Construct a Turing machine that accepts the language:
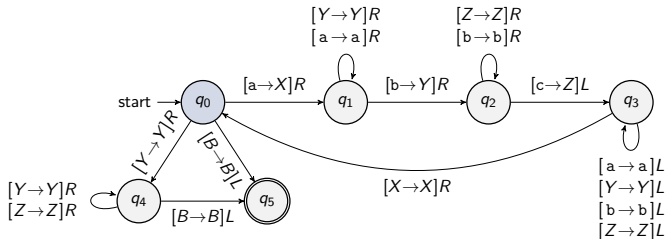
$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

···	B	a	a	b	b	c	c	B	···

1: **while** there are a's **do**
2:     Find and Replace a with X
3:     Find and Replace b with Y
4:     Find and Replace c with Z
5: **end while**
6: Check if only Y's and Z's are left

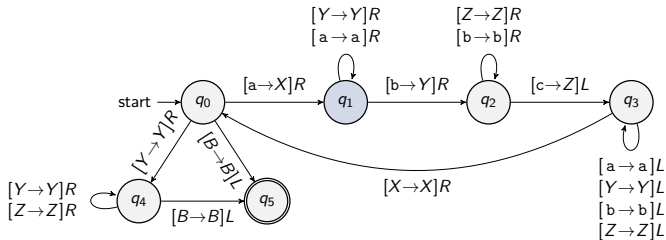Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

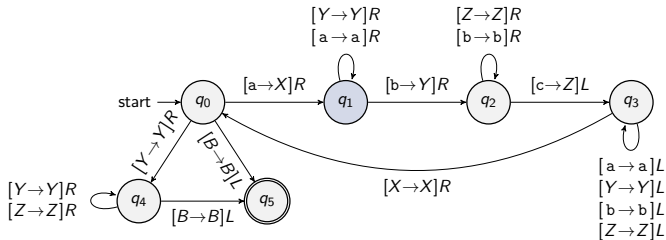|	B	a	a	b	b	c	c	B	
$\cdots$									$\cdots$

Find and Replace a with X.

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

	B	X	a	b	b	c	c	B	
$\cdots$									$\cdots$

Find and Replace b with Y.

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

	$\cdots$	B	X	a	b	b	c	c	B	$\cdots$

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

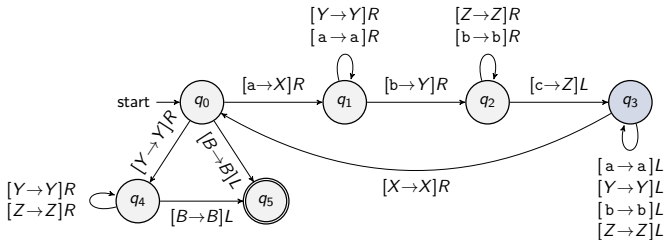| $\cdots$	B	X	a	Y	b	c	c	B	$\cdots$
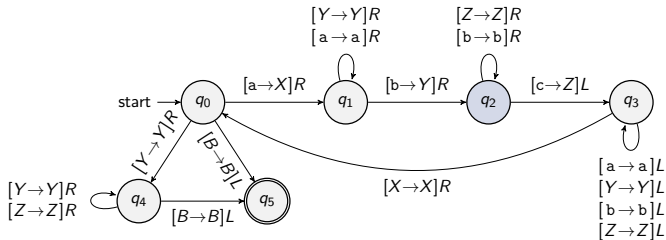
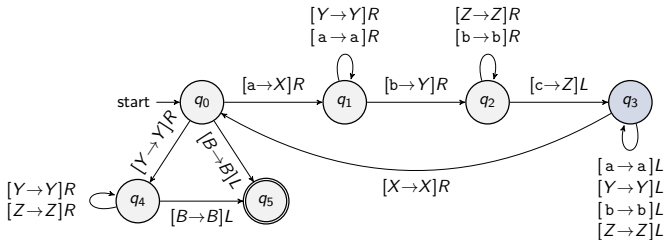Find and Replace c with Z.

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$
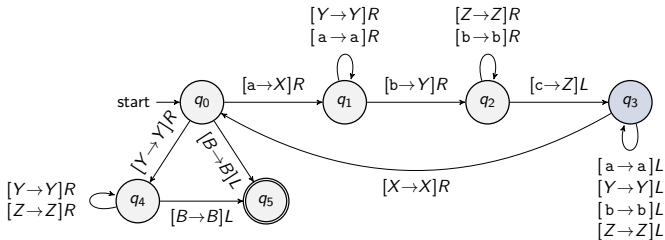
Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

