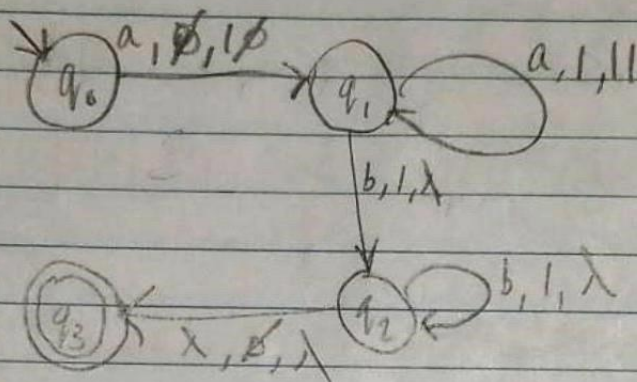


Ch 7.1

4(a)

Construct NPDA that accepts
Languages on $\Sigma = \{a, b, c\}$

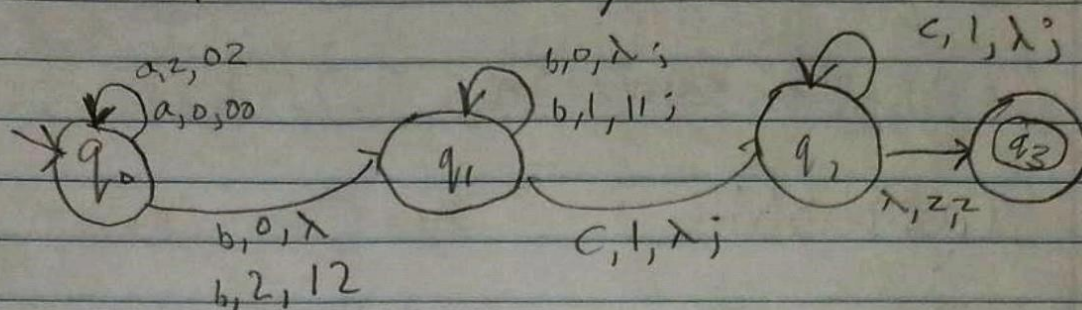
$$L = \{a^n b^{2n} : n \geq 0\}$$



NPDA

4(d)

$L = \{a^n b^{n+m} c^m : n \geq 0, m \geq 1\}$



Step 1: read a, put token to be consumed by b, change state

Step 2: read b, consume tokens from a

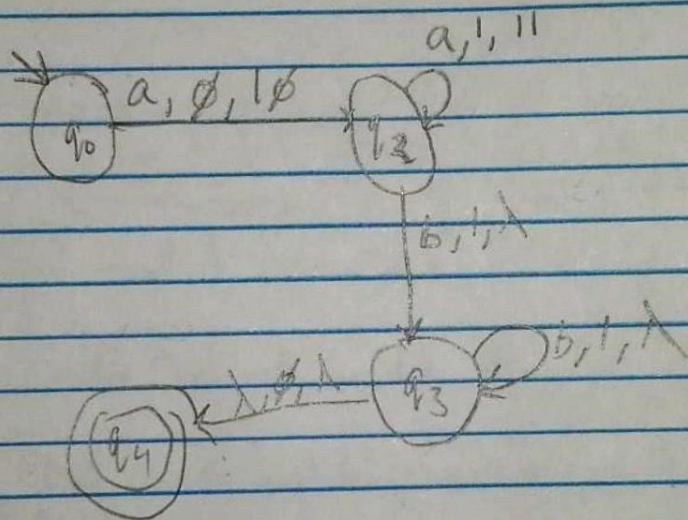
Step 3: read b, write token to be consumed by c, change state

