Homework #6

#1. (10 Points)

a) If *0 1 1* is accepted by an NPDA, it is accepted by a DPDA True False
b) If *0 1 1* is accepted by an NFA, it is accepted by a DFA True False
c) NPDA's can accept more languages than DPDA's True False
d) If a PDA accepts by final state, then it accepts by empty stack True False
e) If L is accepted by a dfa M, then it is accepted by a PDA, N True False

#2. (10 Points) Given the PDA P= ({q,p}, {0,1}, {⊥, X}, δ, q, ⊥, {p})
with the following transition functions:

1. $\delta(q, 0, \perp) = \{(q, X\perp)\}$
2. $\delta(q, 0, X) = \{(q, XX)\}$
3. $\delta(q, 1, X) = \{(q, X)\}$
4. $\delta(q, \varepsilon, X) = \{(p, \varepsilon)\}$
5. $\delta(p, \varepsilon, X) = \{(p, \varepsilon)\}$
6. $\delta(p, 1, X) = \{(p, XX)\}$
7. $\delta(p, 1, \perp) = \{(p, \varepsilon)\}$

a) Show all reachable configurations when

a) w = 01

b) w = 010

c) Also describe L(M)

#3. (10 Points) Design a PDA to accept the set of all strings of 0's and 1's with an equal number of 0's and 1's. Show an example accepting a string and an example rejecting a string.

#4. (10 Points) a) Convert the grammar, S → 0 S 0 | 1 S 1 | ε to an equivalent NPDA. Show your NPDA accepting 0 1 1 0 and rejecting 0 1 1.

#5. (10 Points) Convert your NPDA from part 1 back to a CFG. Show your grammar generating 0 1 1 0 and not generating 0 1 1.

#6 This time you can post your applications of

a) PDA's
b) NPDA's

(Post to the Module 6 postings)