THERE WILL BE NO CONTEXT CHECK.

<NUMBER> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

23 <PRIMARY> ::= <NUMBER>
THERE WILL BE NO CONTEXT CHECK.

<IDENTIFIER> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

25 <VARIABLE> ::= <IDENTIFIER>
THERE WILL BE NO CONTEXT CHECK.

<EXPR> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

7 <EXPR> ::= <IF CLAUSE> THEN <EXPR> <ELSE1> <EXPR>
THERE WILL BE NO CONTEXT CHECK.

5 <ASSIGNMENT> ::= <VARIABLE> = <EXPR>
THERE WILL BE NO CONTEXT CHECK.

11 <BOOLEAN> ::= <EXPR> <RELATION> <EXPR>
THERE WILL BE NO CONTEXT CHECK.

<TERM> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

17 <ARITH EXPR> ::= <ARITH EXPR> + <TERM>
THERE WILL BE NO CONTEXT CHECK.

18 <ARITH EXPR> ::= <ARITH EXPR> - <TERM>
THERE WILL BE NO CONTEXT CHECK.

16 <ARITH EXPR> ::= <TERM>
THERE WILL BE NO CONTEXT CHECK.

<BOOLEAN> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

12 <BOOLEAN> ::= <IF CLAUSE> THEN <BOOLEAN> <ELSE2> <BOOLEAN>
THERE WILL BE NO CONTEXT CHECK.

8 <IF CLAUSE> ::= IF <BOOLEAN>
THERE WILL BE NO CONTEXT CHECK.

<PRIMARY> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

20 <TERM> ::= <TERM> * <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

21 <TERM> ::= <TERM> / <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

19 <TERM> ::= <PRIMARY>
THERE WILL BE NO CONTEXT CHECK.

<VARIABLE> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

22 <PRIMARY> ::= <VARIABLE>
THERE WILL BE NO CONTEXT CHECK.

<STATEMENT> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

3 <STATEMENT LIST> ::= <STATEMENT LIST> <STATEMENT>
THERE WILL BE NO CONTEXT CHECK.

2 <STATEMENT LIST> ::= <STATEMENT>
THERE WILL BE NO CONTEXT CHECK.

<ARITH EXPR> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

6 <EXPR> ::= <ARITH EXPR>
THERE WILL BE NO CONTEXT CHECK.

<STATEMENT LIST> AS STACK TOP WILL CAUSE PRODUCTIONS TO BE CHECKED IN THIS ORDER:

1 <PROGRAM> ::= <STATEMENT LIST>
THERE WILL BE NO CONTEXT CHECK.

TIME USED WAS 0.01 SECONDS.
TOTAL TIME IS 0.11 SECONDS.

