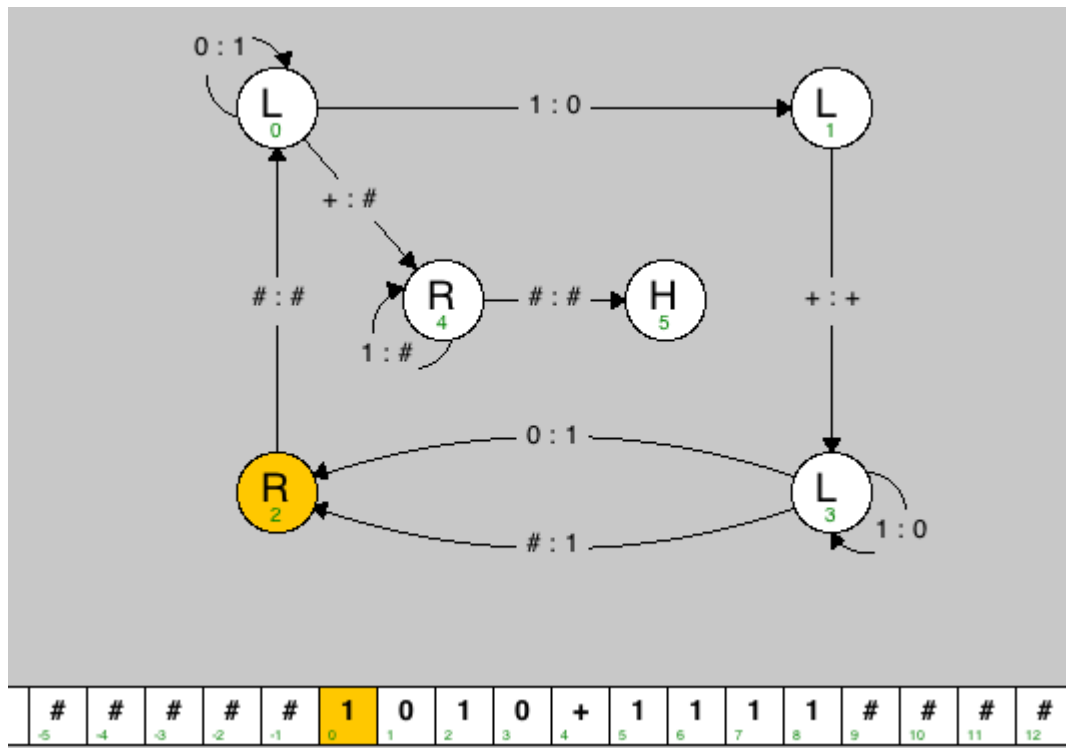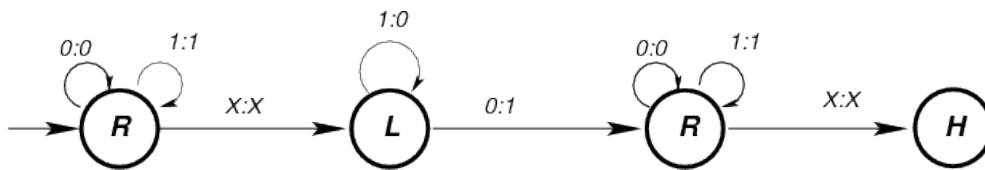# COS126 Turing Machine Worksheet

- Example from Lecture 19. (Binary Adder)

- Recommended Turing Machine exercise from the exam archive:
  Fall 2010, Exam 2, question 9

- Old exam question **Turing Machine** (Note slightly different notation.)

a) The Turing Machine above starts in the leftmost state. If this Turing Machine is run on the tape below, with the tape head starting at the position marked by the arrow, what will be the contents of the tape when it halts, AND where will the head be?

Write your answer in the empty tape below.

	0	0	0	0	0	1	0	1	1	0	1	1	1	X	X	X	

b) What computation does this Turing Machine perform?

- Answer to old exam question.

  a) Contents of the tape:

  . . . 0 0 0 0 0 1 0 1 1 1 0 0 0 X X X . . .

  Arrowhead will point to the leftmost X shown.

  b) Adds one to the binary number on the tape.