

Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
...	B	B	B	B	B	B	B	B	B	...

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

Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

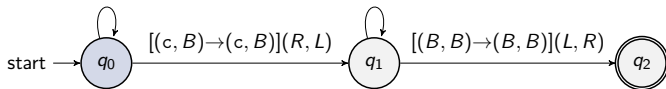
...	B	B	B	B	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Find the first **c** in the input.

Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

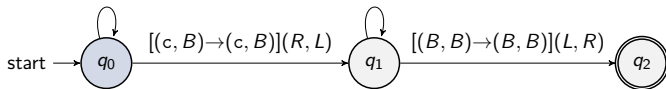
...	B	a	B	B	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

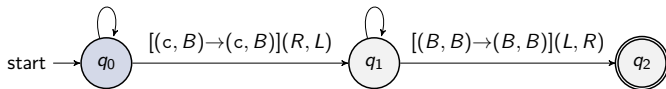
...	B	a	b	B	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

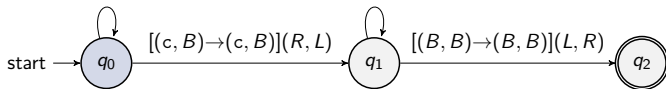
...	B	a	b	b	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Construct a **multi-tape TM** that accepts the language:

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

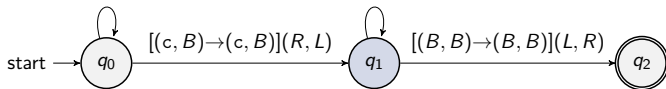
...	B	a	b	b	c	b	b	a	B	...
...	B	a	b	b	B	B	B	B	B	...

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

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

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

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



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

Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

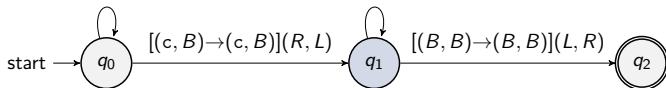
...	B	a	b	b	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

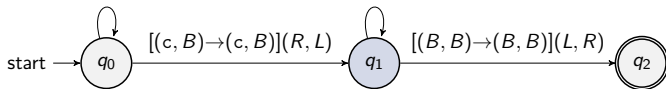
...	B	a	b	b	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

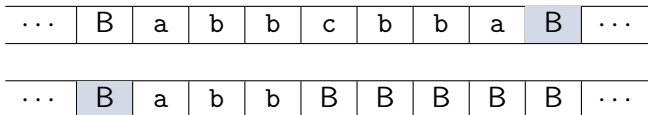
$[(b, B) \rightarrow (b, b)](R, R)$

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



Construct a **multi-tape TM** that accepts the language:

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

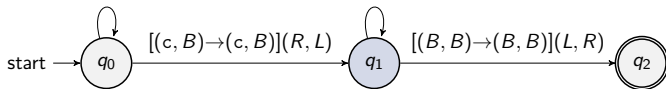


$[(a, B) \rightarrow (a, a)](R, R)$

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

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

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



Construct a **multi-tape TM** that accepts the language:

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

...	B	a	b	b	c	b	b	a	B	...
-----	---	---	---	---	---	---	---	---	---	-----

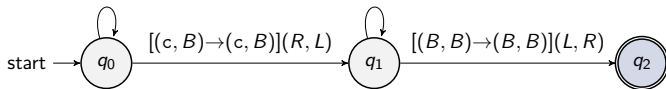
...	B	a	b	b	B	B	B	B	B	...
-----	---	---	---	---	---	---	---	---	---	-----

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

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

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

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



Accept!