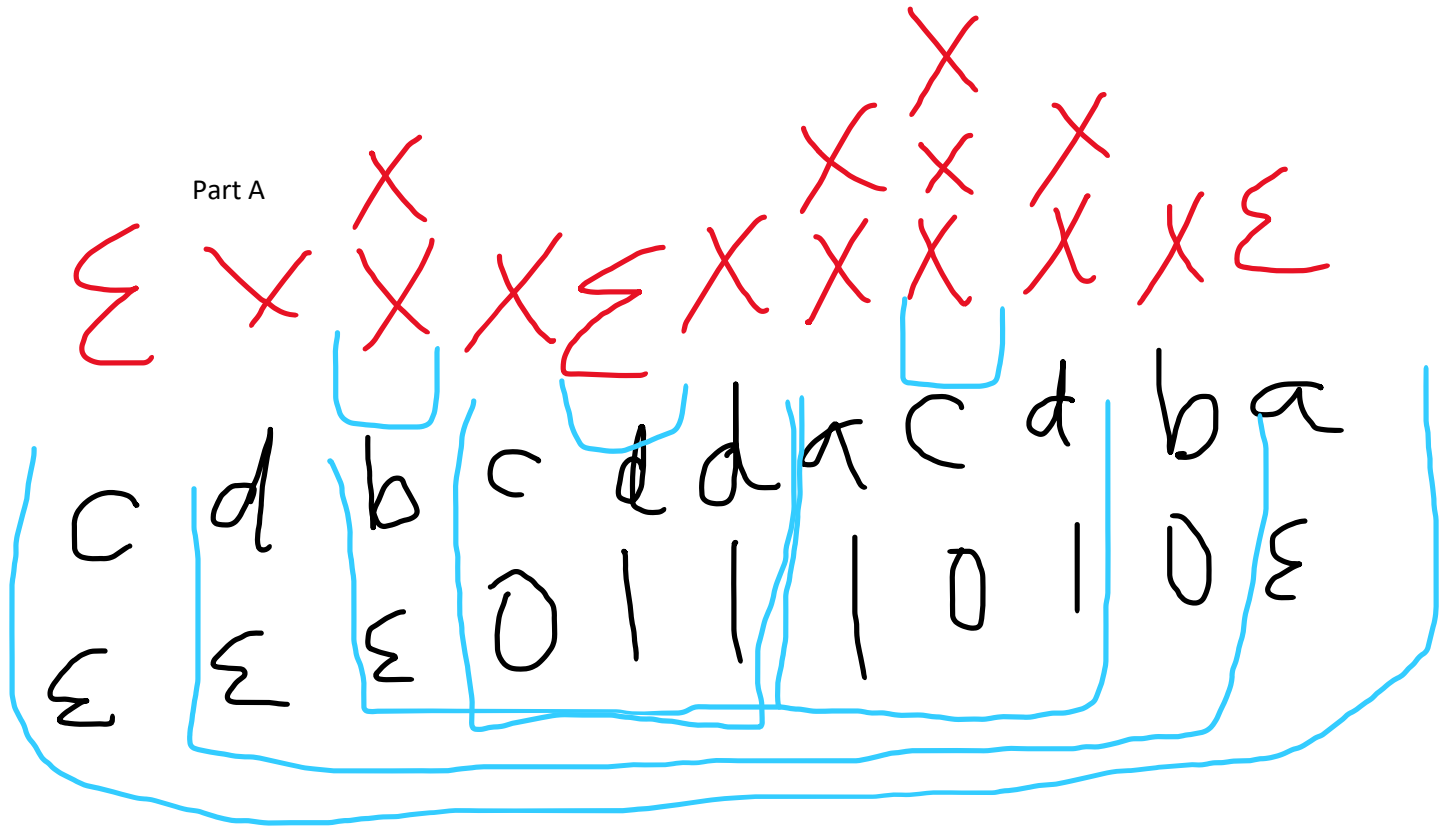


Part A



$$A_{ca} \rightarrow A_{cd} \quad A_{ba} \rightarrow A_{bb}0$$

$$A_{da} \rightarrow A_{dc}0 \quad A_{da} \rightarrow 0A_{da}$$

$$01A_{db}0 \rightarrow 011A_{ad}10$$

$$011A_{cc}010 \rightarrow 011A_{\epsilon}010$$

$$\rightarrow 0111010$$

$$|\sigma| = |n| + 10$$

Part B

$$|\sigma| = |n| + 10$$

Assume L is a context free language

Let  $x = 101, y = 11, z = 10$

Check first

when  $i = 1$

$$10(1)' = (1)' + 10 \Rightarrow |01| = 11 + 10$$

$\notin L$

$$|\sigma| = |n| + 10$$

$$(|\sigma|)_2 = (|n|)_{10} \quad (|n|)_2 = (7)_{10}$$

$$(10)_2 = (2)_{10}$$

$$11 \neq 7 + 2$$

•

Since 11 does not equal 7 plus 2, then the assumption that L is a regular context free language is false