Tutorial-7 (28/10/2020)

1. Show that L= {a^nb^n}{a^nb^2n} is not deterministic context-free language.

2. Show that L which is given in Q.No-1 ,L'={ L U {a^nb^nc^n}} is not CFL by using pumping lemma.

3. List out a few negative closure properties of Context- Free Languages.

4. Prove that "The intersection of a context-free language and a regular language
is a context-free language".

5. Consider the language L1,L2,L3 as given below.
   L1 = { $a^m b^n$ | m, n >= 0 }
   L2 = { $a^n b^n$ | n >= 0 }
   L3 = { $a^n b^n c^n$ | n >= 0 }
   Which of the following statements is NOT TRUE?

   A. Push Down Automata (PDA) can be used to recognize L1 and L2
   B. L1 is a regular language
   C. All the three languages are context free
   D. Turing machine can be used to recognize all the three languages

6. Create a PDA that recognizes the following language:

   A. L={$a^i b^j c^k$ | i,j≥0, k=i+j}

   B. L= {w∈ {0,1}* | w=w^R and the length of w is odd}

Questions to be solved latest by Saturday (31/10/2020)

1. Prove that "If L1 and If L2 are two context free languages, their intersection L1 ∩ L2 need not be context free". [3]

2. $L_1 = \{a^n b^n c^m\}$ and $L_2 = \{a^m b^n c^n\}$ are two CFL, find out the intersection of these two and explain the type of the language generated? [4]

3. Is CFL closed under complementation? Justify your answer with a suitable example. [3]

NOTE: *Upload your solutions only through the given link. Name your pdf file with the format* ***<rollno_name_tutorialno>****. Do not mail your solutions elsewhere.*

Link to upload the solutions:

https://docs.google.com/forms/d/e/1FAIpQLSf_0ICrlUtFlZxEUVd543Zsl_qll AvbTlZxprycBa5libgrAA/viewform?usp=sf_link