4.3
Closure Properties of NFAs

Closure properties of NFAs

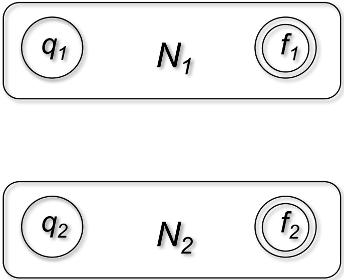
Are the class of languages accepted by NFAs closed under the following operations?

- union
- intersection
- concatenation
- Kleene star
- complement

Closure under union

Theorem

For any two NFA*s* N_1 *and* N_2 *there is a* NFA N *such that* $L(N) = L(N_1) \cup L(N_2)$.



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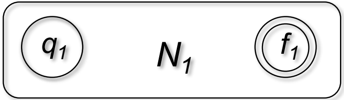

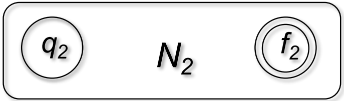

Closure under concatenation

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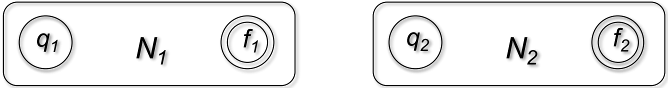
For any two NFAs N_1 *and* N_2 *there is a* NFA N *such that* $L(N) = L(N_1) \bullet L(N_2)$.



Closure under concatenation

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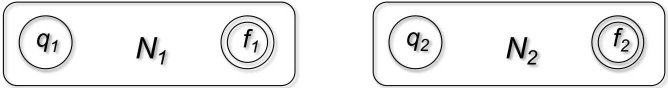
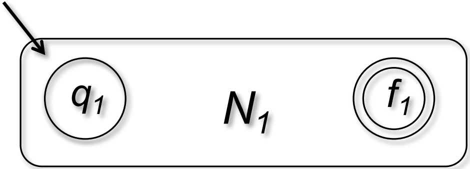


Closure under Kleene star

Theorem

For any NFA N_1 *there is a* NFA N *such that* $L(N) = (L(N_1))^*$.



Closure under Kleene star

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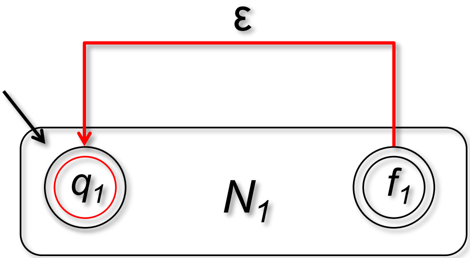

Does not work! Why?

Theorem

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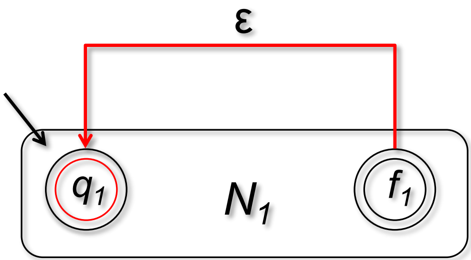

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Closure under Kleene star

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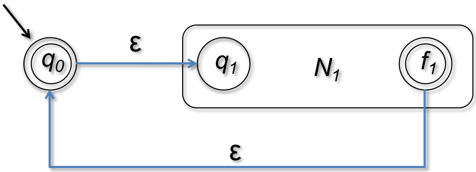

THE END

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(for now)