1)

Original Grammar	
<prog>	□ program <identifier>; var <dec-list> begin <stat-list> end.
<identifier>	□ <letter>{<letter>|<digit>} note: this grammar is in EBNF
<dec-list>	□ <dec> : <type> ;
<dec>	□ <identifier>,<dec>| < identifier >
<type>	□ integer
<stat-list>	□ <stat> | <stat> <stat-list>
<stat>	□ <write> | <assign>
<write>	□ write (<str> < identifier >);
<str>	□"value=" , | λ
<assign>	□ < identifier > = <expr>;
<expr>	□ <expr> + <term> | <expr> - < <term> | < term>
<term>	□ <term> * <factor> | <term> / <factor>| <factor>
<factor>	□ < identifier > | <number> | (<expr>)
<number>	□ <sign><digit>{<digit> } note: this grammar is in EBNF
<sign>	□ + | - | λ
<digit>	□ 0|1|2|…|9
<letter>	□ a|b|c|d|w|f

2)

\ = lambda	**3)**
P -> program I ; var C begin G end.	P -> program I ; var C begin G end.
I -> LX	I -> LX
X -> LX	I -> L
X -> HX	X -> LX
X -> \	X -> HX
C -> D : Y ;	X -> H
D -> I , D	X -> L
D -> I	C -> D : Y ;
Y -> integer	D -> I , D
G -> B	D -> I
G -> BG	Y -> integer
B -> W	G -> B
B -> A	G -> BG
W -> write (RI) ;	B -> W
R -> "value=" ,	B -> A
R -> \	W -> write (RI) ;
A -> I = E ;	W -> write (I) ;
E -> E + T	R -> "value=" ,
E -> E - T	A -> I = E ;
E -> T	E -> E + T
T -> T * F	E -> E - T
T -> T / F	E -> T
T -> F	T -> T * F
F -> I	T -> T / F
F -> N	T -> F
F -> (E)	F -> I
N -> SHZ	F -> N
Z -> HZ	F -> (E)
Z -> \	N -> SHZ
S -> +	N -> SH
S -> -	N -> HZ
S -> \	N -> H
H -> 0	Z -> SHH
H -> 1	Z -> SH
H -> 2	Z -> H
H -> 3	Z -> HH
H -> 4	S -> +
H -> 5	S -> -
H -> 6	H -> 0
H -> 7	H -> 1
H -> 8	H -> 2
H -> 9	H -> 3
L -> a	H -> 4
L -> b	H -> 5
L -> c	H -> 6
L -> d	H -> 7
L -> w	H -> 8
L -> f	H -> 9
	L -> a
	L -> b
	L -> c
	L -> d
	L -> w
	L -> f

5)

