Exercise 11

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Let $B = \{a^n bub^n | n >= 2 \text{ and } u \in \{a, b\}^*\}$.

For all pumping lengths p, let $s = a^{p+2}bab^{p+2}$. s is in the language B and has length greator than p. For all partitions $s = xyz$ satisfying $|xy| <= p$ and $|y| > 0$, xy^0z is of the form $a^m bab^n$ where $m < n$ and is thererfore not in the language B.

By the converse of the pumping lemma, B is not regular.