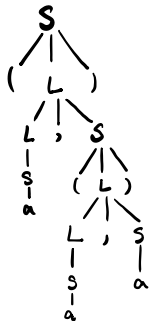


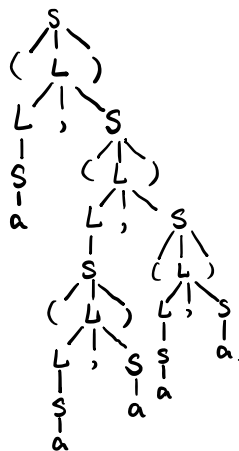
Homework 2.

1. (3.1 a)

$(a, (a, a))$



$(a, ((a, a), (a, a)))$



2. (3.2 a)

$S \Rightarrow aSbS \Rightarrow abs \Rightarrow abasbs \Rightarrow ababs \Rightarrow abab$

$S \Rightarrow asbs \Rightarrow absasbs \Rightarrow abasbs \Rightarrow ababs \Rightarrow abab$

3. (3.1°)

First: $\text{First}(D) = \{\text{int}, \text{real}\} = \text{First}(T)$

$\text{First}(L) = \{\text{id}\}$

$\text{First}(R) = \{\epsilon, \text{id}\}$

Follow: $\text{Follow}(D) = \{\phi\}$

$\text{Follow}(T) = \{\text{id}\}$

$\text{Follow}(L) = \{\phi\}$

$\text{Follow}(R) = \{\phi\}$

非终结符 \ 终结符	int	real	id	,	\$
D	$D \rightarrow TL$	$D \rightarrow TL$			
T	$T \rightarrow \text{int}$	$T \rightarrow \text{real}$			
L			$L \rightarrow \text{id}R$		
R				$R \rightarrow \text{id}R$	$R \rightarrow \epsilon$

4. (3.11)

