Bijay Shrestha - 11
CDC

PAGE
DATE / /

Q. Draw LR Passing Table of following Grammar
$S \to AA$
$A \to aA$
$A \to b$

Sol"

The augmented grammar is
$S' \to S$
$S \to AA$
$A \to aA$
$A \to b$

We can obtain canonical collection of sets of LR(0) items as follows

$I_0 = closure(\{S' \to .S\}) = \{S' \to .S, S \to .AA, A \to .aA, A \to .b\}$

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

$I_2 = goto(\{I_0, A\}) = closure(\{S \to A.A\})$
$= \{S \to A.A, A \to .aA, A \to .b\}$

$I_3 = goto(\{I_0, a\}) = closure(\{A \to a.A\})$
$= A \to a.A, A \to .aA, A \to .b\}$

$I_4 = goto(\{I_0, b\}) = closure(\{A \to b.\}) = \{A \to b.\}$

No possible goto from I_1

$I_5 = goto(I_2, A) = closure(\{S \to A.A.\$\})$
$= \{S \to AA.\$\}$

$I_6 = goto(\{I_2, a\}) = closure(\{A \to a.A\$\})$
$= A \to a.A, A \to .aA, A \to .b\$$
$= I_3$ (same as I_3)

So,
$I_7 = goto(\{I_2, b\$\}) = closure(\{A \to b.\$\}) = \{A \to b.\$$
$= I_4$ (same as I_4)

Again
$I_8 = goto(\{I_3, A\$\}) = closure[\{A \to aA.\$$
$= \{A \to aA.\$$

$goto(\{I_3, a\$\}) = closure(\{A \to a.A\$)$
$= \{A \to a.A, A \to .aA, A \to .b\$$
$= I_3$ (same as I_3)

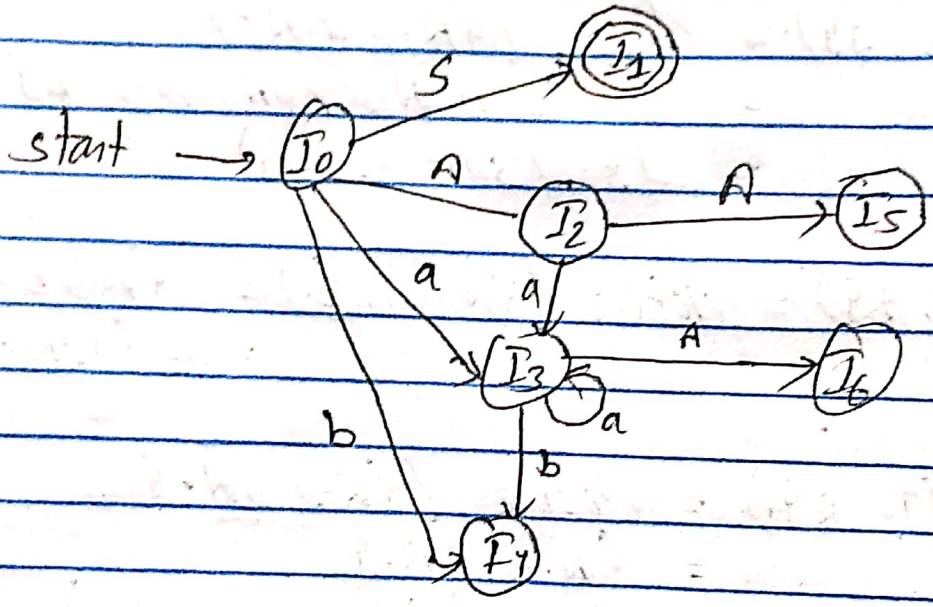
$goto[\{I_3, b\$\}) = closure(\{A \to b.\$\})$
$= \{A \to b.\$$ same as I_4

So, total no. of state is 7

Now we calculate FOLLOW function as

FOLLOW (S) = {\$}
FOLLOW (S) = {FOLLOW (S')} = {\$}
FOLLOW (A) = {FIRST (A) ∪ FOLLOW (S)}
= {a, b}

The DFA of above grammar is



Now, we construct SLR Parsing table as

States	Action Table			GOTO Table	
	a	b	$	S	A
I_0	Shift I_3	Shift I_4		I_1	I_2
I_1			Accept		
I_2	Shift I_3	Shift I_4			I_5
I_3	Shift I_3	Shift I_4			I_6
I_4	Reduce 3	Reduce 3	Reduce 3		
I_5			Reduce 1		
I_6	Reduce 2	Reduce 2	Reduce 2		