

Construct a Turing machine that computes the function:

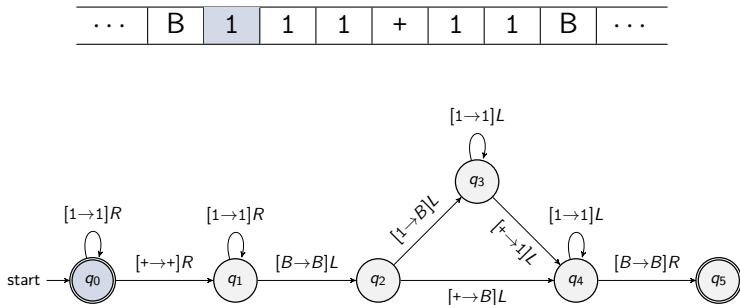
$$f(a, b) = a + b \quad \text{where} \quad a \text{ and } b \text{ are unary numbers}$$

...	B	1	1	1	+	1	1	B	...
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- 1: Find + after 1's
- 2: **if** the last symbol is 1 **then**
- 3: Find and Remove the last 1
- 4: Find and Replace the + with 1
- 5: **else**
- 6: Remove the +
- 7: **end if**
- 8: Go to the first input symbol

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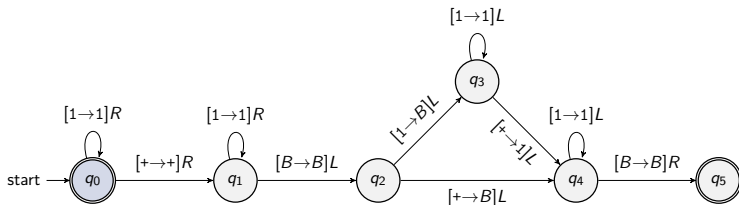
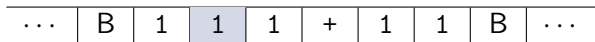
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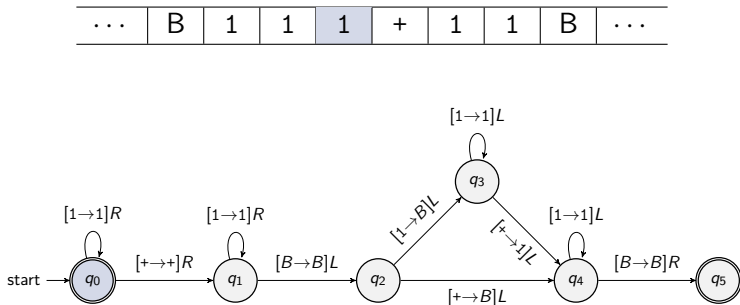
Find + after 1's.

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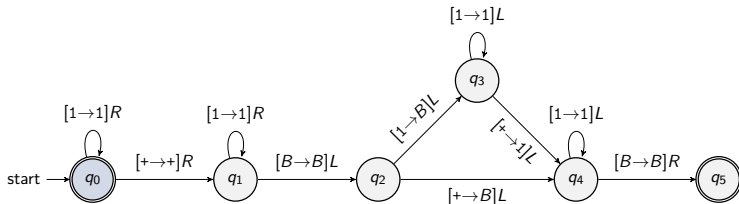


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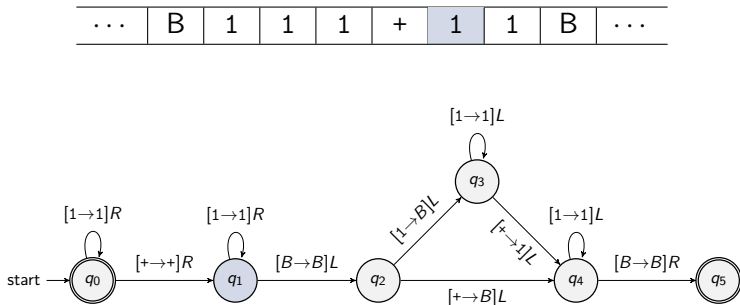
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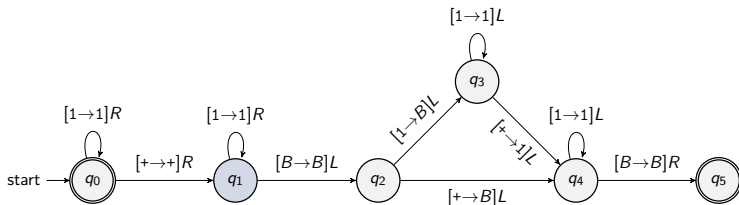
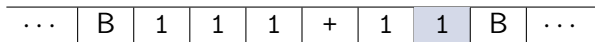
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Check if the last symbol is 1.

