Lecture #8.

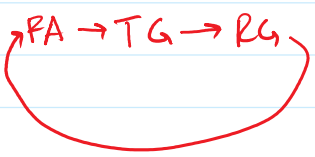
Klecne Theorem

If a language can be expressed by
- FA
- TG
- RG

Then it can be expressed by the other two.

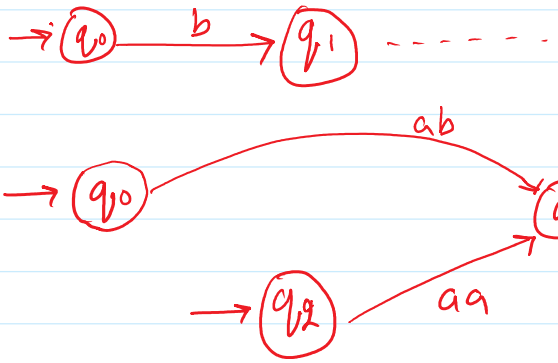
Part1:- Every language that can be defined by FA can also be expressed using TG.

Part2:- Every language defined by TG can also be expressed by Regular Expression.

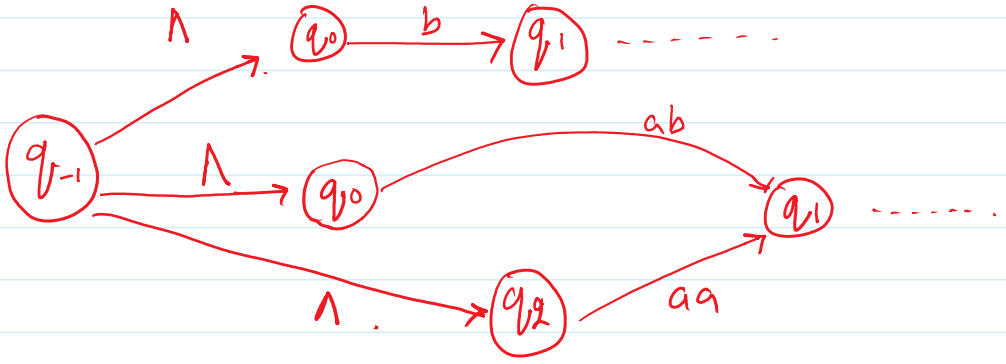


Given a TG How to obtain RE.

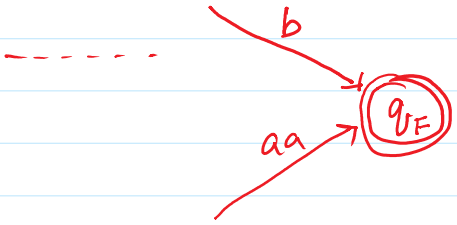
Step 1:- Create A Unique Start State.

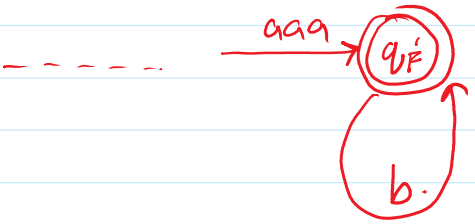


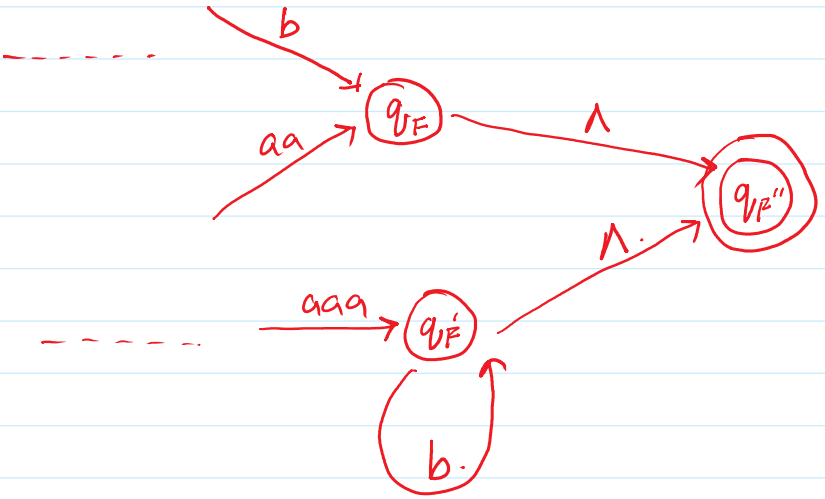
A Single TG.



