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If we suppose that $L = \{a^n b a^n b a^n b \mid n \geq 1\}$ is context-free, then we can assume some pumping length p. Suppose we have $w = a^{p-1} b a^{p-1} b a^{p-1} b$. The pumping lemma shows that we can construct w as $uvxyz$, such that $|xyv| \leq p$ and $v \neq \varepsilon$ or $y \neq varepsilon$. No matter what we pick for v and y, pumping those v or y will result in a word that is not in L. If either v or y is ε, letting the other select a substring in w, the largest substring that the other can be is $a^{p-1}b$ or ba^{p-1}, which if pumped, will result in an imbalance in the number of as. If we have values for both v and y, we still run into an issue, because there will always be a third set of as that is not being pumped. Therefore, L is not context-free.