

## AHSANULLAH UNIVERSITY OF SCIENCE & TECHNOLOGY

CSE 4129

FORMAL LANGUAGES & COMPILERS LAB

#### **Assignment 6 on Predictive Parsing**

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### Given

The following grammar:

$$5 \rightarrow axd$$
 $x \rightarrow Y2$ 
 $Y \rightarrow b$ 
 $Y \rightarrow E$ 
 $Z \rightarrow CX$ 
 $Z \rightarrow E$ 

The input string = abod

1. Find the FIRST and FOLLOW sets of each of the non-terminals.

## Bolos

2 Constraict the predictive parsing table for LL(1) method.

Soln:

Non-ter -minal	Input Symbol						
	a	b	C	d	\$		
5	5-axd						
X		X+X5	X+YZ	X→Y2			
Y		Y→b	Y→ E	4→6			
2			2→cx	2→6			

3. Demonstrate the moves of the LL(1) parser on the given input = a bad

	<b>\$</b>	\$
6 Aston	\$ P	\$ P
7 6-7	\$ P	\$ P =
7 ← K	\$ P	\$PZX
₹ X←X	\$ P	\$PX
o Astron	इ क्व	\$ PXO
5 + cx	cds	\$ 172
d Atrin	\$ 620	\$PZ9
9+1	\$ bod	\$PZK
2X+X	\$ bod \$	\$ PX
nothern	\$ bods	\$ px>
P×4€S	\$ bods	\$ 5
ro it A	tudie I	Stack

4. Construct the LP(0) automater to the grammer, We can derive an augmented Gri.
Augmented Gri.

Now, we've to that out the LR(0) authorition for the given grunning.

of Initial state, Io:

Closupe (15: 50 - 5, 50 - 5, 50 - 5, 50 - 5, 50 - 5)

(T) = (S, S) = (S, A) or Ord #

· 1 445 50 (5) = (5, x) +2) = (x 42) aroza Y+ J= I2 (d. +4 (f) + x, bx. D+2 = (a (at) oto oto) 63 state Is: batgass 0 = (\$ , £ I) 010 A # It = (15+15)=(5,01) 01012 51 state 17: CLOSURE (25-15)= {5,4.5,5} = (2000) : of state Lottine I the given grannap. Now, we've to find out the colonation (0) 21 なまじ、そろ、か、そろをととう=(ななり)のたのら in the co EI = (b. xx + 2) = (x,21) or 0,2 is state to

Ob State 15:  
GOTO (
$$I_2$$
,  $b$ ) =  $\{Y \rightarrow b \cdot \} = I_5$   
of State  $I_6$ :  
GOTO ( $I_3$ ,  $d$ )=  $\{a \times d \cdot \} = I_6$   
OB State  $I_7$ :  
GOTO ( $I_4$ ,  $z$ ) =  $\{x \rightarrow Yz \cdot \} = I_7$   
O9 State  $I_8$ :  
GOTO ( $I_4$ ,  $c$ ) =  $\{z \rightarrow c \cdot x, x \rightarrow Yz, Y \rightarrow b, Ya \cdot \}$   
=  $I_8$   
10 State  $I_9$ :  
GOTO ( $I_8$ ,  $x$ ) =  $\{z \rightarrow c \times \} = I_9$   
11 GOTO ( $I_8$ ,  $Y$ ) =  $\{x \rightarrow Y \cdot Z, Z \rightarrow c \times, Z \rightarrow J = I_4\}$   
12 GOTO ( $I_8$ ,  $Y$ ) =  $\{x \rightarrow Y \cdot Z, Z \rightarrow c \times, Z \rightarrow J = I_4\}$ 

8 parsing table for LR(1) parsing A eccepted 5

with the grammar Construct the

Q	00	n	0	72	4	w	2	4->	0	1816	1
		The state of the s							52	9	
	20		in Principal Industrial Control (1997)				55	8		6	Ac
<b>300</b>	44	É		27	88		42			G	Action
25	42	r2	No.	53	26	56	44	反		P	
		distribution of the state of th	47			MILITARITY AND SAMPLE PROPERTY.		occeptu		43.	
		Special agranation of manufacture accommon series and agranation of the special series accommon series accommon series and agranation of the special series accommon series accom							7	W	9
	O		en grande en el el el el en el				w	PROTEIN CONTRACTOR	enter i preti que su su didi frança	×	Goto
	2		www.gar.changior.stau.chi.com				2			~	The state of the s
		The state of the s	, ar es primitar for a char		71	Total Control		And the second s		4	The state of the s

# Demonstrate the moves of the LR(1) parse on the given input

	Stack Symbol	Stack State	Imput	Action
0	\$	0	abcds	52
1	\$ab	029	bcd \$	55
2	\$ab	025	cd\$	n3(Y→b)
3	\$ay	024	cd\$	58
4	Farc	0248	1\$	74 (Y>E)
5	\$ ayey	02484	d\$	r6(2+6)
6	\$aYcYz	024847	J\$	Y2 (X→Y2)
7	FAYEX	02489	4\$	75 (2+cx)
8	\$ a Y2	0247	4\$	72(X-1/2)
9	\$ ax	023	4\$	56
10	\$ AXd	0236	\$	r1 (staxd)
11	\$	01		accepted
				2