Step 2:- Create a Unique Final State.

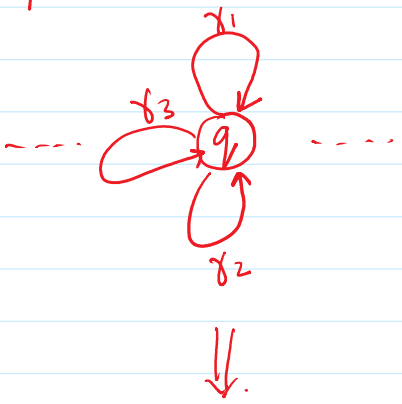


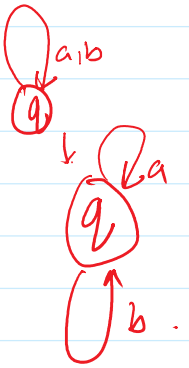




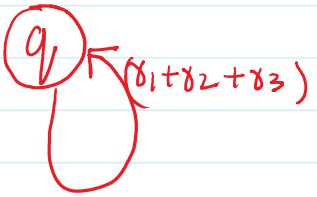
Step 3:-

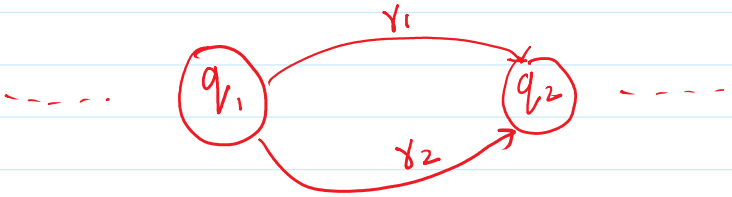
Step 3:- Combining Edges.

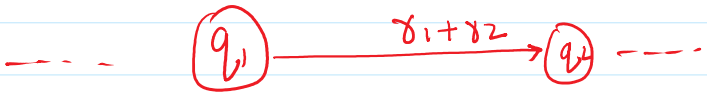




$(a+b)^*$.

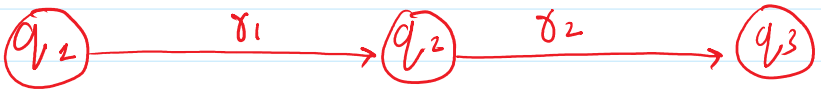


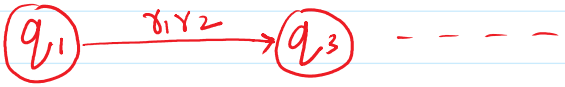




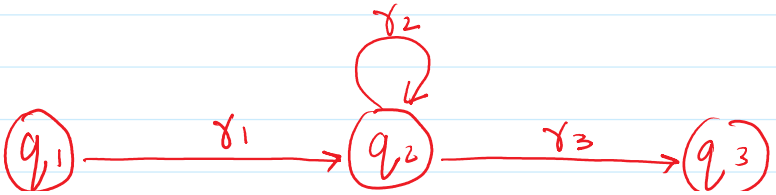
Step 4:- Bypass & State Elimination.

