Göktuğ Ekinci
2380343

A) $\{(a,b,S,F,T,X),(a,b),R,S\}$

$R =$ $S \rightarrow F|T$

$F \rightarrow aFc|bFc|e$

$T \rightarrow XTc|e$

$X \rightarrow aa|ab|ba|bb$

B) assume L is CFL, p is the pumping length

So, valid strings should be dividible like uv^nxy^nz for $n \geq 0$ and $|vy| > 0$ and $|vxy| \leq p$.

$a^p b^p c^{(p^2)} = uv^nxy^nz$

* for vxy in either prefix of $a^p b^p$ or suffix c^{p^2} value of n is going to disturb the equality of $p^2 = p \times p$. (for n=0 number of a's and b's will decrease and will not be equal to p^2 or same with c situation) $(p \mp k)^2 \neq p \cdot p$ and $p^2 \neq (p \mp k)(p \mp k)$

* for vxy is at the intersection of b and c, number of c's and b's will change but a's won't according to the value of n.

$p \cdot (p+k) \neq (p+x)^2$ where x, k is the change according to change of n

Göktuğ Elçinci
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There is no need to check whether vxy contains all a's, b's and c's since this is a strong pumping theorem with the condition $|vxy| \leq p$ (number of b's are already p.)

Statements above creates a contradiction regarding the assumption. So, this language is not a context free language proven by pumping theorem.