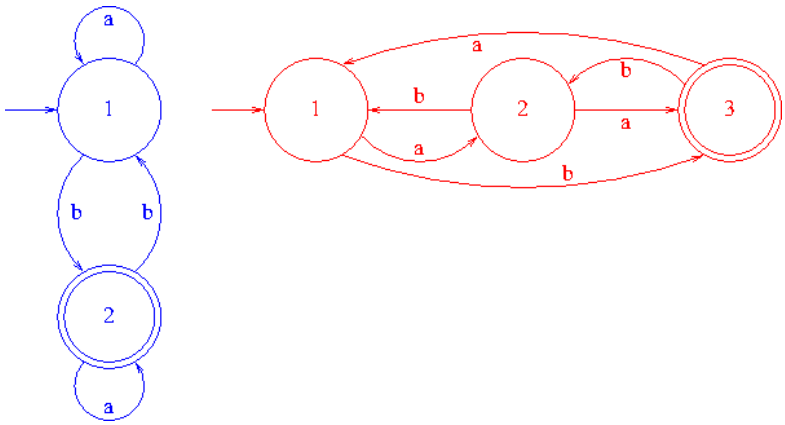
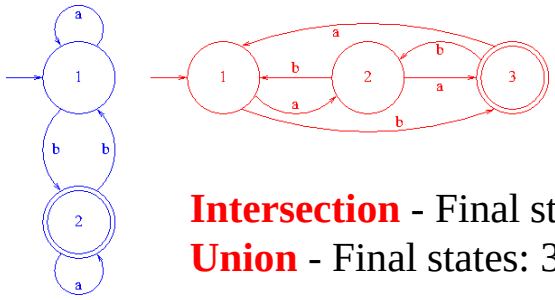
CSC 339 – Theory of Computation
Fall 2022-2023

Product Construction of DFAs

Product Construction of Two DFAs

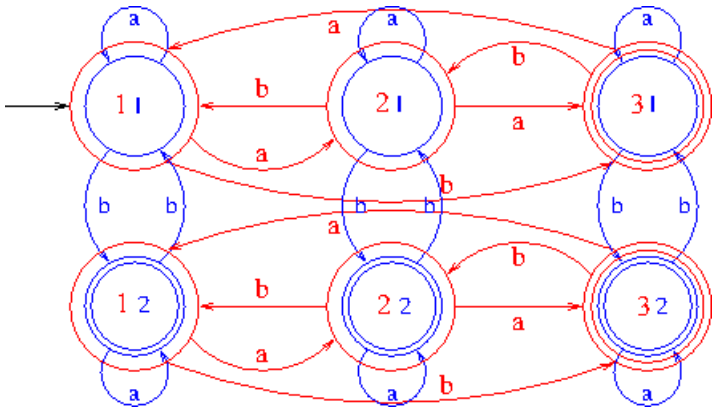


Product Construction of Two DFAs

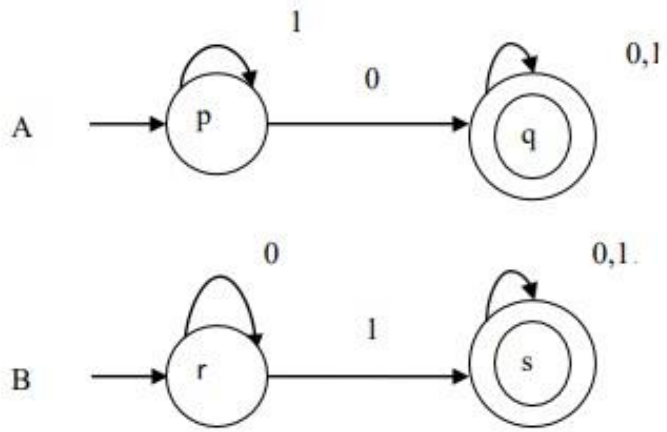


Intersection - Final state: 32

Union - Final states: 31, 12, 22, 32



Intersection of Two DFAs



The language A ={10,100,00,001,1010,…..}
The language B ={01,1010,10,101,…..}

Intersection of Two DFAs

AA = (QA, Σ, δA, qa, FA)

AB = (QB, Σ, δB, qB, FB)

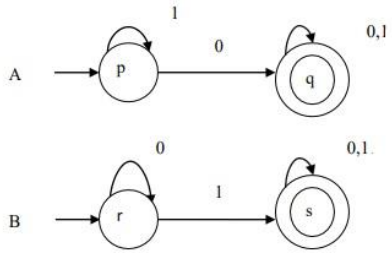
A∩B=(QA x QB ,Σ,δ(qA x qB ,FA x F B)

