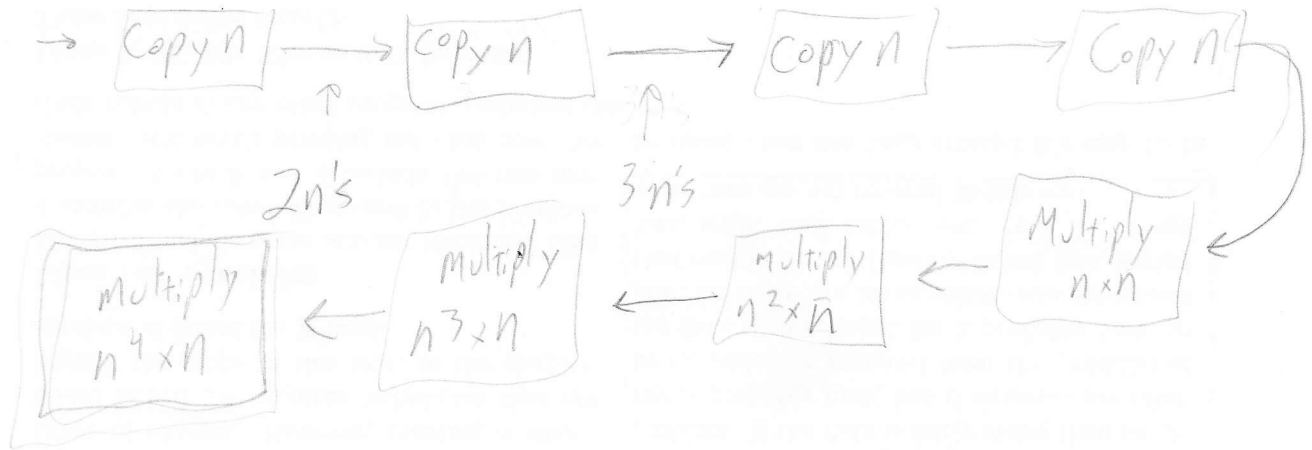
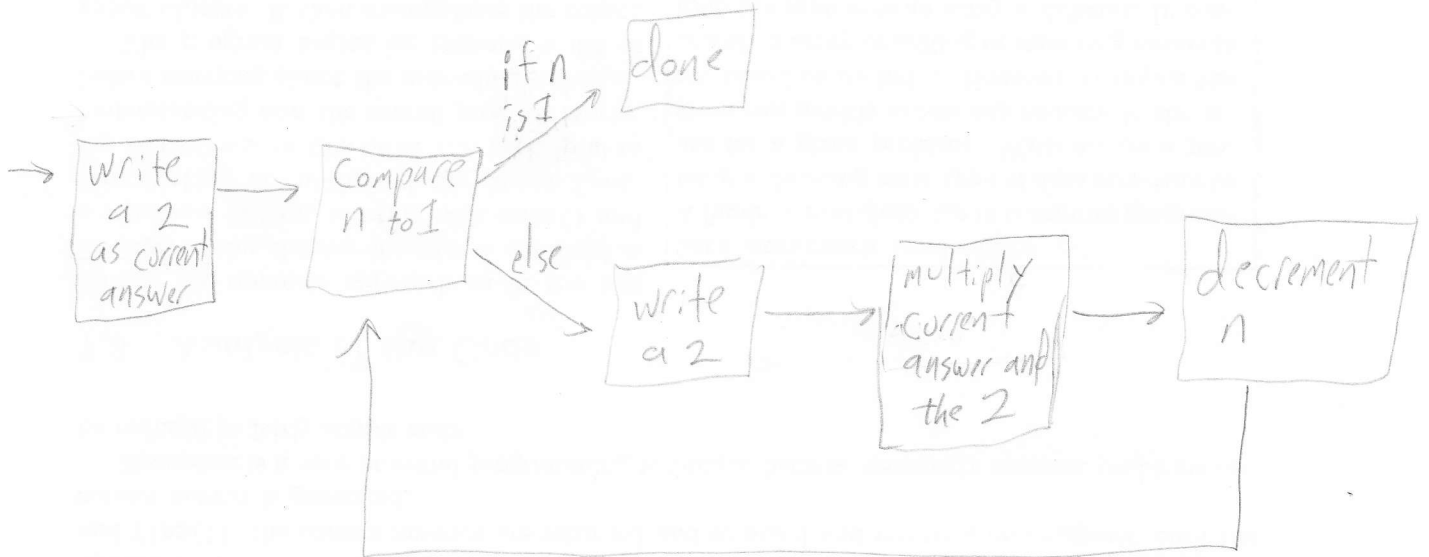


