CS21004 - Tutorial 8

March 16th, 2019

Instructions: For all these problems, please write the answers neatly in loose sheets and submit to the TA before the end of the tutorial.

1. Show that following language is not context-free using pumping lemma

   (a) $L_1 = \{a^{n!} : n \geq 0\}$

   (b) $L_2 = \{wtw^R | w, t \in \{0, 1\}^*\}$ and $|w| = |t|\}$ (To Submit)

2. Design NPDA for the following languages

   (a) $L_3 = \{a^i (bc)^j | i, j \geq 0, i \geq j\}$ states (To Submit)

   (b) $L_4 = \{a^n b^m | n \neq m\}$ (To Submit)

3. Construct a NPDA that accepts the language generated by a grammar with productions: $S \rightarrow aSbb | a$ (To Submit)

4. Consider the PDA $P = (\{q\}, \{0, 1\}, \{Z, A, B\}, \delta, q, Z, \phi)$, where the transitions are shown in the following figure. Convert this PDA to CFG as per the PDA-to-CFG conversion. (Home)