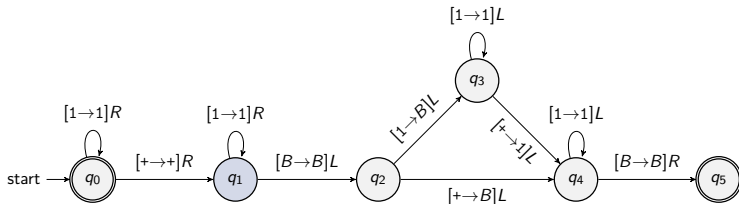
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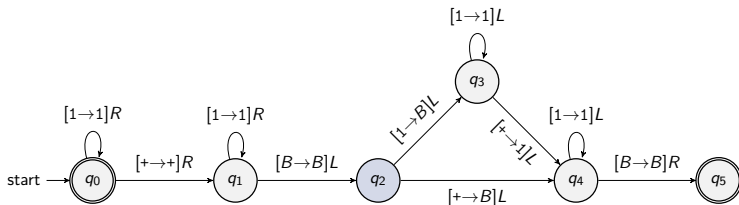
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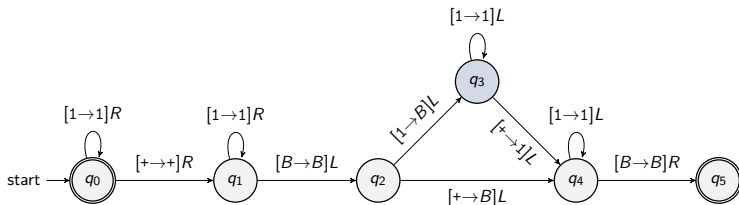
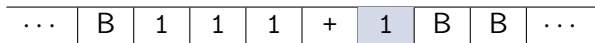
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Since the last symbol is 1, find and remove the last 1.

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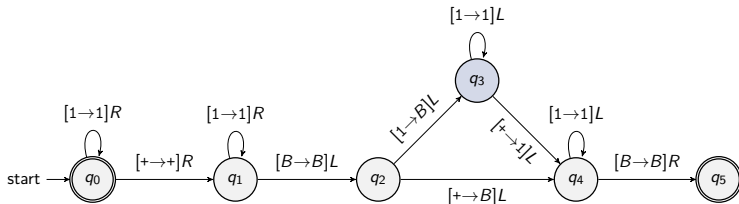
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Find and Replace the + with 1.

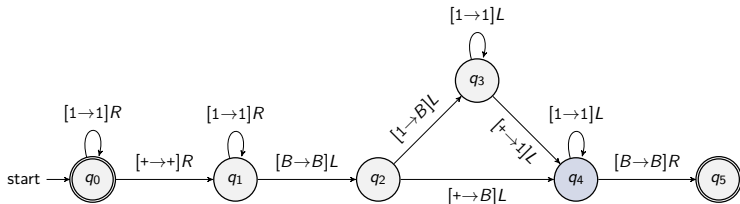
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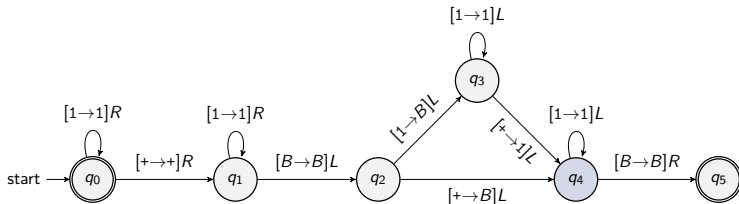
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Go to the first input symbol.

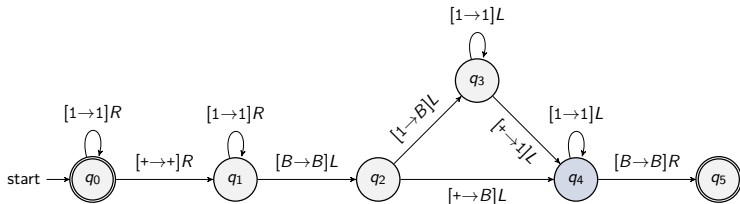
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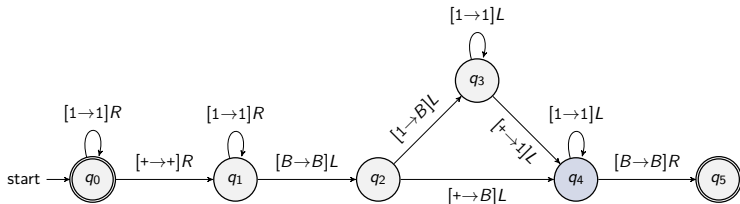
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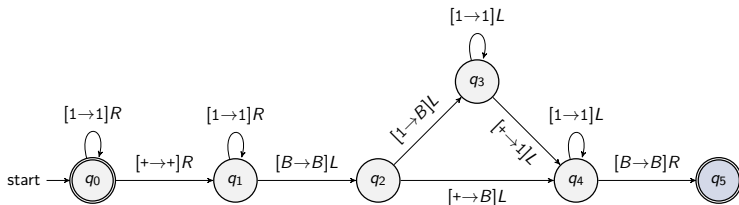
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Computed! $f(111+11) = 11111$