1. I_0 = closure $(A' \to .A, \$) = \{(A' \to .A, \$), (A \to .BA, \$), (B \to .aB, a/b/\$),$
$(B \to .b, a/b/\$)\}$

$I_0 = (A, B, a, b)$

$I_1 = goto(I_0, A) = \{(A' \to A., \$)\}$

$I_2 = goto(I_0, B) = \{(A \to B.A, \$), (A \to .BA, \$), (A \to ., \$), (B \to .aB, a/b/\$),$
$(B \to .b, a/b/\$)\}$

$I_3 = goto(I_0, a) = \{(B \to a.B, a/b/\$), (B \to .aB, a/b/\$), (B \to .b, a/b/\$)\}$

$I_4 = goto(I_0, b) = \{(B \to b., a/b/\$)\}$

$I_5 = goto(I_2, A) = \{(A \to BA., \$)\}$

$goto(I_2, B) = I_2$

$goto(I_2, a) = I_3$

$goto(I_2, b) = I_4$

$I_6 = goto(I_3, B) = \{(B \to aB., a/b/\$)\}$

$goto(I_3, a) = I_3$

$goto(I_3, b) = I_4$

STATE	a	b	$	A	13
0	S_3	S_4	R_2	1	2
1			Accept		
2	S_3	S_4	R_2	5	2
3	S_3	S_4			6
4	R_4	R_4	R_4		
5			R_1		
6	R_3	R_3	R_3		

2. $I_0 = (S, L, R, *, a)$

$I_1 = \{S' \to S., \$\}$

$I_2 = \{(S \to L. = R, \$), (R \to L., \$)\}$

$I_3 = \{(S \to R., \$)\}$

$I_4 = \{(L \to *.R, \$/=), (R \to .L, \$/=), (L \to .*R, \$/=), (L \to .a, \$/=)\}$

$I_5 = \{L \to a., \$/=\}$

$I_6 = \{(S \to L = .R, \$), (R \to .L, \$), (L \to .*R, \$), (L \to .a, \$)\}$

$I_7 = \{(L \to *R., \$/=)\}$

$I_8 = \text{goto}(I_4, R) = \{L \to *R., \$/=\}$

$I_9 = \text{goto}(I_6, R) = \{(S \to L = R., \$)\}$

$I_{10} = \text{goto}(I_6, L) = \{(R \to L., \$)\}$

$I_{11} = \text{goto}(I_6, *) = \{(L \to *.R, \$)\}$

$I_{12} = \text{goto}(I_6, a) = \{(L \to a., \$)\}$

T $= \text{goto}(I_4, *) = I_4$

$= \text{goto}(I_4, L) = \{R \to L., \$/=\}$

$= \text{goto}(I_4, a) = I_5$

$I_{13} = \text{goto}(I_{11}, R) = \{(L \to *R., \$)\}$

STATE	A	*	=	$	S	L	R
0	S_5	S_4			1	2	3
1				Accept			
2			S_6	R_5			
3				R_2			
4	S_5	S_4					
5			R_3	R_3		8	7
6	S_{12}	S_{11}					
7			R_4	R_4		10	9
8			R_5	R_5			
9				R_1			
10				R_5			
11							
12							13
13				R_3			
				R_4			

3. $I_1 = \{(S' \to S.\ ,\ \$)\}$

$I_2 = \{(S \to A.a\ ,\ \$)\}$

$I_3 = \{(S \to B.C\ ,\ \$)\}$

$I_4 = \{(S \to b.AC\ ,\ \$), (S \to b.Ba\ ,\ \$), (A \to .d\ ,\ c), (B \to .d\ ,\ a)\}$

$I_5 = \{(A \to d.\ ,\ a), (B \to d.\ ,\ c)\}$

$I_6 = goto\ (I_4, A) = \{(S \to bA.C\ ,\ \$)\}$

$I_7 = goto\ (I_4, B) = \{(S \to bB.a\ ,\ \$)\}$

$I_8 = goto\ (I_4, d) = \{(A \to d.\ ,\ c), (B \to d.\ ,\ a)\}$

$I_{58} = \{(A \to d.\ ,\ a/c), (B \to d.\ ,\ a/c)\}$

$I_9 = \{(S \to bAC.\ ,\ \$)\}$

$I_{10} = \{(S \to bBa.\ ,\ \$)\}$

STATE	a	b	c	d	$	S	A	B
0		S_4		S_{58}		1	2	3
1					Accept			
2								
3								
4				S_{58}				
58	(R_5, R_6)		(R_5, R_6)				6	7
6								
7								
8								
9								
10								