ASSIGNMENT # 03

COMPILER CONSTRUCTION (CS-30)

SUBMITTED BY
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ROLL NO #
CS19-037

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Question No :01

bexpr → bexpr or bterm | bterm

bterm → bterm and bfactor | bfactor

bfactor → not bfactor | (bexpr) | true | false

Removing Left Recursion:

Bexpr → bterm A'

A' → or bterm | E

bterm → bfactor B'

B' → and bfactor B' | E

bfactor → not bfactor | (bexp) |

| true | false

Finding First & Follow:

First:

Bexpr = { not , (, true , false }

A' = or , E

Bterm = { not ,(, true , false }

B' = [and , E]

bfactor = { not ; (true , false)

Follow:

bex, pr → { $,) }

A' → { $, ') }

bterm → { or ,) , $ }

B' → { or ,) , $ }

bfactor → { and , or , $,) }

Parsing Table:

	or	and	(	)	True	false	not	$
bexpr			1		1	1	1	
bterm			4		4	4	4	
bfactor			8		9	10	7	
A’	2			3				3
B’	6	5		6				6

Question No :02

SLR IMPLEMENTATION

A’ -> A

A -> A + K

A -> K

K-> KW

K-> W

W-> W^+

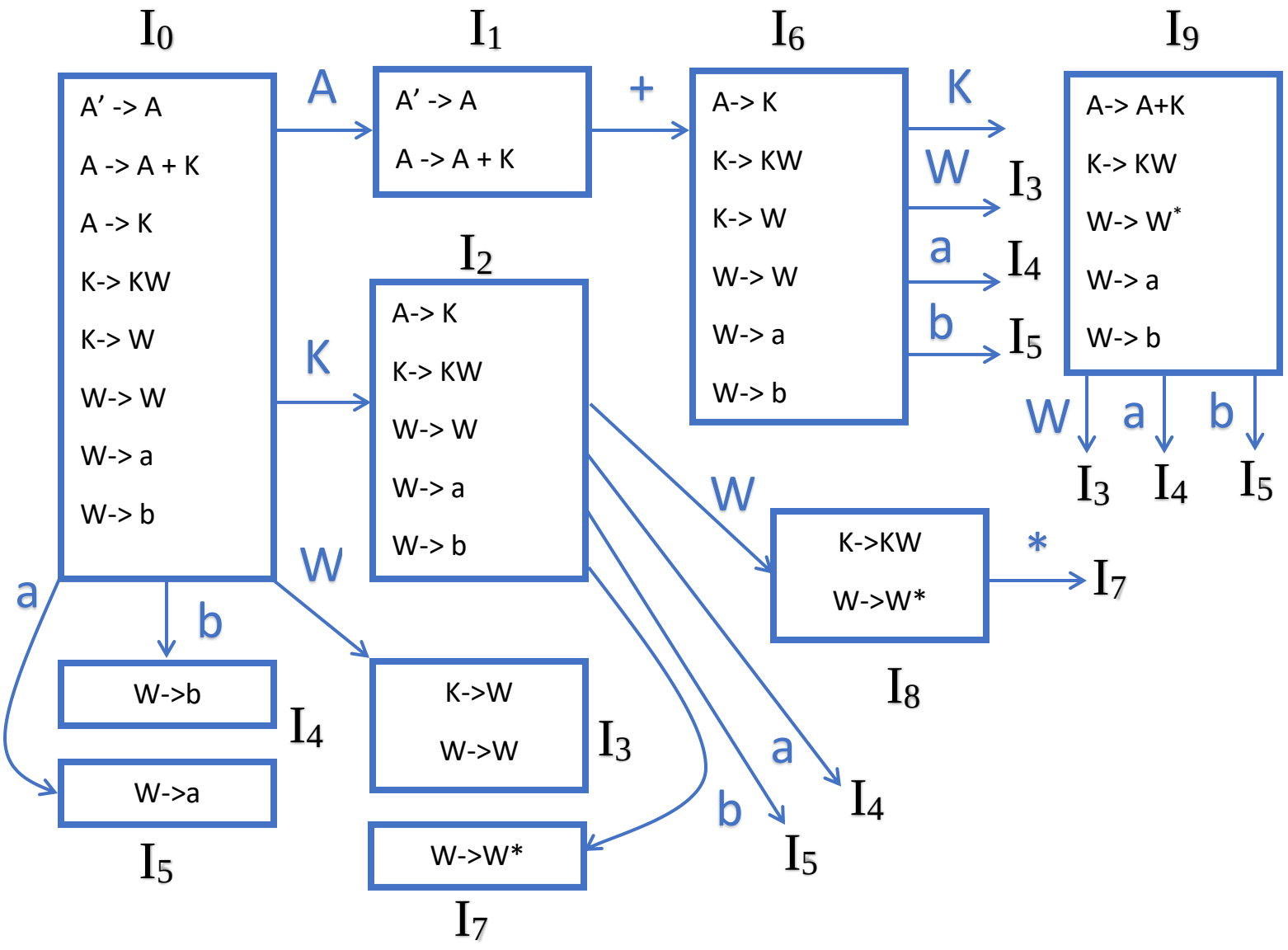
W-> a

W-> b

STACK IMPLEMENTATION

STACK	i/p	Production
$bexpr	not(trueorfalse)$	bexpr->btermA’
$A’bterm	not(trueorfalse)$	bterm->bfactorB’
$A’B’bfactor	not(trueorfalse)$	bfactor->not bfactor
$A’B’bfactornot	not(trueorfalse)$	
$A’B’bfactor	(trueorfalse)$	bfactor->(bexp)
$A’B’)bexpr(	(trueorfalse)$	
$A’B’)bexpr	(trueorfalse)$	bexp->btermA’