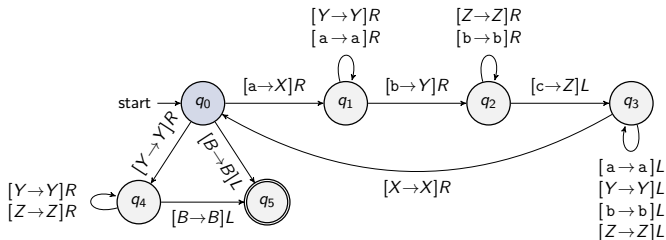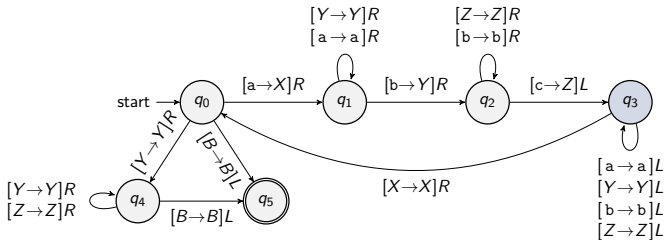|	B	X	a	Y	b	Z	c	B	
$\cdots$									$\cdots$

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$
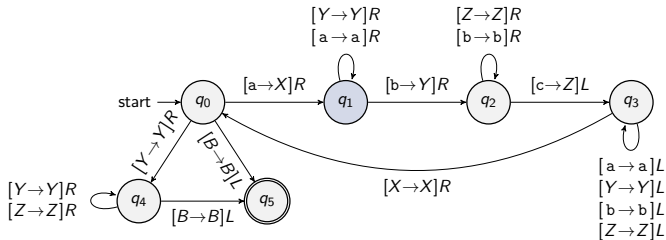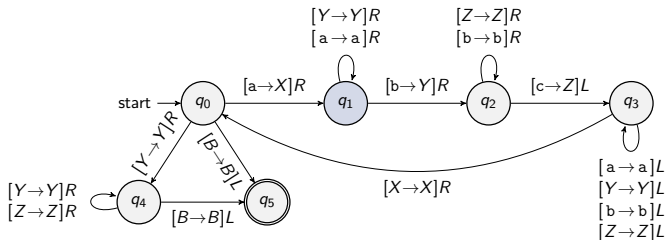
Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

$\cdots$	B	X	a	Y	b	Z	c	B	$\cdots$

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

$\cdots$	B	X	a	Y	b	Z	c	B	$\cdots$

Construct a Turing machine that accepts the language:

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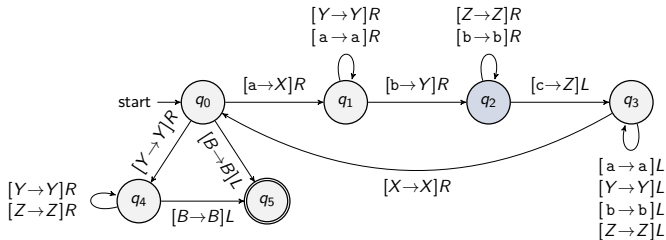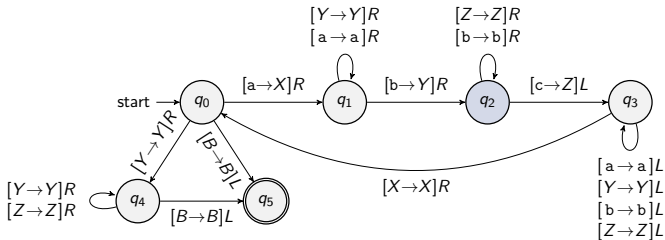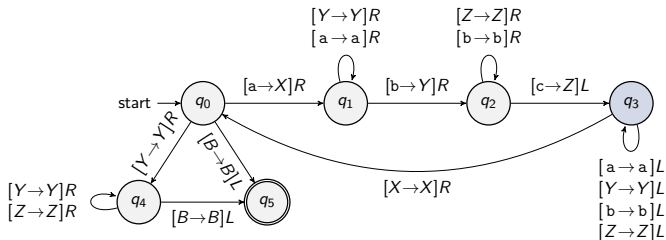| $\cdots$ | B | X | a | Y | b | Z | c | B | $\cdots$ |

Repeat until no a's left.

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

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$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

	$\cdots$	B	X	X	Y	b	Z	c	B	$\cdots$

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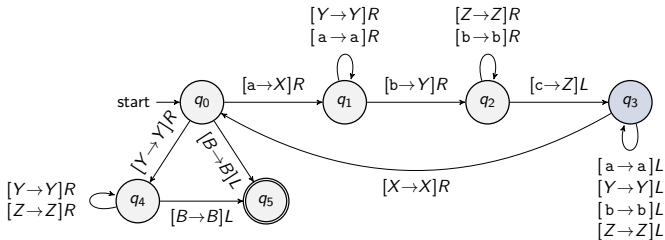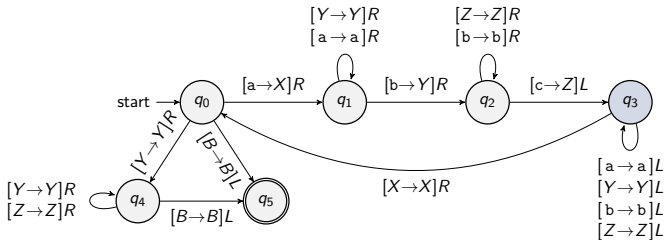
Construct a Turing machine that accepts the language:

