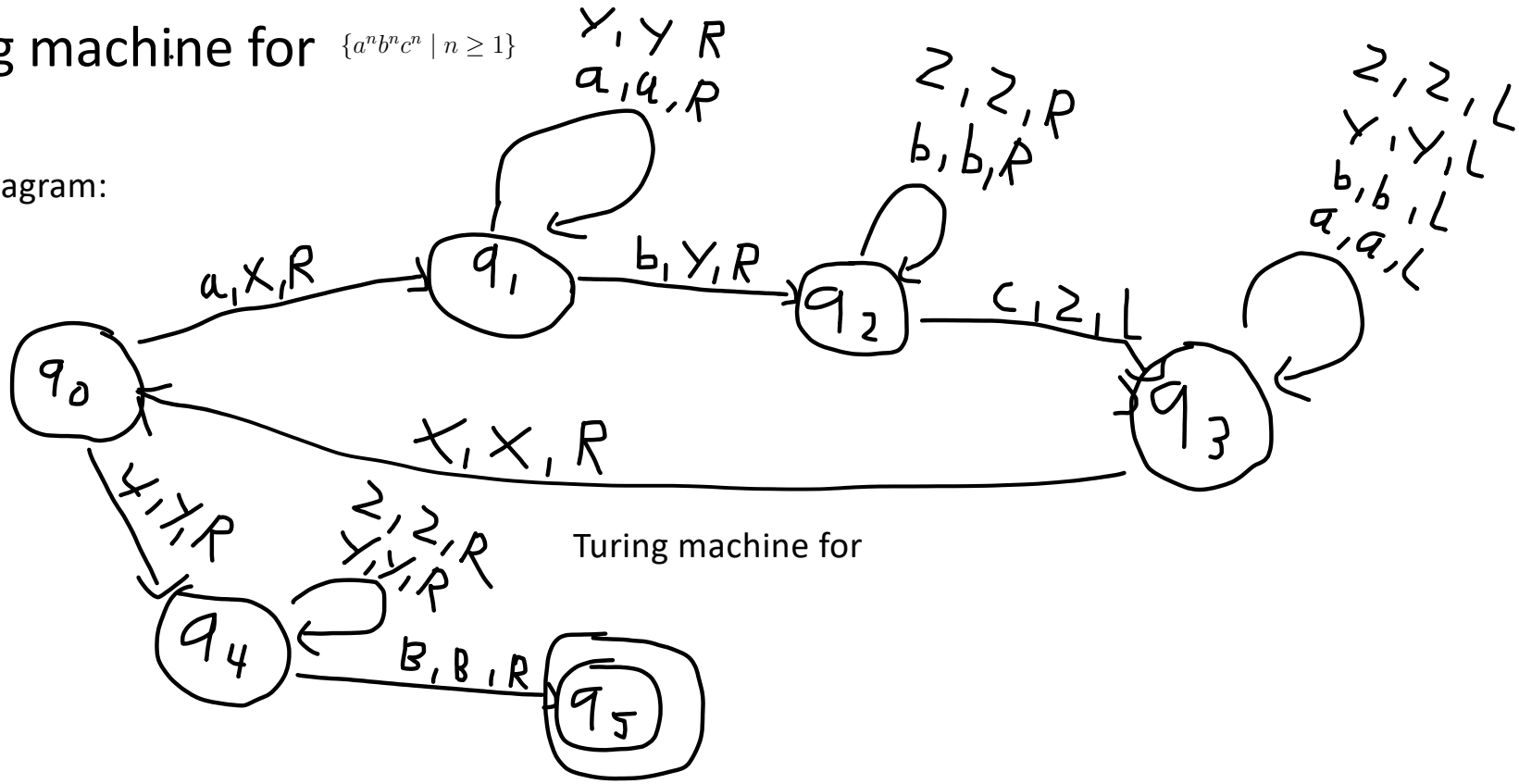
ADSA Workshop 5 Notes

Turing Machines

Turing machine for $\{a^n b^n c^n \mid n \geq 1\}$

State diagram:



Turing machine for

Turing machine: M = {{q0,q1,q2,q3,q4,q5}, {a,b,c}, {a,b,c,X,Y,Z,B}, δ, q0, B, {q5}}