CASE 1

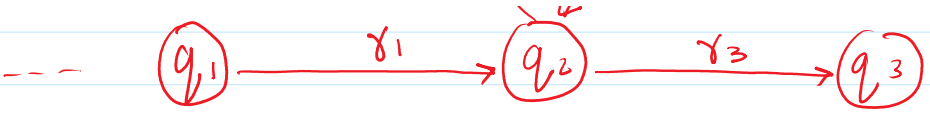


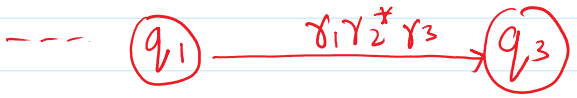


CASE 2.

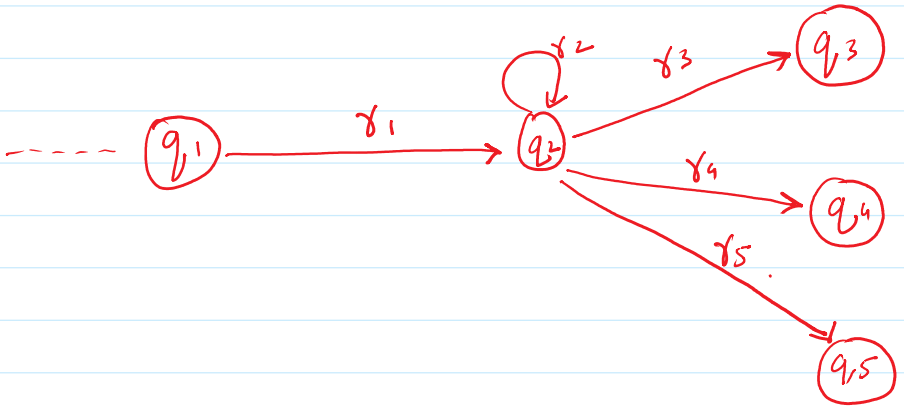


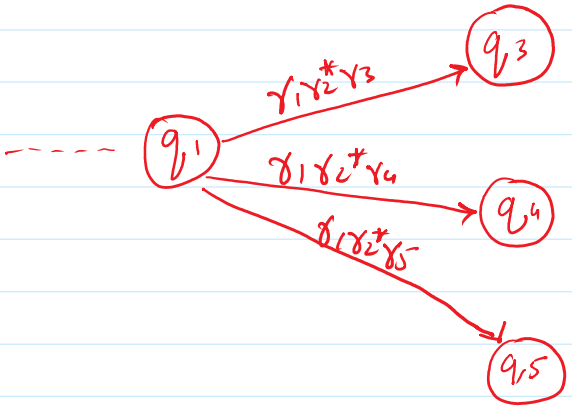
CASE2.



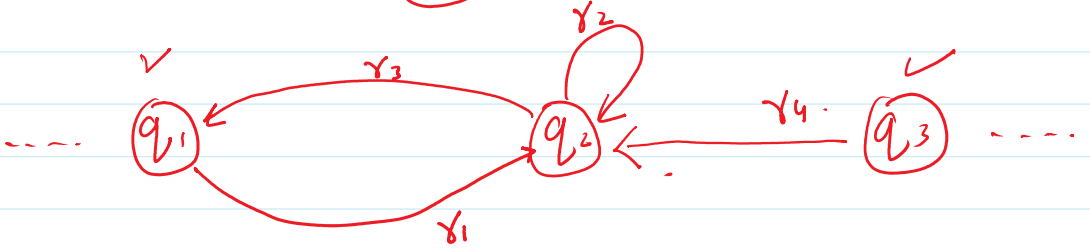


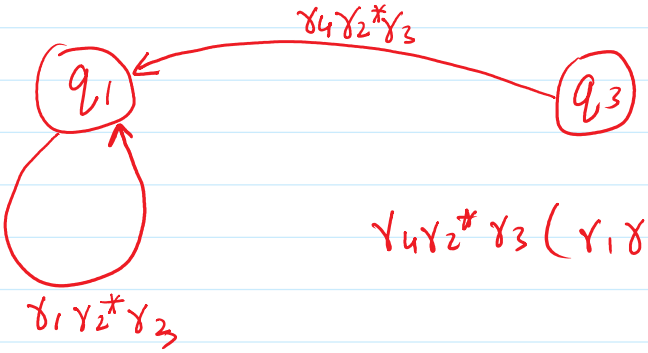
CASE3.