First: $\text{First}(S) = \{a, b, \epsilon\}$

$\text{First}(A) = \{a, b\}$

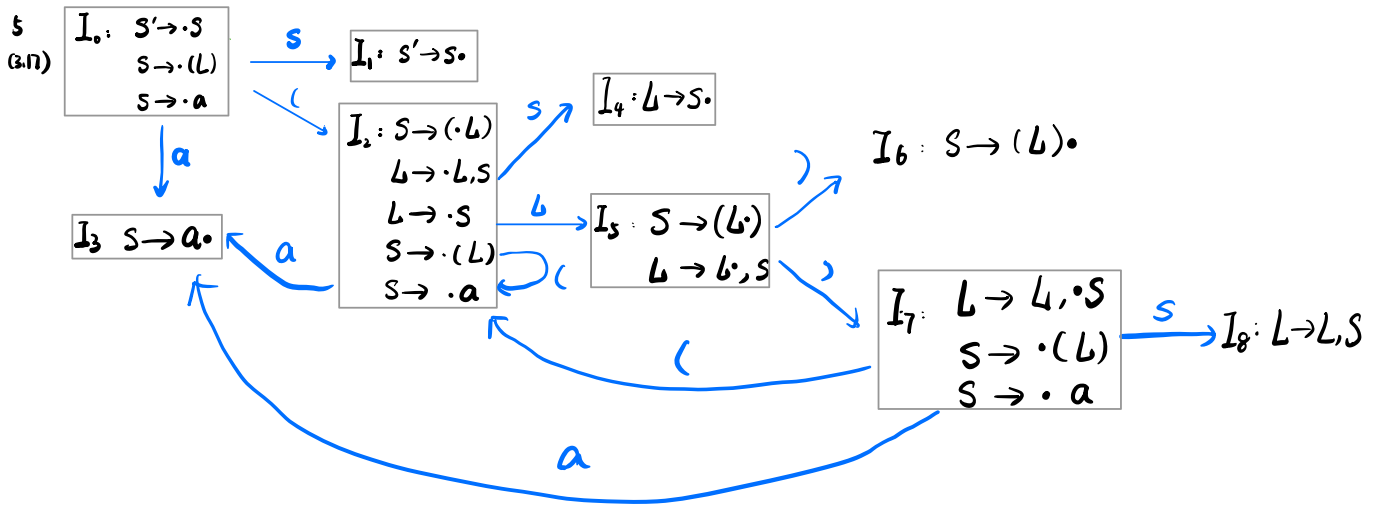
$\text{First}(B) = \{a, b\}$

Follow: $\text{Follow}(S) = \{\phi\}$

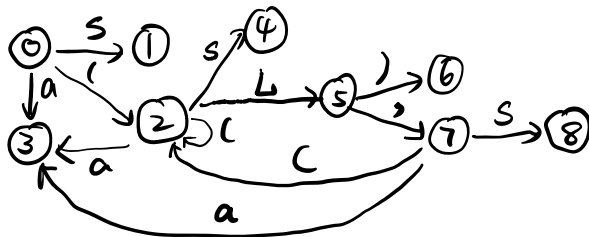
$\text{Follow}(A) = \{\phi, a, b\}$

$\text{Follow}(B) = \{\phi, a, b\}$

非终结符 \ 终结符	a	b	\$
S	$S \rightarrow aBS$	$S \rightarrow bAS$	$S \rightarrow \epsilon$
A	$A \rightarrow a$	$S \rightarrow bAA$	
B	$B \rightarrow aBB$	$B \rightarrow a$	

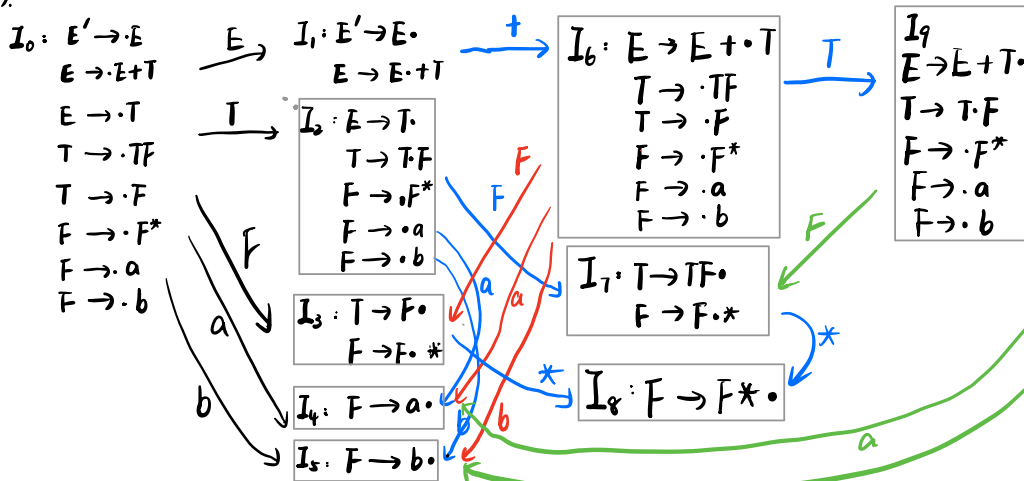


DFA



6. (3.19a)

DFA:



S	ACTION					GOTO		
	a	b	+	*	\$	E	T	F
0	S ₄	S ₅				S ₁	S ₂	S ₃
1			S ₆		ACC			
2	S ₄	S ₅	r ₇				S ₇	
3	r ₄	r ₅	r ₆	S ₈	r ₄			
4	r ₄	r ₅	r ₆	r ₆	r ₆			
5	r ₇	r ₇	r ₇	r ₇	r ₇			
6	S ₄	S ₅				S ₉	S ₈	
7	r ₃	r ₃	r ₃	S ₈	r ₃			
8	r ₅	r ₅	r ₅	r ₅	r ₅			
9	S ₄	S ₅	r ₁					S ₇

1. $E \rightarrow E+T$
2. $E \rightarrow T$
3. $T \rightarrow TF$
4. $T \rightarrow F$
5. $F \rightarrow F^*$
6. $F \rightarrow a$
7. $F \rightarrow b$

$$\text{Follow}(b) = \{\$, +\}$$

$$\text{Follow}(T) = \{a, b, +, \$\}$$

$$\text{Follow}(F) = \{*, a, b, +, \$\}$$