Step 4: read c, consume token from b

4(f) Construct NPDFA on $\Sigma = \{a, b, c\}$

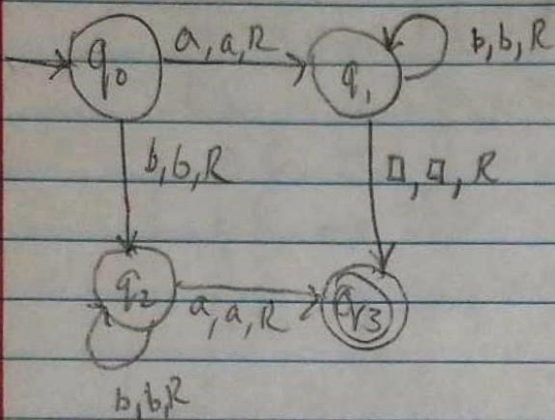
$$L = \{a^n b^m \mid n \leq m < 3n\}$$

aabbbbbbb



Ch 9

#5 What language is accepted by the Turing machine whose transition graph is in the figure below?



$$L = \{ (ab^*) + b(b^*)a(atb)^* \}$$

?

I don't think this is correct.

$$L = \{ a^n b^m a^n : 0 \leq n \leq 1, m \geq 0 \} \quad \text{Is this correct?}$$

