- 1: Find the first c in the input
- 2: Check if left and right parts of c are reverse of each other

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\dots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \dots$$

$$\dots \mid B \mid a \mid B \mid \dots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L) \qquad ([b, B) \rightarrow (b, b)](R, R)$$

$$[(b, B) \rightarrow (b, b)](R, R) \qquad [(b, b) \rightarrow (b, b)](R, L)$$

$$(a, A) \rightarrow (a, A) \rightarrow ($$

Find the first c in the input.

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$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid B \mid B \mid B \mid B \mid B \mid \cdots$$

$$[(a, B) \rightarrow (a, a)](B, B) \qquad [(a, a) \rightarrow (a, a)](B, I)$$

$$[(a,B)\rightarrow(a,a)](R,R) \qquad [(a,a)\rightarrow(a,a)](R,L)$$

$$[(b,B)\rightarrow(b,b)](R,R) \qquad [(b,b)\rightarrow(b,b)](R,L)$$
start 
$$q_0 \qquad [(c,B)\rightarrow(c,B)](R,L) \qquad q_1 \qquad [(B,B)\rightarrow(B,B)](L,R) \qquad q_2$$

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\dots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \dots$$

$$\dots \mid B \mid a \mid b \mid \dots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L) \qquad ([(b, B) \rightarrow (b, b)](R, R) \qquad ([(b, b) \rightarrow (b, b)](R, L)$$

$$\text{start} \longrightarrow q_0 \qquad [(c, B) \rightarrow (c, B)](R, L) \qquad q_1 \qquad ([(B, B) \rightarrow (B, B)](L, R) \qquad q_2 \qquad q_2 \qquad q_2 \qquad q_3 \qquad q_4 \qquad$$

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid b \mid B \mid B \mid B \mid B \mid \cdots$$

$$[(a,B)\rightarrow(a,a)](R,R) \qquad [(a,a)\rightarrow(a,a)](R,L)$$

$$[(b,B)\rightarrow(b,b)](R,R) \qquad [(b,b)\rightarrow(b,b)](R,L)$$

$$(c,B)\rightarrow(c,B)](R,L) \qquad q_1 \qquad [(B,B)\rightarrow(B,B)](L,R) \qquad q_2$$

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid \cdots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L) \qquad ([b, B) \rightarrow (b, b)](R, R)$$

$$[(b, B) \rightarrow (b, b)](R, R) \qquad [(b, b) \rightarrow (b, b)](R, L)$$

$$(g_0) \qquad (g_1) \qquad (g_2) \qquad (g_2)$$

Check if left and right parts of c are reverse of each other.

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid b \mid B \mid B \mid B \mid B \mid \cdots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L)$$

$$[(\mathbf{a},B)\rightarrow(\mathbf{a},\mathbf{a})](R,R) \qquad [(\mathbf{a},\mathbf{a})\rightarrow(\mathbf{a},\mathbf{a})](R,L) \\ [(\mathbf{b},B)\rightarrow(\mathbf{b},\mathbf{b})](R,R) \qquad [(\mathbf{b},\mathbf{b})\rightarrow(\mathbf{b},\mathbf{b})](R,L)$$
start 
$$q_0 \qquad q_1 \qquad [(\mathbf{b},B)\rightarrow(B,B)](L,R) \qquad q_2$$

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid b \mid B \mid B \mid B \mid B \mid \cdots$$

$$[(a, B), (a, b)](B, B) \qquad [(a, b), (a, b)](B, I)$$

$$[(\mathbf{a},B)\rightarrow(\mathbf{a},\mathbf{a})](R,R) \qquad [(\mathbf{a},\mathbf{a})\rightarrow(\mathbf{a},\mathbf{a})](R,L) \\ [(\mathbf{b},B)\rightarrow(\mathbf{b},\mathbf{b})](R,R) \qquad [(\mathbf{b},\mathbf{b})\rightarrow(\mathbf{b},\mathbf{b})](R,L)$$
start 
$$q_0 \qquad q_1 \qquad [(\mathbf{c},B)\rightarrow(\mathbf{c},B)](L,R) \qquad q_2$$

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\dots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \dots$$

$$\dots \mid B \mid a \mid b \mid \dots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L) \\
[(b, B) \rightarrow (b, b)](R, R) \qquad [(b, b) \rightarrow (b, b)](R, L)$$
start  $\rightarrow q_0 \qquad [(c, B) \rightarrow (c, B)](R, L) \qquad q_1 \qquad [(B, B) \rightarrow (B, B)](L, R)$ 

$$L(M) = \{w c w^R \mid w \in \{a, b\}^*\}$$

$$\cdots \mid B \mid a \mid b \mid b \mid c \mid b \mid b \mid a \mid B \mid \cdots$$

$$\cdots \mid B \mid a \mid b \mid b \mid B \mid B \mid B \mid B \mid \cdots$$

$$[(a, B) \rightarrow (a, a)](R, R) \qquad [(a, a) \rightarrow (a, a)](R, L)$$

$$[(\mathbf{a},B)\rightarrow(\mathbf{a},\mathbf{a})](R,R) \qquad [(\mathbf{a},\mathbf{a})\rightarrow(\mathbf{a},\mathbf{a})](R,L) \\ [(\mathbf{b},B)\rightarrow(\mathbf{b},\mathbf{b})](R,R) \qquad [(\mathbf{b},\mathbf{b})\rightarrow(\mathbf{b},\mathbf{b})](R,L)$$
 start 
$$q_0 \qquad q_0 \qquad q_1 \qquad q_2$$

Accept!