

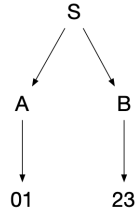
MATH321 - Assignment-II

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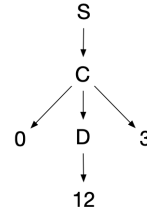
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1 Q1

1.1 Q1-a



(a) Path 1



(b) Path 2

1.2 Q1-b

$S \rightarrow aABA \mid aB$
 $A \rightarrow bA \mid b \mid \varepsilon$
 $B \rightarrow cB \mid c \mid \varepsilon$

$S_0 \rightarrow S$
 $S \rightarrow aABA \mid aB$
 $A \rightarrow bA \mid b \mid \varepsilon$
 $B \rightarrow cB \mid c \mid \varepsilon$

$S_0 \rightarrow S$
 $S \rightarrow aABA \mid aB \mid aAA \mid a$
 $A \rightarrow bA \mid b \mid \varepsilon$
 $B \rightarrow cB \mid c$

$S_0 \rightarrow S$
 $S \rightarrow aABA \mid aB \mid aAA \mid a \mid aAB \mid aBA \mid aA$
 $A \rightarrow bA \mid b$
 $B \rightarrow cB \mid c$

$S_0 \rightarrow S$
 $S \rightarrow A_0ABA \mid A_0B \mid A_0AA \mid a \mid A_0AB \mid A_0BA \mid A_0A$
 $A \rightarrow B_0A \mid b$
 $B \rightarrow C_0B \mid c$
 $A_0 \rightarrow a$
 $B_0 \rightarrow b$
 $C_0 \rightarrow c$

$S_0 \rightarrow A_0AB_A \mid A_0B \mid A_0A_A \mid a \mid A_0A_B \mid A_0B_A \mid A_0A$
 $A \rightarrow B_0A \mid b$
 $B \rightarrow C_0B \mid c$
 $A_0 \rightarrow a$
 $B_0 \rightarrow b$
 $C_0 \rightarrow c$
 $A_A \rightarrow AA$
 $A_B \rightarrow AB$
 $B_A \rightarrow BA$
 $A_{0A} \rightarrow A_0A$

1.3 Q1-c

There must be equal number of 0's and 1's in the string. $L = \{w \mid w = (01)^* \cup (10)^*\}$

2 Q2