

CS 383

HW 5

Due in class Wednesday, October 25

This one should be typed.

1. Design a PDA to accept the strings in $(0+1)^*$ such that no prefix has more 1's than 0's. 01001011001 is a string in this language. Say whether your PDA accepts by final state or empty stack.
2. Design a PDA to accept $\{a^i b^j c^k \mid i=j \text{ or } j=k\}$. Say whether this accepts by final state or empty stack.
3. Design a PDA to accept $\{0^n 1^m \mid n \leq m \leq 2n\}$
4. Convert the following grammar into a PDA that accepts by empty stack.
 $S \Rightarrow 0S1 \mid A$
 $A \Rightarrow 1A0 \mid S \mid \epsilon$
5. Here is a PDA that accepts strings in $(0+1)^*$ with the same number of 0's and 1's. This PDA accepts by empty stack. Convert this PDA into a context-free grammar. Give a derivation in this grammar of the string 010110.

