Theory Exam 3

1. Prove that the language $\{0^i1^{2i}0^{3i} \mid i \geq 0\}$ is non context free language

2. Let X = $\{w \mid w = k_1\#k_2\#....\#k_n$ for $n \geq 0$, each $k_i \in 1^*$, and $k_i \neq k_j$ whenever $i \neq j$. Here $\sum = \{1,\#\}$. Prove that X is non context free language.

3. Construct a Turing machine state diagram that accepts $L = \{ a^n b^m c^n : m > n\}$.