QA x QB = {p,q} x {r,s}={(p, r), (p, s), (q, r), (q, s)}

Σ={0,1}

qA x qB = {p, r}

FA x FB = {q, s}



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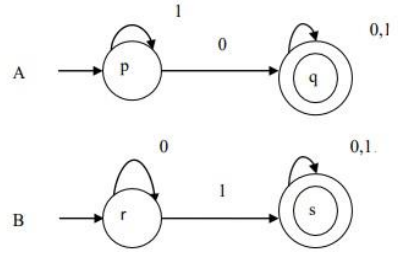
Intersection of Two DFAs



$\delta(q_A, q_B)$

Q ↓ \ Σ	0	1
→ **{p, r}**	{q, r}	{p, s}
{p, s}	{q, s}	{p, s}
{q, r}	{q, r}	{q, s}
* **{q, s}**	{q, s}	{q, s}

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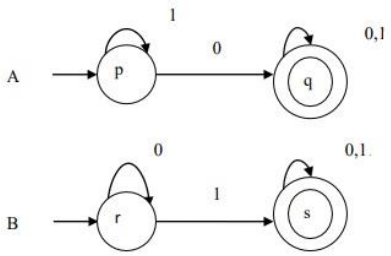
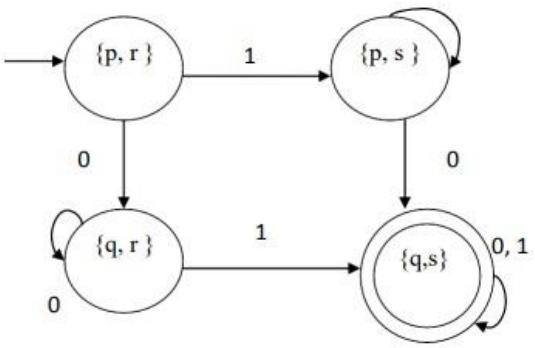
Intersection of Two DFAs



Finite Automata



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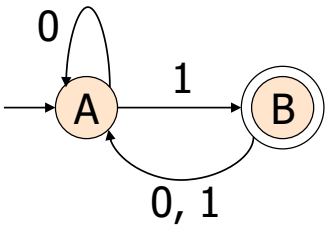
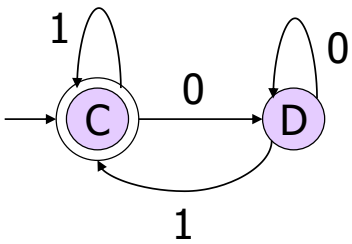
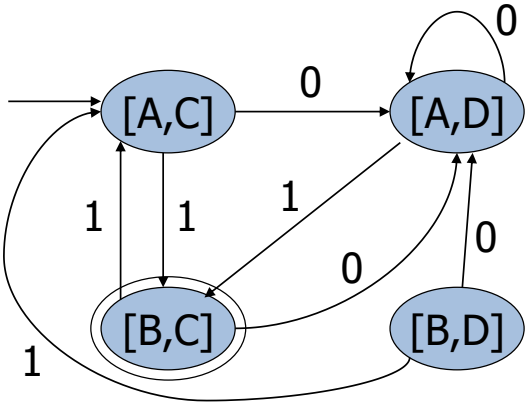
Other Examples







Language accepted?

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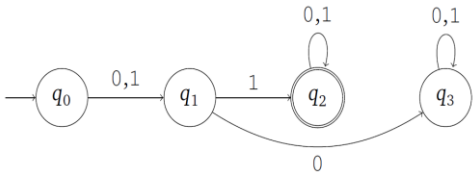
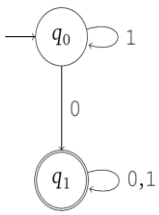
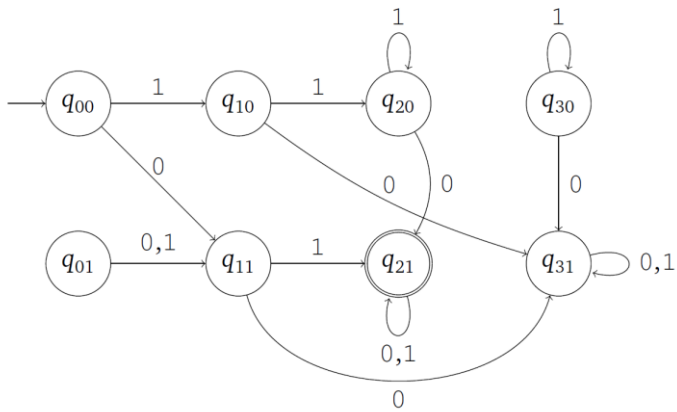
Other Examples







