Assignment #6

(I) Clearly describe each of the following in a few lines.

(i) linear grammar
(ii) right linear grammar
(iii) left linear grammar
(iv) regular grammar.

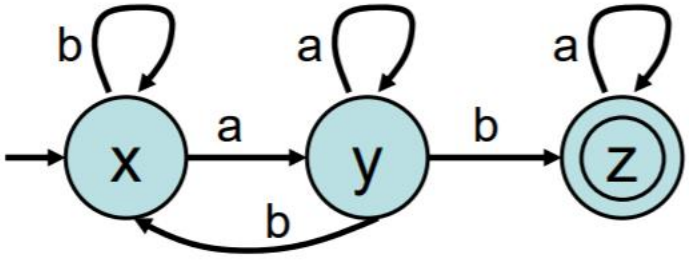
(II) You completed this exercise in the previous assignment to construct a NFA (Use the construction in Theorem 3.1 and find an NFA recognizing the languages)

(i) (01 + 001 + 010)*
(ii) (0 + 1)*010
(iii) 0(10)*1

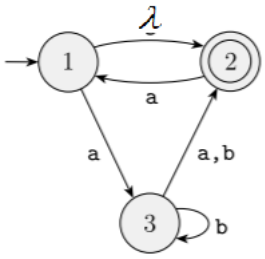
Give an equivalent regular grammar for all the three above. Be clear in describing the grammar as G= (V,T,S,P)

(III) Give an equivalent regular grammar for the automata given below. Be clear in describing the grammar as G= (V,T,S,P)

(i)



(ii)



(IV) Construct an NFA for the following right linear grammar G = ({S,S_1, S_1, S_2, S_3), {a,b,c},S, P) where P:

$$S \to aS \qquad S_2 \to cS_2$$
$$S \to aS_1 \qquad S_2 \to cS_3$$
$$S_1 \to bS_1 \qquad S_3 \to \lambda$$
$$S_1 \to bS_2$$

(i)Give an equivalent Regular Expression for the above

(V) Construct an NFA for the following right linear grammar G = ({S,T), {0,1},S, P) where P:

$$S \to 0 \qquad S \to 1T$$
$$T \to \lambda \qquad T \to 0T \qquad T \to 1T$$

(i) Derive three different strings of length 3
(ii) Verify that the three strings ae accepted by the NFA giving the extended transition function.
(iii) Give an equivalent Regular Expression for the above