Peter Cholak Math 441 Due Wednesday, November 6 Homework

3.3.2, 3.3.3, 3.3.4.

Consider $L = \{x^n y^n : n \in \mathbb{N}, x \in \{ab, ba\}, y \in \{cd, dc\}\}$. Construct a grammar G such that $L(G) = L$. Using Lemma 3.4.3 find a PDA M such that $L(M) = L$.

Let $M = (\{s, f\}, \{a, b, c, d\}, \{a\}, s, \{f\}, \Delta)$, where $\Delta = \{((g, aa, e), (g, aaa)), ((g, b, e), (g, aa)), ((g, e, e), (f, e)), ((f, d, a), (f, e)), ((f, d, aaa), (f, e)), ((f, c, aa), (f, e))\}$. Using Lemma 3.4.4 find a context-free grammar G such that $L(G) = L(M)$. Describe $L(M)$.