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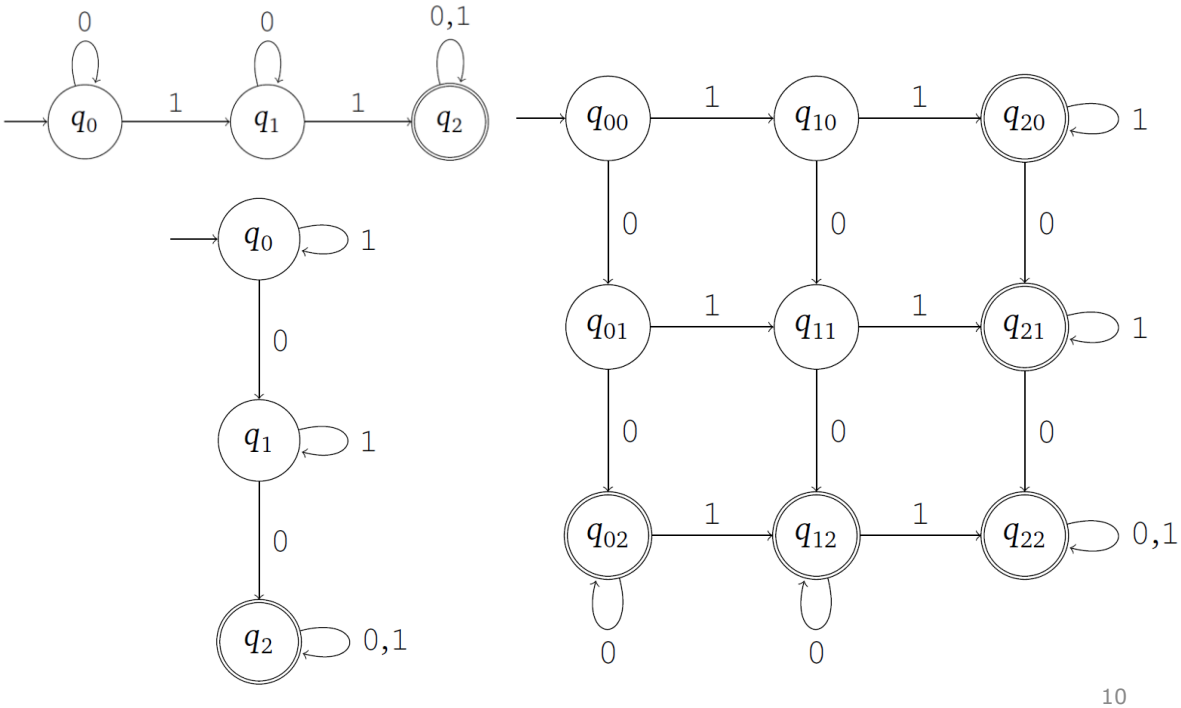
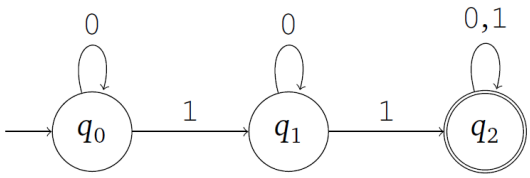
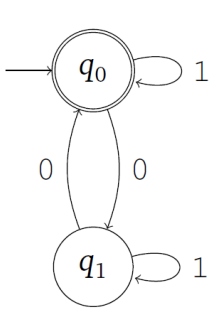
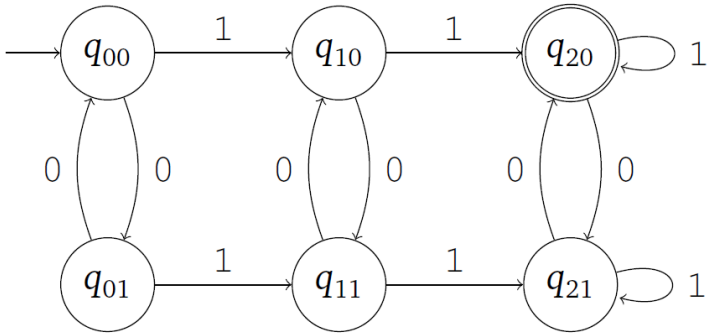
Other Examples



Other Examples







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