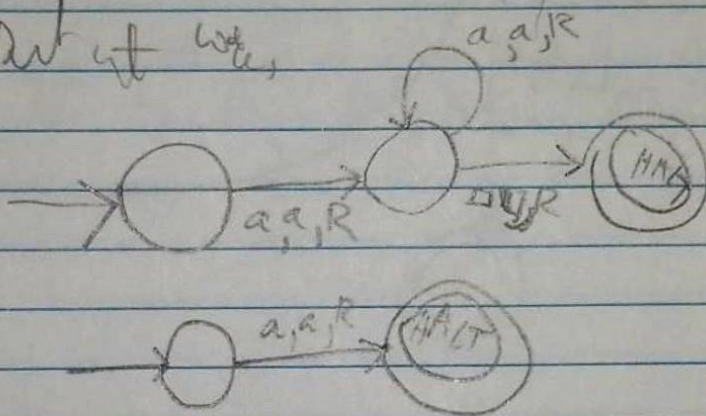
Ch 9.1

#2 Design a Turing machine w/ no more than ^{states} three states

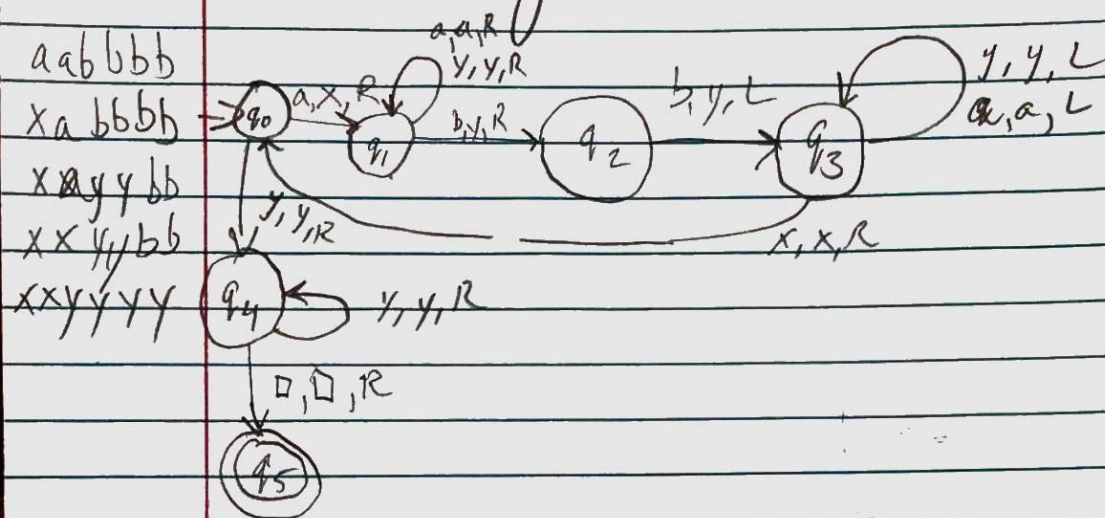
language $L(a^nb^n)$

Assume $\Sigma = \{a, b\}$ is it?
possible to do it

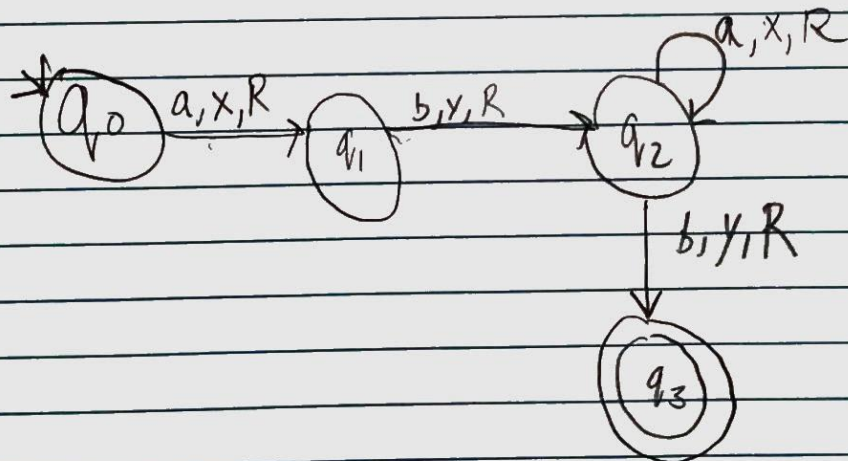
But w/ 3 states



#7(b) Create Turing Machine for $L = \{a^n b^{2n} : n \geq 1\}$



7(a) Create TM that accepts the $L = L(aba^*b)$ on (a, b)



11.3(b) Find CSG for following
 $L = \{a^n b^n a^{2n} : n \geq 1\}$

CFG

$$S \rightarrow abc \mid aAbc$$

$$Ab \rightarrow bA$$

$$Ac \rightarrow BbCc$$

$$bB \rightarrow Bb$$

$$aB \rightarrow aa \mid aaA$$

$$\hookrightarrow S \rightarrow abaa \mid aAbaa$$

$$Ab \rightarrow bA$$

$$Aaa \rightarrow Bbaaa$$

$$bB \rightarrow Bb$$

$$aB \rightarrow aa \mid aaA$$

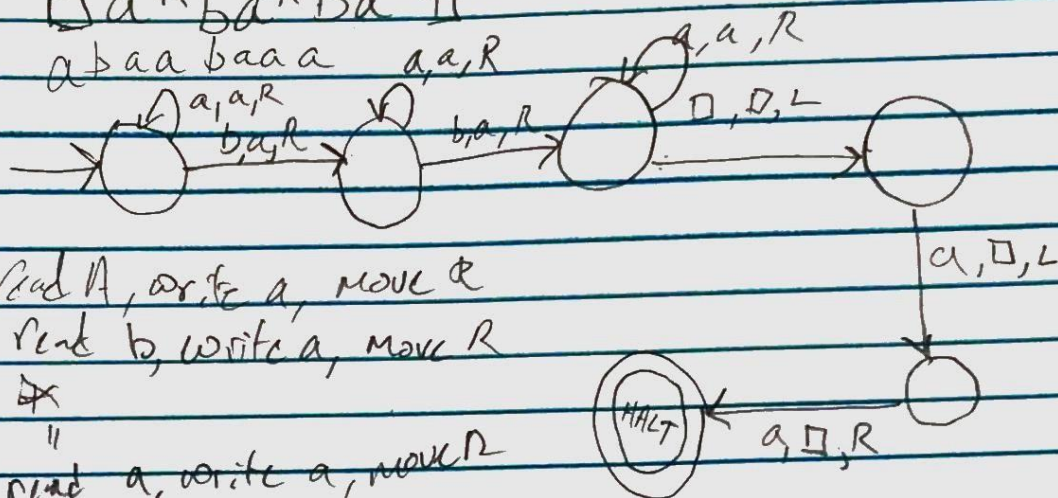
TM as computer

TM
as
comp

3-int-adder
 $\square a * b a * b a * \square$

a b a a b a a a a, a, R

(a)



read \square , write a , move R

read b , write a , move R

\times

"

read a , write a , move R

read \square , write \square , move L

read a , write \square , move L (change state)

read a , write \square , move R (move to HALT)

(b) adder for any # of ints

