

CS 4810 Homework Assignment 7 due in class October Oct 15

Your homework will be graded on the neatness of your write up as well as its correctness.

1. Create a context-free grammar for the language  $\{a^*b^nc^*d^ne^*|n \geq 0\}$ .
2. Prove that the reversing every string in a context-free language results in a context-free language.
3. Create a context-free grammar for the complement of the language  $\{wcv|w \in \{a, b\}^*\}$ . The terminal alphabet is  $\{a, b, c\}$ .
4. Show that  $L = \{w \vdash w^R \vdash w \vdash w^R \vdash \dots \vdash w | \text{The number of } \vdash \text{'s is even}\}$  is the intersection of two context-free languages.
5. Create a nondeterministic pushdown automaton that accepts the complement of the language  $L = \{xx|x \in (a + b)^*\}$ .