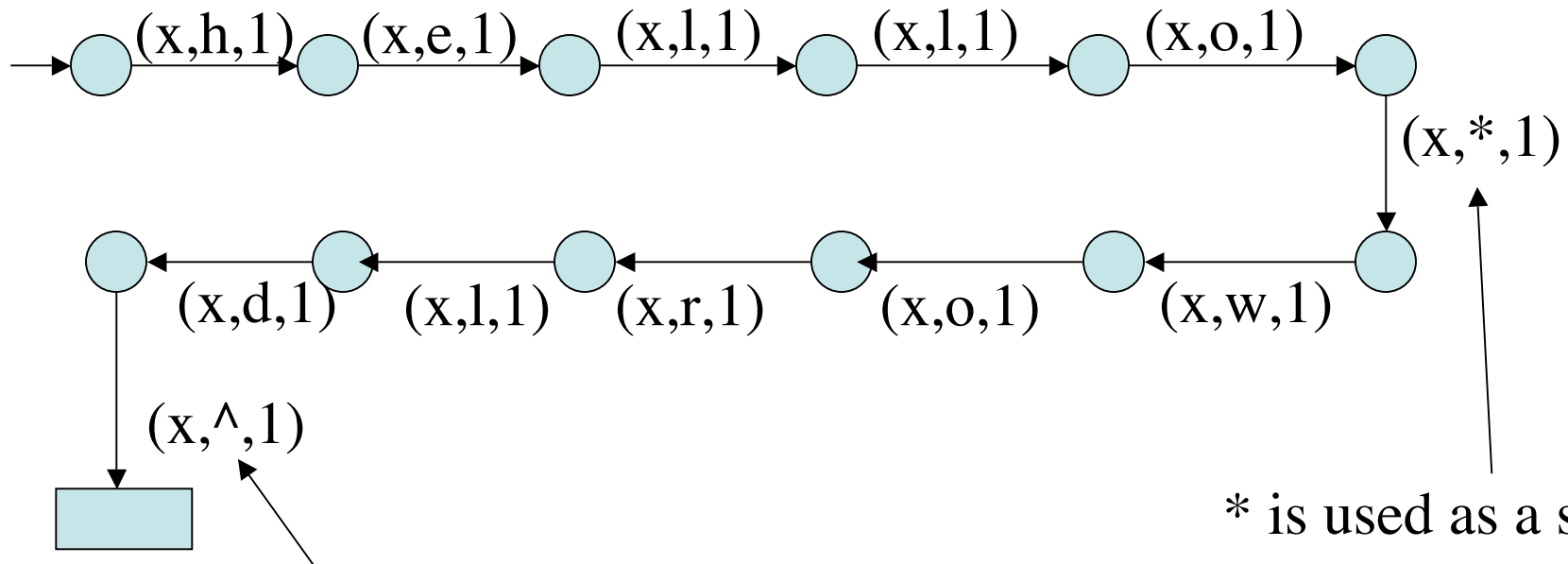


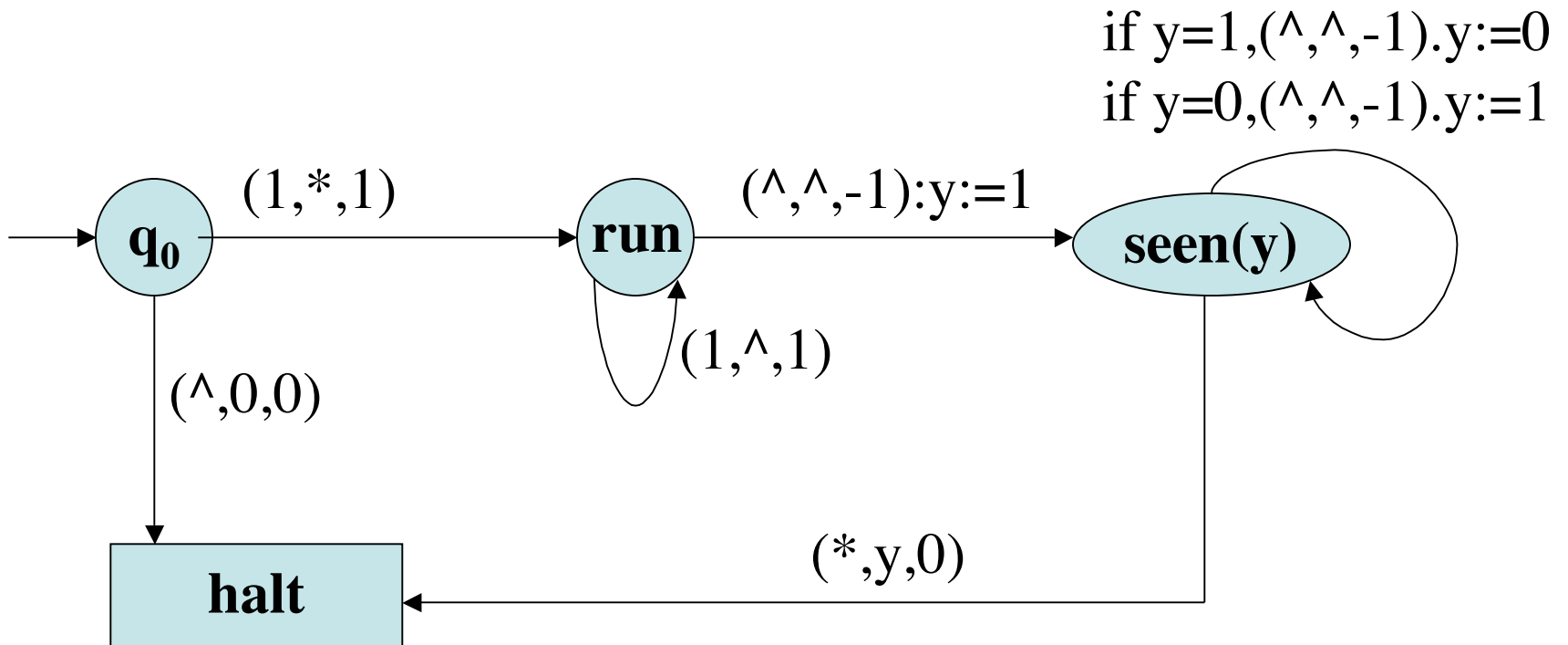
1.



Note the final blank to end the output - needed in case the input is long

\* is used as a space character. If we used ^ the output would be 'hello'.

2. A possible solution, using a parameter  $y$  in a state, is:



The I/O function of  $M$  is given by:

$f_M(w)=0$  if  $w$  has even length, and 1 otherwise.

Note:  $M$  counts (even/odd) only on the way back to square 0.

3. R could have a 2-track tape, with the word on track 1, and track 2 used for markers. R repeatedly reads, remembers and marks the leftmost unmarked character, moves right until the rightmost unmarked character is found (go right until a marked character or blank is found, then move left), marks it, remembers it and overwrites it with the remembered char., then goes left until a marked char is hit, and overwrites it with the remembered char. R moves right and repeats until all chars are marked.