

CHECK LR(0) OR NOT

1.

$$\begin{aligned} E &\rightarrow E + T \\ E &\rightarrow T \\ T &\rightarrow id \end{aligned}$$

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$$\begin{aligned} \textcircled{1} S &\rightarrow AA \\ A &\rightarrow aA \mid b \end{aligned}$$

2. CHECK SLR(1) OR NOT

$$\begin{aligned} S &\rightarrow (L)/a \\ L &\rightarrow L, S/S \end{aligned}$$

4.

$$\begin{aligned} S &\rightarrow Aa \\ &\quad | bAc \\ &\quad | dc \\ &\quad | bda \\ A &\rightarrow d \end{aligned}$$

5.

$$\begin{aligned} S &\rightarrow AS \mid b \\ A &\rightarrow SA \mid a \end{aligned}$$

[\[5\] Test for LL\(1\), LR\(0\) & SLR\(1\) Grammar](#)

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$S \rightarrow Aa$   
 $\quad | bAc$   
 $\quad | dc$   
 $\quad | bda$   
 $A \rightarrow d$

**[2] Test for LL(1), LR(0), SLR(1), LR(1) & LALR(1) Grammar**

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$S \rightarrow AaAb$   
 $\quad | BbBa$   
 $A \rightarrow \epsilon$   
 $B \rightarrow \epsilon$

**[1] Test for LL(1), LR(0), SLR(1), LR(1) & LALR(1) Grammar**

8.

$S \rightarrow Aa$   
 $\quad | bAc$   
 $\quad | Bc$   
 $\quad | bBa$   
 $A \rightarrow d$   
 $B \rightarrow d$

**[3] Test for LL(1), LR(0), SLR(1), LR(1) & LALR(1) Grammar**

9.

$E \rightarrow E+E | E * E | id$

**[2] Operator Precedence Parser**

INPUT:  $id + id + id \$$

SDD

DRAW ANNOTATED PARSE TREE AND EVALUATE THE ATTRIBUTES

<u>SDD</u> <u>Productions &amp; Semantic Rules</u>	
$S \rightarrow x x W$	<code>Printf("1")</code>
$  y$	<code>Printf("2")</code>
$W \rightarrow S z$	<code>Printf("3")</code>

<u>SDD</u> <u>Productions &amp; Semantic Rules</u>	
	INPUT: $((2 + 3) = 8)$
$E \rightarrow E_1 + E_2$	<code>if ((E<sub>1</sub>.type == E<sub>2</sub>.type) &amp;&amp; (E<sub>1</sub>.type == int)) then E.type = int else ERROR</code>
$  E_1 = E_2$	<code>if ((E<sub>1</sub>.type == E<sub>2</sub>.type) &amp;&amp; (E<sub>1</sub>.type == int/bool)) then E.type = bool else ERROR</code>
$  (E)$	<code>E.type = E<sub>1</sub>.type</code>
$  \text{num}$	<code>E.type = int</code>
$  \text{True}$	<code>E.type = bool</code>
$  \text{False}$	<code>E.type = bool</code>

## Productions & Semantic Rules

INPUT = 1011

$N \rightarrow L$	$N.count = L.count$	
$L \rightarrow L, B$	$L.count = L_1.count + B.count$	
$  B$	$L.count = B.count$	
$B \rightarrow 0$	$B.count = 0$	
$  1$	$B.count = 1$	

## SDD

### Productions & Semantic Rules

INPUT: 2 # 3 & 5 # 6 & 4

$E \rightarrow E \# T$	$E.val = E.val * T.val$
$  T$	$E.val = T.val$
$T \rightarrow T \& F$	$T.val = T.val + F.val$
$  F$	$T.val = F.val$
$F \rightarrow num$	$F.val = num.value$

## SDD for a Simple Calculator

### Productions & Semantic Rules

$E \rightarrow E + T$	$E.val = E.val + T.val$
$E \rightarrow T$	$E.val = T.val$
$T \rightarrow T * F$	$T.val = T.val * F.val$
$T \rightarrow F$	$T.val = F.val$
$F \rightarrow (E)$	$F.val = E.val$
$F \rightarrow digit$	$F.val = digit$