

$$G = (N, \Sigma, P, S)$$

$$N = \{ S, I \}$$

$$\Sigma = \{ i, o, e \}$$

$$P = \{ \begin{array}{l} 1: S \rightarrow I, \\ 2: S \rightarrow o, \\ 3: I \rightarrow iS, \\ 4: I \rightarrow iSeS \end{array} \}$$

New production:  $0: S' \rightarrow S$

Abbr.:

S ... statement  
 I ... if-statement  
 o ... other statement  
 i ... if  
 e ... else

$$I_0(\epsilon) = \{ [S' \rightarrow .S], \\ [S \rightarrow .I], [S \rightarrow .o], \\ [I \rightarrow .iS], [I \rightarrow .iSeS] \}$$

$$I_1(S) = \{ [S' \rightarrow S.] \}$$

$$I_2(I) = \{ [S \rightarrow I.] \}$$

$$I_3(o) = \{ [S \rightarrow o.] \}$$

$$I_4(i) = \{ [I \rightarrow i.S], [I \rightarrow i.SeS], \\ [S \rightarrow .I], [S \rightarrow .o], \\ [I \rightarrow .iS], [I \rightarrow .iSeS] \}$$

$$I_5(iS) = \{ [I \rightarrow iS.], [I \rightarrow iS.eS] \}$$

$$I_4(iI) = I_2, \quad I_4(io) = I_3, \quad I_4(ii) = I_4$$

$$I_6(iSe) = \{ [I \rightarrow iSe.S], \\ [S \rightarrow .I], [S \rightarrow .o], \\ [I \rightarrow .iS], [I \rightarrow .iSeS] \}$$

$$I_7(iSeS) = \{ [I \rightarrow iSeS.] \}$$

$$I_6(iSeI) = I_2, \quad I_6(iSeo) = I_3, \quad I_6(iSei) = I_4$$

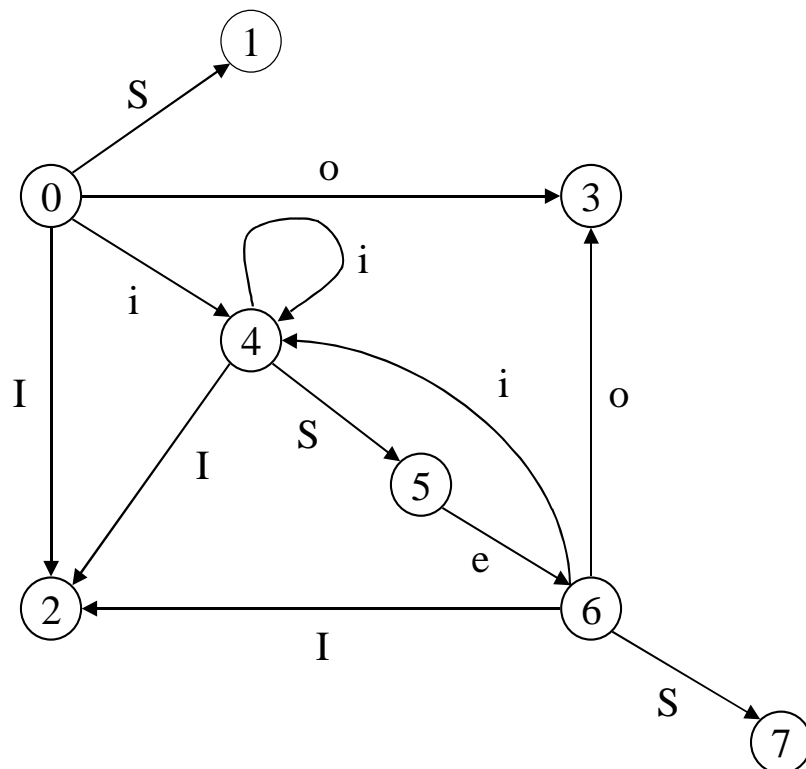
$$FOLLOW(S') = \{ \$ \}$$

$$FOLLOW(S) = \{ \$, e \}$$

FOLLOW(I) = { \$, e }  
 SLR(1) Parsing Table:

State	action f				goto g	
	\$	i	e	o	S	I
0		s4		s3	1	2
1	accept					
2	r1		r1			
3	r2		r2			
4		s4		s3	5	2
5	r3		s6/r3			
6		s4		s3	7	2
7	r4		r4			

DFA:



Analyse:

$S \xRightarrow{1} I \xRightarrow{4} iSeS \xRightarrow{2} iSeo \xRightarrow{1} iIeo \xRightarrow{4} iiSeSeo \xRightarrow{2}$   
 $\xRightarrow{2} iiSeoeo \xRightarrow{2} iioeoeo$

$\langle 0, iioeoeo\$, \epsilon \rangle \xrightarrow{s4}$   
 $\langle 0i4, ioeoeo\$, \epsilon \rangle \xrightarrow{s4}$   
 $\langle 0i4i4, oeoeo\$, \epsilon \rangle \xrightarrow{s3}$   
 $\langle 0i4i4o3, eoeo\$, \epsilon \rangle \xrightarrow{r2}$   
 $\langle 0i4i4S5, eoeo\$, 2 \rangle \xrightarrow{s6}$   
 $\langle 0i4i4S5e6, oeo\$, 2 \rangle \xrightarrow{s3}$   
 $\langle 0i4i4S5e6o3, eo\$, 2 \rangle \xrightarrow{r2}$   
 $\langle 0i4i4S5e6S7, eo\$, 22 \rangle \xrightarrow{r4}$   
 $\langle 0i4I2, eo\$, 422 \rangle \xrightarrow{r1}$   
 $\langle 0i4S5, eo\$, 1422 \rangle \xrightarrow{s6}$   
 $\langle 0i4S5e6, o\$, 1422 \rangle \xrightarrow{s3}$   
 $\langle 0i4S5e6o3, \$, 1422 \rangle \xrightarrow{r2}$   
 $\langle 0i4S5e6S7, \$, 21422 \rangle \xrightarrow{r4}$   
 $\langle 0I2, \$, 421422 \rangle \xrightarrow{r1}$   
 $\langle 0S1, \$, 1421422 \rangle \xrightarrow{\text{accept}}$