	(	)	*	`+	,	-	/	0	1	2	3	4	5	6	7	8	9	:	;	=	a	b	c	d	w	f	integer	"value=",	begin	end.	program	write	var	$	A	B	C	D	E	F	G	H	I	L	N	P	R	S	T	W	X	Y	Z
0																															s2															1							
1																																		acc																						
2																					s5	s6	s7	s8	s9	s10																	3	4									
3																			s11																																			
4		r3	r3	r3	r3	r3	r3	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	r3	r3	r3	s5	s6	s7	s8	s9	s10																22		23								24		
5		r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47	r47																										
6		r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48	r48																										
7		r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49	r49																										
8		r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50	r50																										
9		r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52	r52																										
10		r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51	r51																										
11																																s25																					
12		r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37	r37																										
13		r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38	r38																										
14		r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39	r39																										
15		r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40	r40																										
16		r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41	r41																										
17		r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42	r42																										
18		r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43	r43																										
19		r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44	r44																										
20		r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45	r45																										
21		r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46	r46																										
22		r6	r6	r6	r6	r6	r6	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	r6	r6	r6	s5	s6	s7	s8	s9	s10																22		23								26		
23		r7	r7	r7	r7	r7	r7	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	r7	r7	r7	s5	s6	s7	s8	s9	s10																22		23								27		
24		r2	r2	r2	r2	r2	r2											r2	r2	r2																																
25																					s5	s6	s7	s8	s9	s10																	30	4									
26		r5	r5	r5	r5	r5	r5											r5	r5	r5																																
27		r4	r4	r4	r4	r4	r4											r4	r4	r4																																
28																													s31																						
29																		s32																																		
30					s33													r10																																		
31																					s5	s6	s7	s8	s9	s10																	39			34	35				36			37	4					38			
32																											s41																												40	
33																					s5	s6	s7	s8	s9	s10																	30	4									
34																					r15	r15	r15	r15	r15	r15				r15			r15																			
35																					s5	s6	s7	s8	s9	s10				r12			s39				34	35			43		37	4					38			
36																														s44																						
37																				s45																																	
38																					r14	r14	r14	r14	r14	r14				r14			r14																			
39	s46																																																				
40																			s47																																	
41																			r11																																	
42																		r9											r8																						
43																														r13																					
44																																		r1																	
45	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10														51	52		53	54	4	55		56	57					
46																					s5	s6	s7	s8	s9	s10		s60															58	4		59							
47																													r8																						
48	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10														61	52		53	54	4	55		56	57					
49								r35	r35	r35	r35	r35	r35	r35	r35	r35	r35																																				
50								r36	r36	r36	r36	r36	r36	r36	r36	r36	r36																																				
51				s62		s63													s64																																	
52		r25	r25	r25		r25	r25												r25																																
53		r32	r32	r32		r32	r32	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21		r32																								65										66
54		r26	r26	r26		r26	r26												r26																																
55		r27	r27	r27		r27	r27												r27																																
56								s12	s13	s14	s15	s16	s17	s18	s19	s20	s21																											67										
57		r22	s68	r22		r22	s69												r22																																
58		s70																																																		
59																					s5	s6	s7	s8	s9	s10																	71	4									
60					s72																																															
61		s73		s62		s63																																													
62	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10															52		53	54	4	55		56	74					
63	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10															52		53	54	4	55		56	75					
64																					r19	r19	r19	r19	r19	r19				r19			r19																			
65		r34	r34	r34		r34	r34	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21		r34																								65										76
66		r31	r31	r31		r31	r31												r31																																
67		r30	r30	r30		r30	r30	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21		r30																								65										77
68	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10															78		53	54	4	55		56						
69	s48			s49		s50		s12	s13	s14	s15	s16	s17	s18	s19	s20	s21				s5	s6	s7	s8	s9	s10															79		53	54	4	55		56						
70																			s80																																	
71		s81																																																	
72																					r18	r18	r18	r18	r18	r18																											
73		r28	r28	r28		r28	r28												r28																																
74		r20	s68	r20		r20	s69												r20																																
75		r21	s68	r21		r21	s69												r21																																

4)	FIRST	FOLLOW		76		r33	r33	r33		r33	r33												r33													
P	program	$		77		r29	r29	r29		r29	r29												r29													
I	a b c d f w	) : * ; + , = - /		78		r23	r23	r23		r23	r23												r23													
X	a b c d f w 0 1 2 3 4 5 6 7 8 9	) : * ; + , = - /		79		r24	r24	r24		r24	r24												r24													
C	a b c d f w	begin		80																					r17	r17	r17	r17	r17	r17				r17		r17
D	a b c d f w	:		81																			s82													
Y	integer	;		82																					r16	r16	r16	r16	r16	r16				r16		r16
G	a b c d f w write	end.																																		
B	a b c d f w write	a b c d f w write																																		
W	write	a b c d f w write																																		
R	"value="	a b c d f w																																		
A	a b c d f w	a b c d f w write																																		
E	a b c d f w 0 1 2 3 4 5 6 7 8 9	) ; + -																																		
T	a b c d f w 0 1 2 3 4 5 6 7 8 9	) * ; + - /																																		
F	a b c d f w 0 1 2 3 4 5 6 7 8 9	) * ; + - /																																		
N	0 1 2 3 4 5 6 7 8 9 + -	) * ; + - /																																		
Z	1 2 3 4 5 6 7 8 9	) * ; + - /																																		
S	+-	1 2 3 4 5 6 7 8 9																																		
H	1 2 3 4 5 6 7 8 9	a b c d f w) * + , - / 0 1 2 3 4 5 6 7 8 9 : ; =																																		
L	a b c d f w	a b c d f w) * + , - / 0 1 2 3 4 5 6 7 8 9 : ; =																																		