Homework12

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Problem1

Let A = {1, 2, 3, 4, 5},B = {a, b, c, d}, and f 1 : A → B = {<1, c>, <2, c>, <3, b>, <4, a>, <5, d>}, f 2 : B → A = {<a, 2>, <b, 5>, <c, 1>, <d, 3>}. Determine whether f1 ,f2 have left or right inverse. If so , ﬁnd the left or right inverse for each function.

F1:

No left inverse

No right inverse

F2:

No left inverse

No right inverse

Problem2

充分性：

假设

必要性：

Problem3

Design a DFA accepting the language (a|b) ∗ c + over the alphabeta {a, b, c}. (Transition table, transition diagram or giving the transition functions are all acceptable). And show how it accepts the string ”abaacc” by showing all the changes of states in whole process.

a b c

q0 q0 q0 q1

\*q1 q2 q2 q1

q2 q2 q2 q2

Problem4

Design a Turing Machine for the language {w|w has an equal nurnber of 0’s and 1’s} over input alphabeta Σ = {0, 1}. (Transition table, transition diagram or giving the transition functions are all acceptable) And show how it accepts the string 100011 by instantaneous descriptions.

0 1 X Y B

q0 (q1,X,R) (q5,Y,R) (q0,X,R) (q0,Y,R) (q4,B,R)

q1 (q1,0,R) (q2,Y,L) ---- (q1,Y,R) ---

q2 (q2,0,L) --- (q0,X,R) (q2,Y,L) ---

\*q4 --- --- --- --- ----

q5 (q6,0,L) (q5,1,R) --- --- ---

q6 --- (q6,1,L) (q6,X,L) (q0,Y,R) ---