ANALYSIS COMPLETE FOR ITERATION 2
NO ERRORS WERE DETECTED.

```

--- CARD OUTPUT --- DECLARE NSY LITERALLY '32', NT LITERALLY '18';
--- CARD OUTPUT --- DECLARE V(NSY) CHARACTER INITIAL ( ' <ERROR: TOKEN = 0>', ';', '=', '<', '>',
--- CARD OUTPUT --- '+', '-', '*', '/', '(', ')', 'IF', '_|_', 'THEN', 'ELSE', 'TRUE',
--- CARD OUTPUT --- 'FALSE', '<NUMBER>', '<IDENTIFIER>', '<EXPR>', '<TERM>', '<PROGRAM>',
--- CARD OUTPUT --- '<BOOLEAN>', '<PRIMARY>', '<VARIABLE>', '<RELATION>', '<STATEMENT>',
--- CARD OUTPUT --- '<IF CLAUSE>', '<ASSIGNMENT>', '<ARITH EXPR>', '<STATEMENT LIST>', 'ELSE',
--- CARD OUTPUT --- 'ELSE');
--- CARD OUTPUT --- DECLARE V_INDEX(12) BIT(8) INITIAL ( 1, 11, 12, 13, 16, 17, 17, 17, 18, 18,
--- CARD OUTPUT --- 18, 18, 19);
--- CARD OUTPUT --- DECLARE C1(NSY) BIT(38) INITIAL (
--- CARD OUTPUT --- " (2) 00000 00000 00000 0000",
--- CARD OUTPUT --- " (2) 00000 00000 00200 0002",
--- CARD OUTPUT --- " (2) 00000 00003 03000 0033",
--- CARD OUTPUT --- " (2) 00000 00002 02000 0022",
--- CARD OUTPUT --- " (2) 00000 00002 02000 0022",
--- CARD OUTPUT --- " (2) 00000 00001 00000 0011",
--- CARD OUTPUT --- " (2) 00000 00001 00000 0011",
--- CARD OUTPUT --- " (2) 00000 00001 00000 0011",
--- CARD OUTPUT --- " (2) 00000 00001 00000 0011",
--- CARD OUTPUT --- " (2) 00000 00001 01000 0011",
--- CARD OUTPUT --- " (2) 02222 22222 20022 0000",
--- CARD OUTPUT --- " (2) 00000 00001 01000 1111",
--- CARD OUTPUT --- " (2) 00000 00000 00000 0001",
--- CARD OUTPUT --- " (2) 00000 00001 01000 1111",
--- CARD OUTPUT --- " (2) 00000 00002 02000 2222",
--- CARD OUTPUT --- " (2) 00000 00000 00022 0000",
--- CARD OUTPUT --- " (2) 00000 00000 00022 0000",
--- CARD OUTPUT --- " (2) 02222 22220 20022 0000",
--- CARD OUTPUT --- " (2) 02222 22222 20022 0000",
--- CARD OUTPUT --- " (2) 02333 00000 30023 0000",
--- CARD OUTPUT --- " (2) 02222 22110 20022 0000",
--- CARD OUTPUT --- " (2) 00000 00000 00200 0000",
--- CARD OUTPUT --- " (2) 00000 00000 00023 0000",
--- CARD OUTPUT --- " (2) 02222 22220 20022 0000",
--- CARD OUTPUT --- " (2) 02322 22221 20022 0000",
--- CARD OUTPUT --- " (2) 00000 00001 01000 0011",
--- CARD OUTPUT --- " (2) 00000 00000 00200 0002",
--- CARD OUTPUT --- " (2) 00000 00000 00010 0000",
--- CARD OUTPUT --- " (2) 01000 00000 00000 0000",
--- CARD OUTPUT --- " (2) 02222 11000 20022 0000",
--- CARD OUTPUT --- " (2) 00000 00000 00200 0001",
--- CARD OUTPUT --- " (2) 00000 00001 01000 0011",
--- CARD OUTPUT --- " (2) 00000 00001 01000 1111");
--- CARD OUTPUT --- DECLARE NC1TRIPLES LITERALLY '17';
--- CARD OUTPUT --- DECLARE C1TRIPLES(NC1TRIPLES) FIXED INITIAL ( 594698, 725762, 725763, 725764,
--- CARD OUTPUT --- 792578, 856834, 856835, 856836, 856846, 857614, 1573385, 1573387, 1573393,
--- CARD OUTPUT --- 1573394, 1972226, 2102018, 2102019, 2102020);
--- CARD OUTPUT --- DECLARE PRTB(28) FIXED INITIAL (0, 28, 0, 0, 0, 1575187, 2323, 0, 0, 0, 0, 0,
--- CARD OUTPUT --- 0, 453841695, 6146, 4889, 7429, 7430, 0, 453842464, 11, 5127, 5128, 0, 0,
--- CARD OUTPUT --- 30, 0, 0, 0);
--- CARD OUTPUT --- DECLARE PRDTB(28) BIT(8) INITIAL (0, 4, 13, 14, 15, 26, 24, 0, 0, 9, 10, 23,
--- CARD OUTPUT --- 25, 7, 5, 11, 17, 18, 16, 12, 8, 20, 21, 19, 22, 3, 2, 6, 1);
--- CARD OUTPUT --- DECLARE HDTB(28) BIT(8) INITIAL (0, 26, 25, 25, 25, 24, 23, 31, 32, 22, 22,
--- CARD OUTPUT --- 23, 24, 19, 28, 22, 29, 29, 29, 22, 27, 20, 20, 20, 23, 30, 30, 19, 21);
--- CARD OUTPUT --- DECLARE PRLLENGTH(28) BIT(8) INITIAL (0, 2, 1, 1, 1, 4, 3, 1, 1, 1, 1, 1, 1,
--- CARD OUTPUT --- 5, 3, 3, 3, 3, 1, 5, 2, 3, 3, 1, 1, 2, 1, 1, 1);

```

```
--- CARD OUTPUT ---| DECLARE CONTEXT_CASE(28) BIT(8) INITIAL (0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0,
--- CARD OUTPUT ---|      0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0);
--- CARD OUTPUT ---| DECLARE LEFT_CONTEXT(0) BIT(8) INITIAL ( 19);
--- CARD OUTPUT ---| DECLARE LEFT_INDEX(14) BIT(8) INITIAL ( 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
--- CARD OUTPUT ---|      0, 1, 1);
--- CARD OUTPUT ---| DECLARE CONTEXT_TRIPLE(0) FIXED INITIAL ( 0);
--- CARD OUTPUT ---| DECLARE TRIPLE_INDEX(14) BIT(8) INITIAL ( 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
--- CARD OUTPUT ---|      0, 0, 1);
--- CARD OUTPUT ---| DECLARE PR_INDEX(32) BIT(8) INITIAL ( 1, 2, 3, 4, 5, 5, 5, 5, 5, 5, 7, 7, 7,
--- CARD OUTPUT ---|      7, 9, 10, 11, 12, 13, 16, 19, 19, 21, 24, 25, 25, 27, 27, 27, 28, 29, 29,
--- CARD OUTPUT ---|      29);
```

```
TIME USED WAS 0.00 SECONDS.
TOTAL TIME IS 0.11 SECONDS.
```