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. δ(q, 0, ⊥) = {(q, X⊥)}
   2. δ(q, 0, X) = {(q, XX)}
   3. δ(q, 1, X) = {(q, X)}
   4. δ(q, ε, X) = {(p, ε)}
   5. δ(p, ε, X) = {(p, ε)}
   6. δ(p, 1, X) = {(p, XX)}
   7. δ(p, 1, ⊥) = {(p, ε)}

   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)