

GANPAT UNIVERSITY
U. V. PATEL COLLEGE OF ENGINEERING
B.TECH VII CE/IT/CE(AI)
ACADEMIC YEAR: JULY-DEC 2024
2CEIT701: COMPILER DESIGN
ASSIGNMENT 2

1. Calculate canonical collection of LR(0) item sets and Construct LR(0) and SLR(1) parsing table for the following grammar and check whether the grammar is LR(0) or SLR(1) ?

$S \rightarrow xAy \mid xBy \mid xAz$ $A \rightarrow aS \mid b$ $B \rightarrow b$ Parse the string "xby\$"	$S \rightarrow (L) \mid a$ $L \rightarrow L,S \mid S$ Parse the string "(a,a)\$"	$S \rightarrow 1AB$ $A \rightarrow 1AC \mid 0C$ $B \rightarrow 0S \mid 1$ $C \rightarrow 1$ Parse the string "101010\$"
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2. Calculate canonical collection of LR(1) item sets and construct CLR(1) & LALR(1) parsing table for the following grammar: **(Note: Given strings need to parse for both CLR(1) and LALR(1) parsing techniques)**

$S \rightarrow aAb \mid bB$ $A \rightarrow Aa \mid \epsilon$ $B \rightarrow Bb \mid \epsilon$ Parse the string "aaaab\$"	$S \rightarrow Xx \mid yXz \mid Yz \mid yYx$ $X \rightarrow v$ $Y \rightarrow v$	$M \rightarrow Nx \mid yNz \mid wz \mid ydx$ $N \rightarrow w$
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3. Identify, following SDT is S-attributed or L-attributed? Justify your answer.

$S \rightarrow XY \{S.val = X.val + Y.val\}$
 $X \rightarrow PQ \{X.val = P.val * Q.val, P.val = Q.val\}$

4. For following SDD compute E.value for the root of the parse tree for the expression: **2#3&5#6&4** and construct annotated parse tree.

$E \rightarrow E \# T \quad \{E.value = E.value * T.value\}$
 $E \rightarrow T \quad \{E.value = T.value\}$
 $T \rightarrow T \& F \quad \{T.value = T.value + F.value\}$
 $T \rightarrow F \quad \{T.value = F.value\}$
 $F \rightarrow num \quad \{F.value = num.value\}$

Note: Submit assignment on or before 18th NOVEMBER 2024.