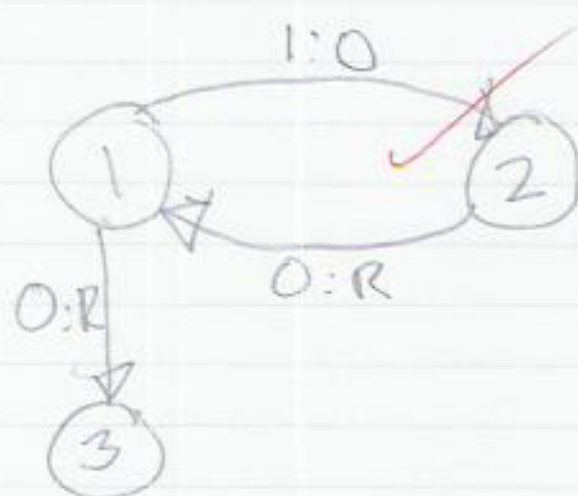


right. When all of the  $n$  1s are erased, the machine is in state 3. In moving to state 2, it moves right one more space. It then moves to the rightmost of the  $m$  1s, and cycles between state 2 and 3, erasing a 1 in moving from state 2 to 3, moving right one space in moving from state 3 to 2, then moving two spaces left to the line of (now less than  $m$ ) 1s in state 2. It then repeats the cycle, <sup>eventually</sup> erasing all the  $m$  1s, finishing in state 2 moving left forever.

Hence this machine does not even produce an answer (it does not halt), so it is unsuitable for the task.

ii)



The machine will halt in state 3 scanning the leftmost of a string of  $n$  1s

(10)

Check (some data)

11011	01011	01011	00011	00011
1	2	1	2	1
00011				
3				