3b) starts w/  $n$  on the tape. Assume  $n > 0$

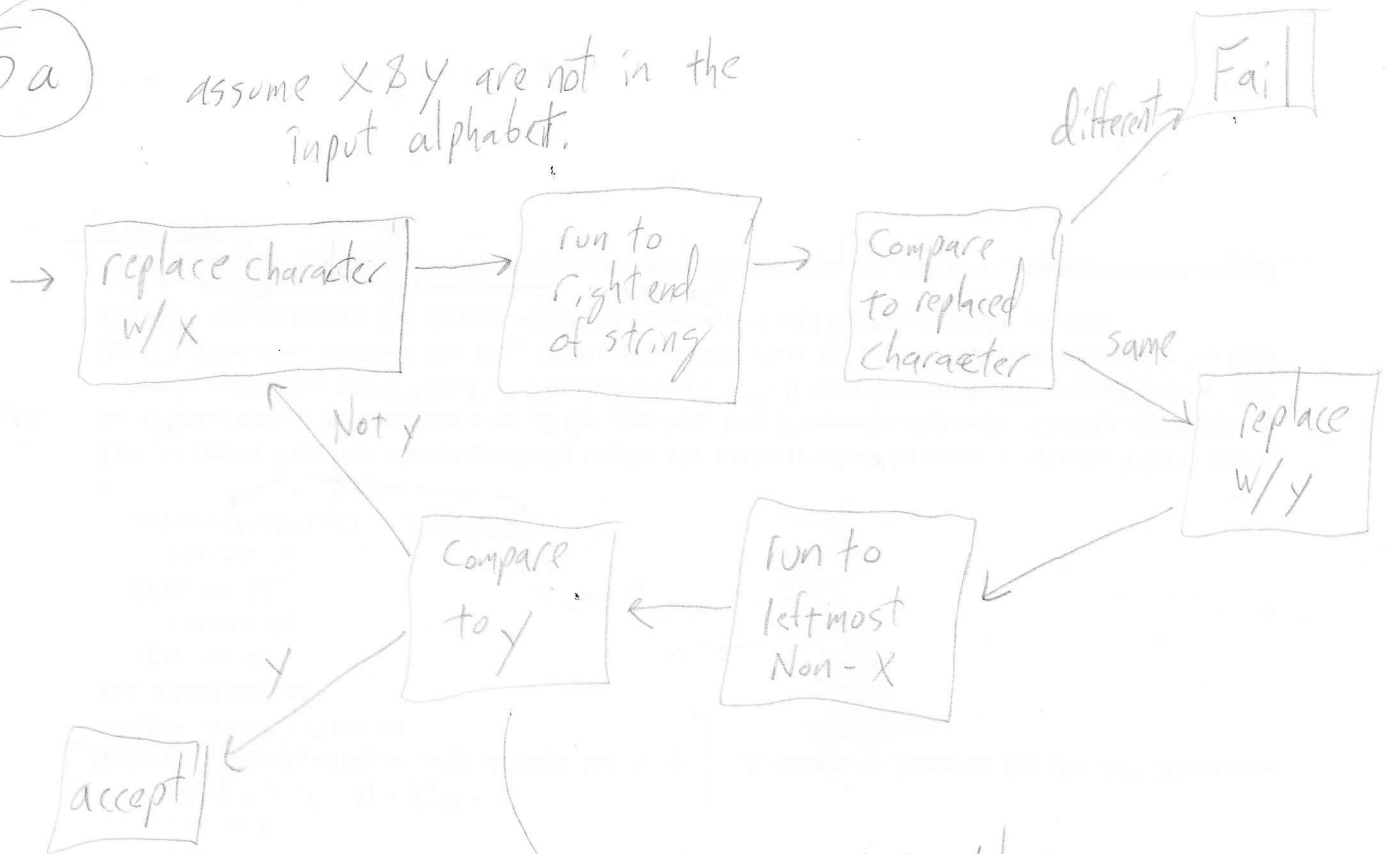


3c) starts w/  $n$  on the tape. Assume  $n > 0$



5a

assume X & Y are not in the input alphabet.



if the string looks like

X X X X Y Y Y Y  
                  ↑  
                  TM

Then the original string was  
w w R

8 In back of text.

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(4) In back of text

(7) Introduce a symbol, say  $x$ , to represent a blank for all transitions of the form

$\delta(q_i, \square) = (q_j, a, R)$  add a new transition.

$\delta(q_i, x) = (q_j, a, R)$  the original transition must be kept for the original blanks on the tape

and

for all transitions of the form

$\delta(q_i, a) = (q_j, \square, R)$  replace w/ a new transition

$\delta(q_i, a) = (q_j, x, R)$

you may also want to look at problem 6 and the answer in the back of the text.