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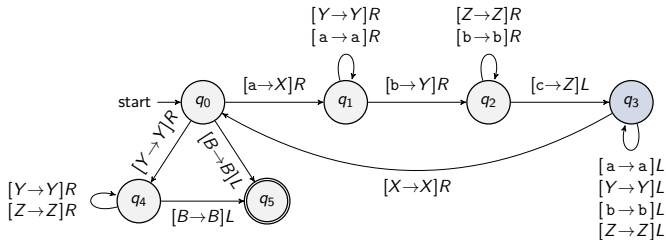| $\cdots$ | B | X | X | Y | Y | Z | c | B | $\cdots$ |

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

Construct a Turing machine that accepts the language:

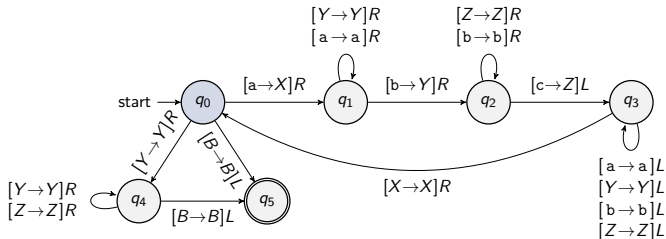$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

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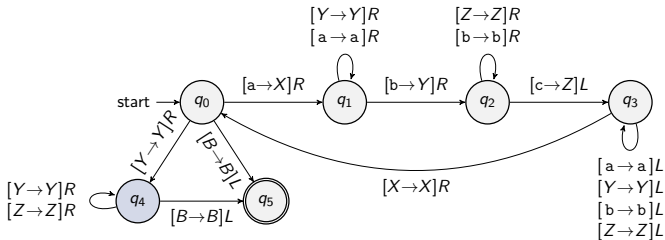
$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

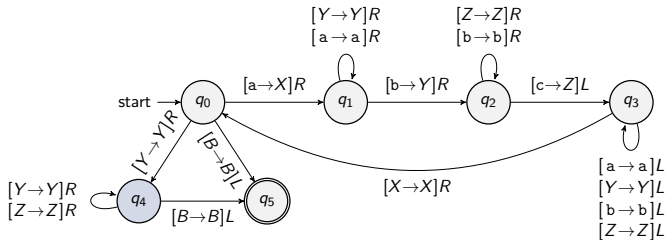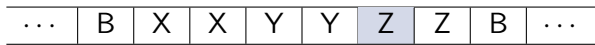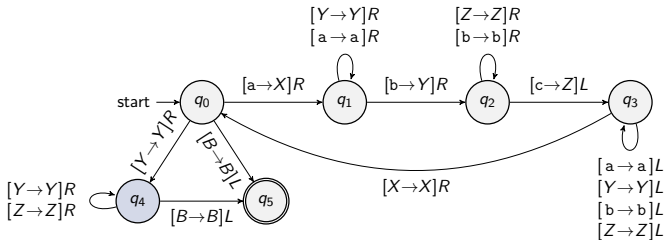Now, no more a's. Check if only Y's and Z's are left.

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

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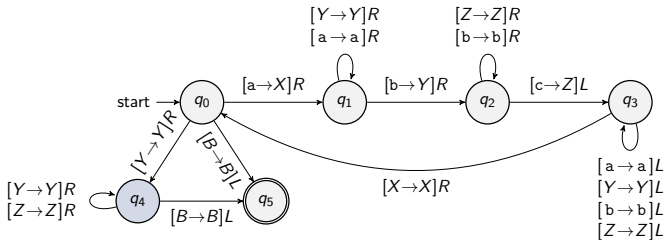|	B	X	X	Y	Y	Z	Z	B	
$\cdots$									$\cdots$

Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$
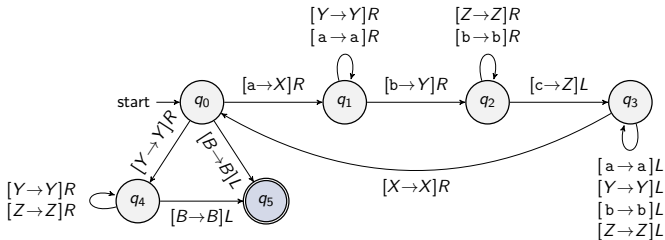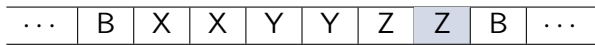
Construct a Turing machine that accepts the language:

$$L(M) = \{a^n b^n c^n \mid n \geq 0\}$$

	B	X	X	Y	Y	Z	Z	B	
$\cdots$									$\cdots$

Accept!