CS 337 **Pop Quiz 4** **4/20/09**

Open book and notes.

Problem Let t be the string $abba$. What is the largest i such that $c^i(t^{20}) \neq \epsilon$? Justify.

Solution First, let us solve the problem for any n instead of 20. Observe $c(t^n) = t^{n-1}$, for $n > 1$. Hence, $c^{n-1}(t^n) = t$, for $n > 1$. And, we see that $c(t) = c(abba) = a$ and $c(a) = \epsilon$. Therefore, $c^n(t^n) = a$ and $c^{n+1}(t^n) = \epsilon$.

We conclude that we can compute cores of t^n repeatedly n times without hitting ϵ. So, the answer is 20.