

Homework13

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Problem1

Design the following 2-tape TM to accept the language of all strings of 0' s and 1' s with an equal number of each. The first tape contains the input, and is scanned from left to right. The second tape is used to store the excess of 0' s over 1' s, or vice-versa, in the part of input seen so far. Specify the states, transitions, and the intuitive purpose of each state.

	0	1	X	Y	B
q0	(q1,(X,B),(R,S))	(q0,(1,I),(R,R))	----	(q0,(Y,B),(R,S))	(q3,(B,B),(S,S))
q1	(q1,(0,B),(R,S))	(q2,(Y,B),(L,S))	----	(q1,(Y,B),(R,S))	(q2,(B,1),(L,R))
q2	(q2,(0,B),(L,S))	---	(q0,(X,B),(R,S))	(q2,(0,B),(L,S))	---
*q3	---	---	---	---	---