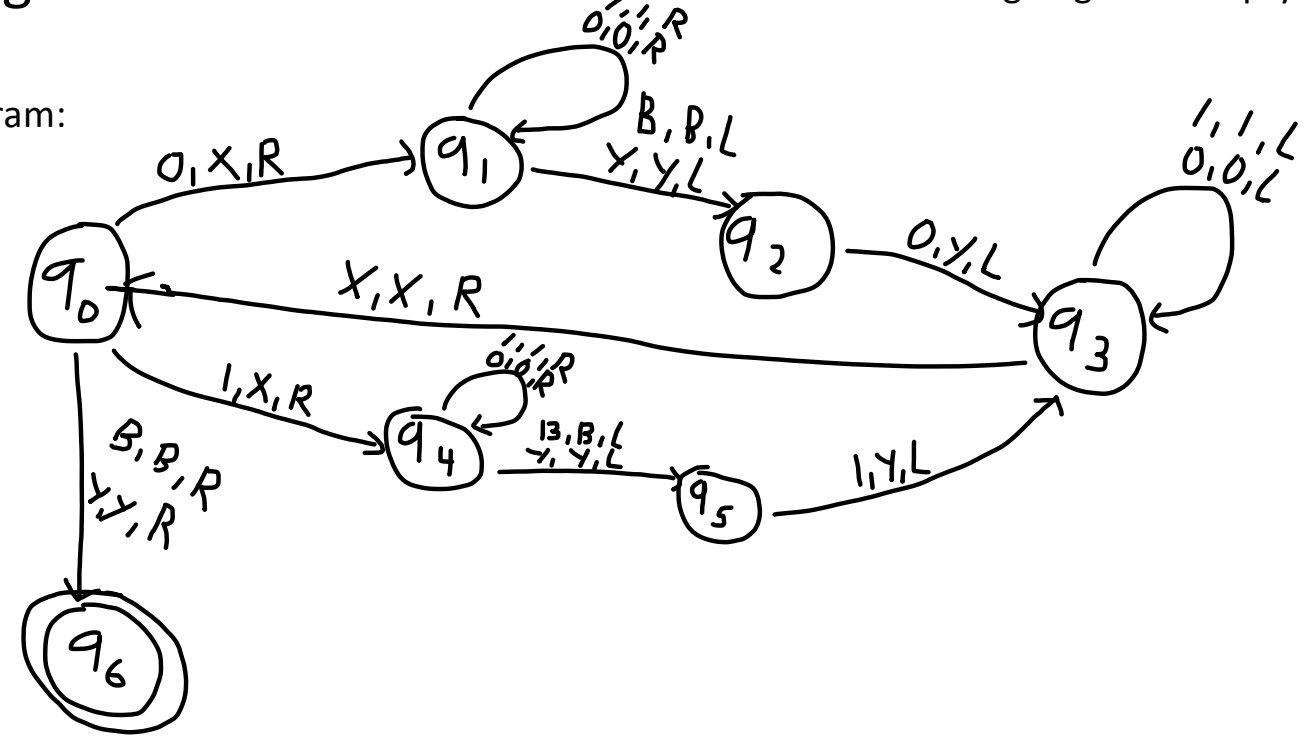
Transition function δ:

	a	b	c	X	Y	Z	B
q0	q1,X,R				q4,Y,R		
q1	q1,a,R	q2,Y, R			q1,Y,R		
q2		q2,b,R	q3,Z,L			q2,Z,R	
q3	q3,a,L	q3,b,L		q0,X,R	q3,Y,L	q3,Z,L	
q4					q4,Y,R	q4,Z,R	q5,B,R
q5							

Turing machine for $\{ww^R \mid \text{w is any string of 0's and 1's}\}$.

string might be empty

State diagram:



Turing machine: M = {{q0,q1,q2,q3,q4,q5,q6}, {0,1}, {X,Y,B}, δ, q0, B, {q6}}

Transition function δ:

	0	1	X	Y	B		
q0	q1,X,R	q4,X,R		q6,Y,R	q6,B,R		
q1	q1,0,R	q1,1,R		q2,Y,L	q2,B,L		
q2	q3,Y,L						
q3	q3,0,L	q3,1,L	q0,X,R				
q4	q4,0,R	q4,1,R		q5,Y,L	q5,B,L		
q5		q3,Y,L					
q6							