$A’B’)A’B’bterm	(trueorfalse)$	bterm->bfactorB’

$A'B')A'B'bfactor	(trueorfalse)$	bfactor->true
$A'B')A'B'true	(trueorfalse)$	
$A'B')A'B'	orfalse)$	B'->Ɛ
$A'B')A'	orfalse)$	A'->or bterm
$A'B')bterm or	orfalse)$	
$A'B')bterm	false)$	bterm->bfactorB'
$A'B')Bbfactor	false)$	Bfactor->false
$A'B')B'false	false)$	
$A'B')B'	)$	B'->Ɛ
$A'B'	$	
$A'	$	B'->Ɛ
$	$	A'->Ɛ



→STATTIC IMPLEMENTATION

STACK	I/P	ACTION
0	A+ba*+a*$	S4
0a4	+ba*+a*$	r6 W→E
0W3	+ba*+a*$	r4 K→W
OK2	+ba*+a*$	r2 A→K
OA1	+ba*a*$	S6
OA1+6	ba*a*$	S5
OA1+6b5	a*+a*$	r7 W→b
OA1+6W3	“”	r4 K→W
OA1+6K9	“”	S4
OA1+6K9a4	*+a*$	r6 W→a
OA1+6K9W3	“”	S7
OA1+6K9W3*7	+a*$	r5 W→W*
OA1+6K9W8	+a*$	r3 K→KW
OA1+6K9	“”	r1 A→A+K
OA1	“”	S6
OA1+6	a*$	S4
OA1+6a4	+$	r6 W→a
OA1+6W3	“”	S7
OA1+6W3*7	$	r5 W→W*
OA1+6W3	$	r4 K→W
OA1+6K9	$	R1 A→A+K
OA1	$	acc

Question No :03

→S- Attribute STD:

If an STD uses only synthesized attribute , it is called S-ATTRIBUTE STD.

→L-ATTRIBUTE STD:

If an STD uses both synthesized attributes & inherited attributes with a restriction that inherited attributes can inherit values from left siblings only,it is called L-attribute STD.

EXAMPLE:

P1:S→MN{S.VAL = M.VAL+N.VAL}

P2:M→PQ{M.VAL=P.VAL*Q.VAL & P.VAL=Q.VAL}

In P1,S is a synthesized attribute & in L-attribute definition synthesized is allowed, So, P1 follows the L-attributed definition ,but P2 doesn’t follow L-attributed definition as P is depending on Q which is RHS to it.