

## Indirect Method:

In this method,

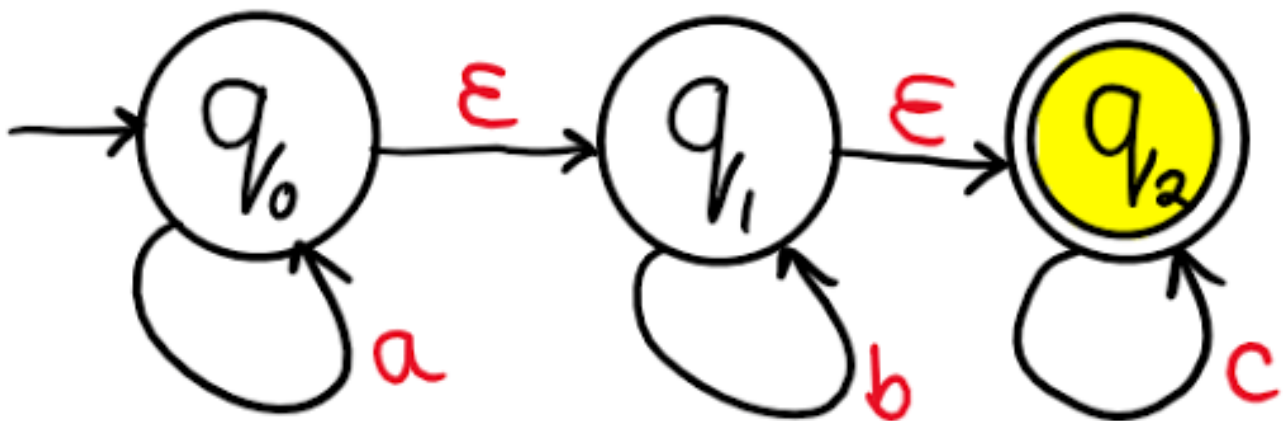
Step 01: Convert NFA with  $\epsilon$  moves to NFA without  $\epsilon$  moves.

Step 02: Than NFA without  $\epsilon$  moves is converted to the DFA.

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## RGPV PYQs:

Convert the following NFA with  $\epsilon$  in to DFA using the indirect method of conversion.

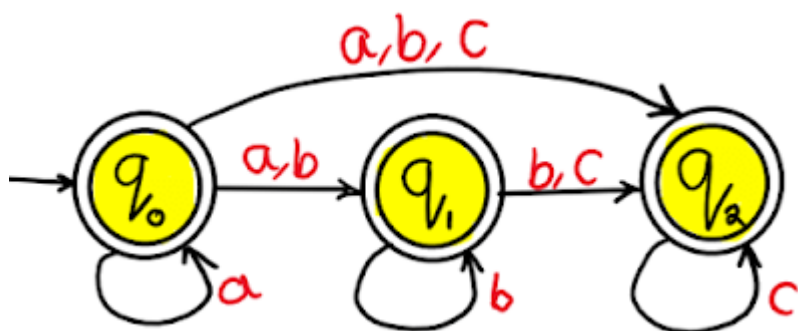


NFA with  $\epsilon$

Solution:

Step 01: Convert NFA with  $\epsilon$  moves to NFA without  $\epsilon$  moves.

- $\epsilon$ -Closure of  $q_0$ :  $\{q_0, q_1, q_2\}$
- $\epsilon$ -Closure of  $q_1$ :  $\{q_1, q_2\}$
- $\epsilon$ -Closure of  $q_2$ :  $\{q_2\}$



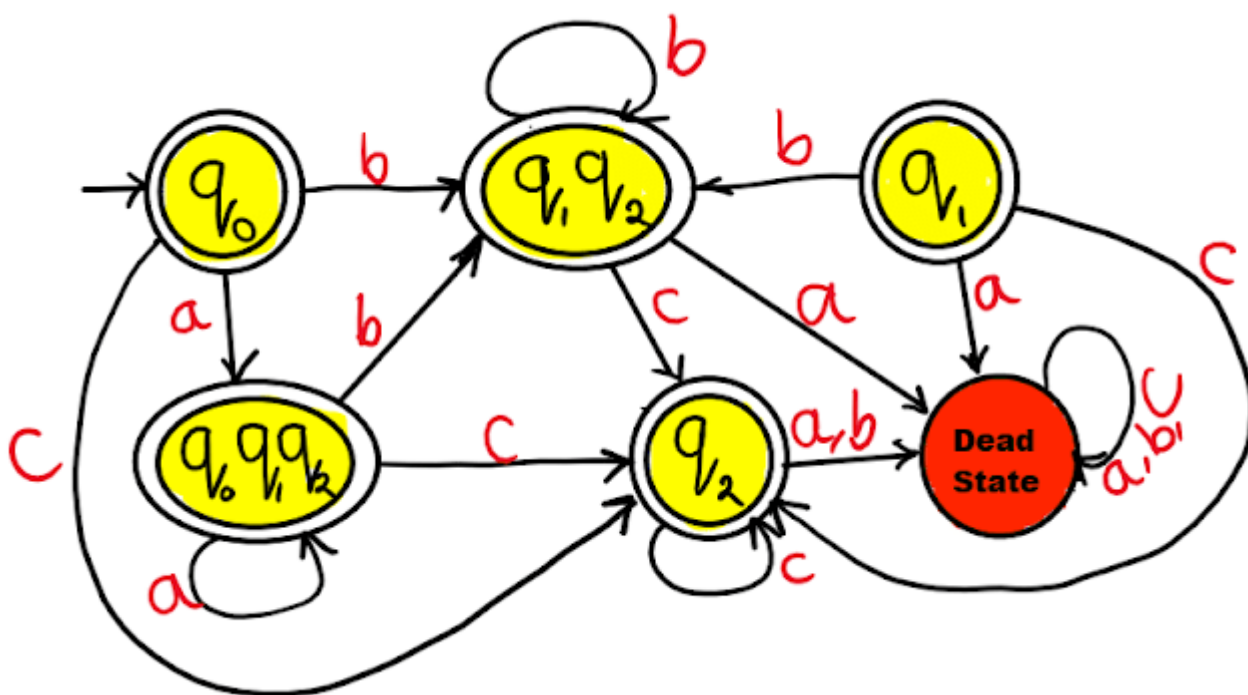
State	a	b	c
$\epsilon$ q0	$\{q_0, q_1, q_2\}$	$\{q_1, q_2\}$	$\{q_2\}$
q1	$\emptyset$	$\{q_1, q_2\}$	$\{q_2\}$
q2	$\emptyset$	$\emptyset$	$\{q_2\}$

Transition table: NFA without  $\epsilon$

Step 02: NFA without  $\epsilon$  moves is converted to the DFA using the subset construction method.

State	a	b	c
$\{q_0\}$	$\{q_0, q_1, q_2\}$	$\{q_1, q_2\}$	$\{q_2\}$
$\{q_1\}$	DeadState	$\{q_1, q_2\}$	$\{q_2\}$

$\{q_2\}$	DeadState	DeadState	$\{q_2\}$
$\{q_0, q_1, q_2\}$	$\{q_0, q_1, q_2\}$	$\{q_1, q_2\}$	$\{q_2\}$
$\{q_1, q_2\}$	DeadState	$\{q_1, q_2\}$	$\{q_2\}$
DeadState	DeadState	DeadState	DeadState



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