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Question: Consider the language $L = \{1^y + 21, y, z \in \{0,1\}^+ \text{ and } x+y=2\}$

Consider the language

$$L = \{x = y + z \mid x, y, z \in \{0, 1\}^+ \text{ and } x + y = z\}.$$

For example $101 = 11 + 10 \in L$ since

$$(5)_2 = (3)_2 + (2)_2.$$

Use the CFL Pumping Lemma to prove that L is not a CFL. Hint: you may assume that two binary numbers w_1 and w_2 , each with leading ones, have the same numerical value iff $w_1 = w_2$, i.e. iff they both represent the same binary word. This is useful when both sides of the equality symbol are being simultaneously pumped.

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$$\text{and } x+y=z \}$$

prove it is not context free using pumping lemma.

Step 1:-

Assume that language L is context free language.

Step 2:-

Consider string generated by language L .

$$S \Rightarrow 101 = 11 + 10 ; S \in L$$

$$\text{where } x = 101, y = 11 \text{ and } z = 10$$

Step 3:- Split the string into 5 parts.

$$\begin{array}{c|c|c|c|c} 10 & 1 & = & 1 & 1 & +10 \\ p & q & & r & s & t \end{array}$$

$$\text{where } p = \boxed{10}, q = \boxed{1}, r = \boxed{=}, s = \boxed{1} \text{ and } t = \boxed{+10}$$

Step 4:- Now check 3 cases of pumping lemma.

$$\begin{array}{l} \text{Case 1:- } |qrs| > 0 \\ |11| > 0 \\ 2 > 0 \\ \boxed{\text{True}} \end{array}$$

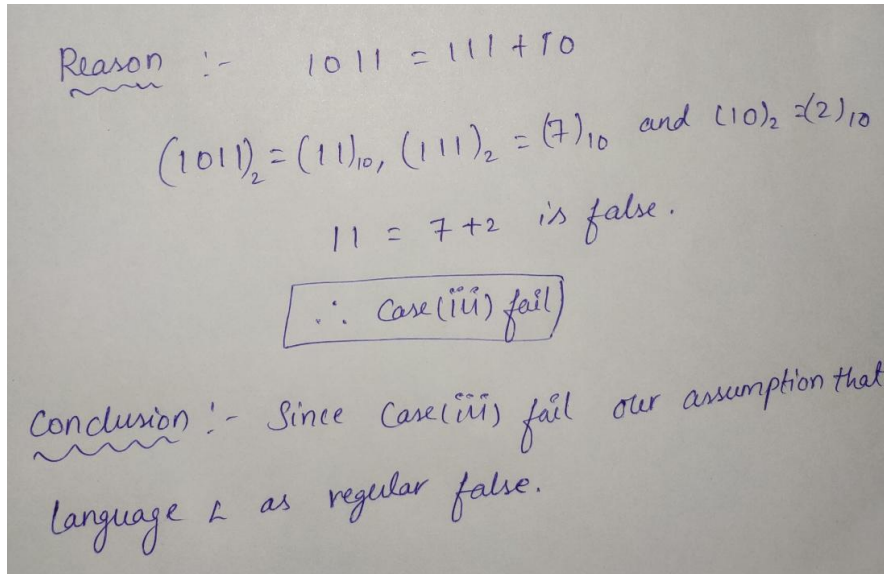
Case-2: $|qrs| \leq \text{pumping length.}$

$$1 |11| \leq 7$$

$$4 \leq 7 \\ \boxed{\text{True}}$$

Case 3:- check $pq^i r s^i t \in L$ for different values of i .

$$i=1 \Rightarrow 10(1)^1 = 1(1)^1 + 10 \Rightarrow 101 = 11 + 10 \in L.$$



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Log files are records that detail who logged on to a system, and what information or resources they used.

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☐ False

See answer

MBSA includes a command line tool called mbsacl. Research the tool and construct a command that will generate a report called

See answer

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