Lesson 2

Computability

Math 574 - Topics in Logic
Penn State, Spring 2014

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2-3

Turing machines - an example

Goal: Find a TM M s.t.

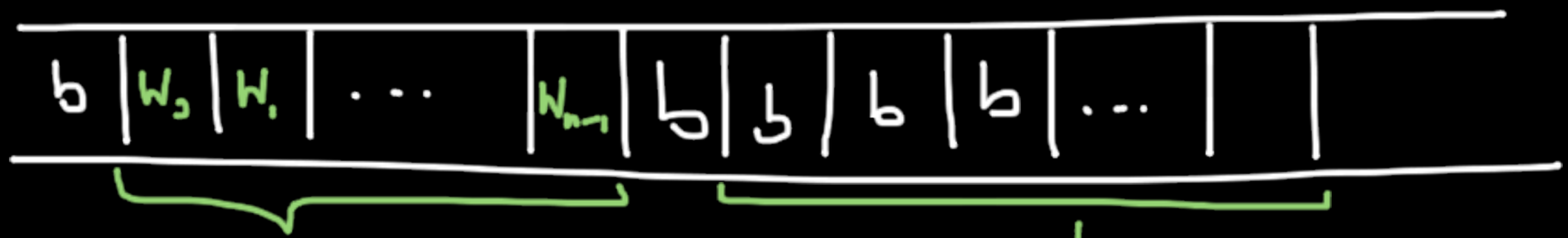
M outputs $\begin{cases} 1 & \text{if input is of form } 0^n1^n \\ 0 & \text{for all other inputs} \end{cases}$

M "accepts" the language

$$L = \{0^n1^n : n \geq 0\}$$

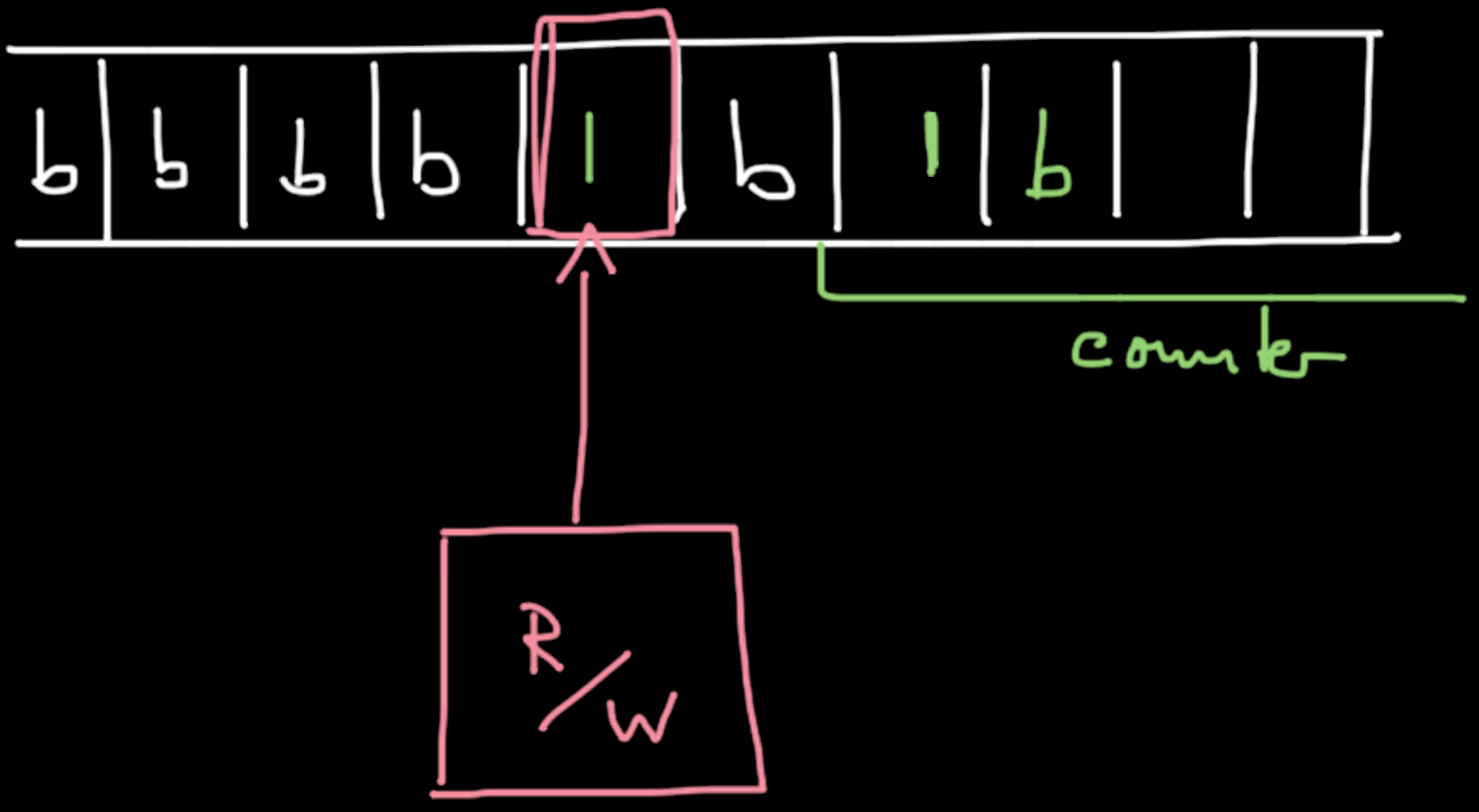
Input: $w = w_0 w_1 \cdots w_{n-1} \in \{0,1\}^{<\mathbb{N}}$

0 0 0 1 1 1



0 0 1 1 0 1

$0^n 1^n$


counter
R/W

- Subroutines
- loops
- while
- if .. then ...