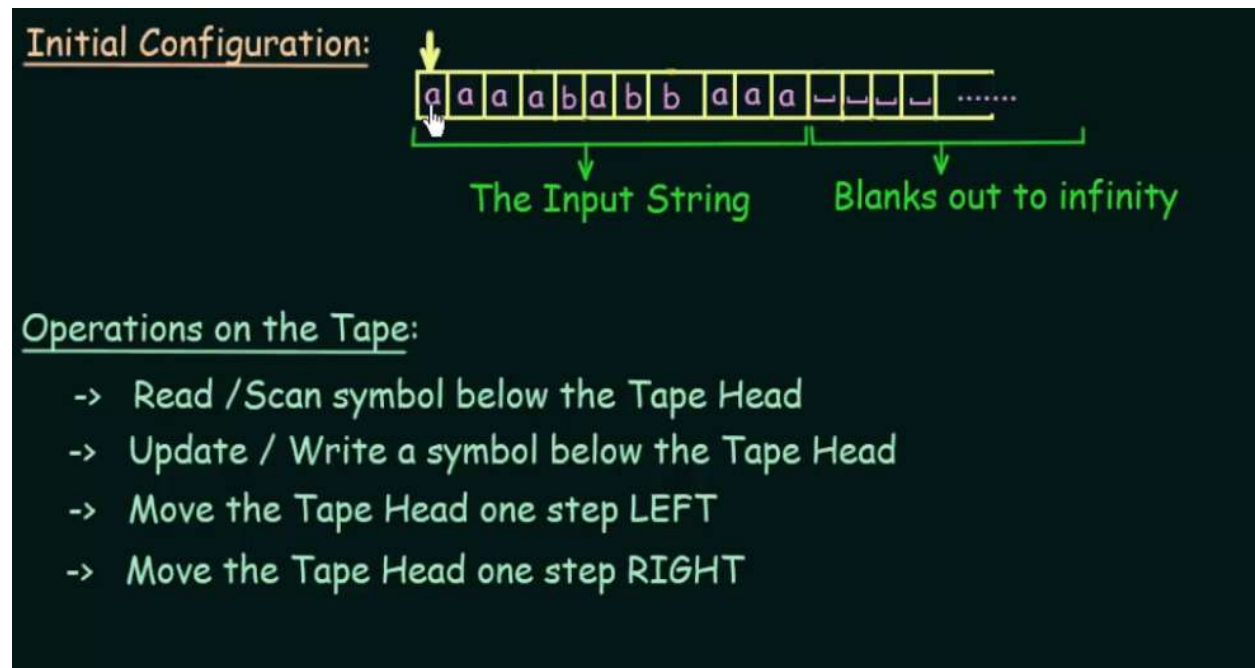## Turing Machines

Accepts recursively enumerable languages (decidable languages)

At each step, turing machine must:

- Choose its next state,
- Write on the current square and
- move left or right

Can only read/update symbol right below the tape head (arrow that points to current square)

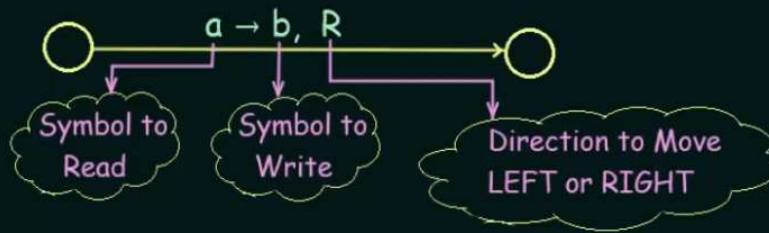A turing machine has a control portion and a tape.

- Control portion is deterministic

Rules of Operation - 1

At each step of the computation:

-> Read the currect symbol
-> Update (i.e. write) the same cell
-> Move exactly one cell either LEFT or RIGHT

If we are at the left end of the tape, and trying to move LEFT, then do not move. Stay at the left end

$a \rightarrow b, R$

Symbol to Read

Symbol to Write

Direction to Move LEFT or RIGHT

If you dont want to update the cell, JUST WRITE THE SAME SYMBOL

$1 \rightarrow 1, L$