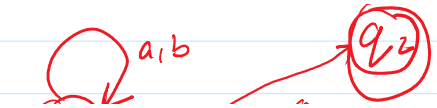


CASE4:-

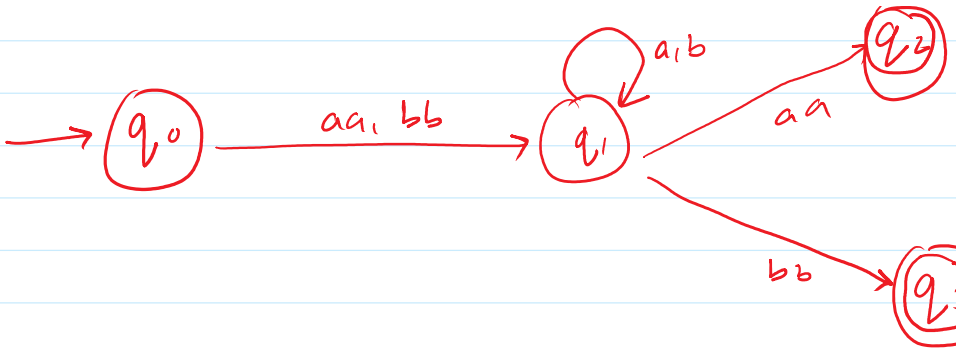


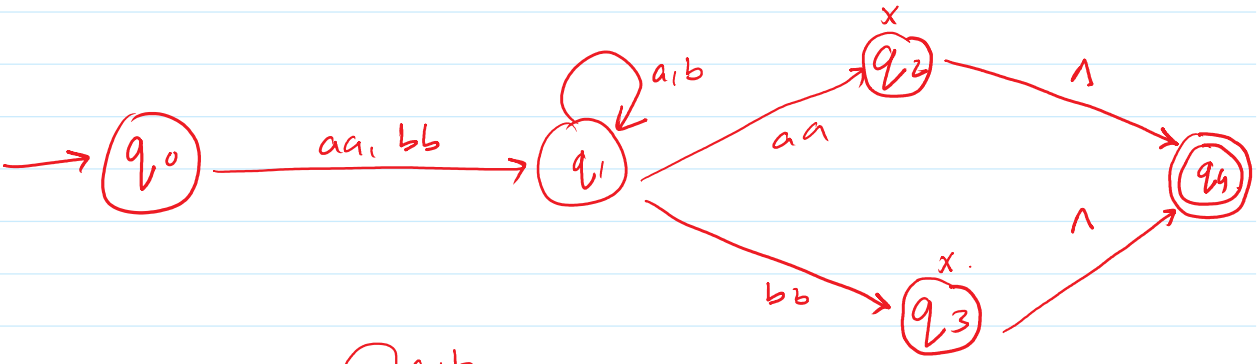


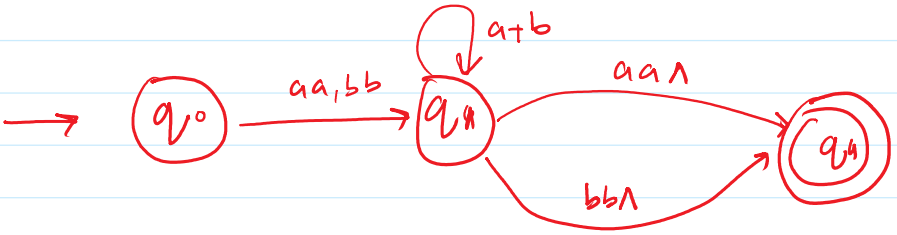
$\gamma_4\gamma_2^*\gamma_3(\gamma_1\gamma_2^*\gamma_3)^*$.

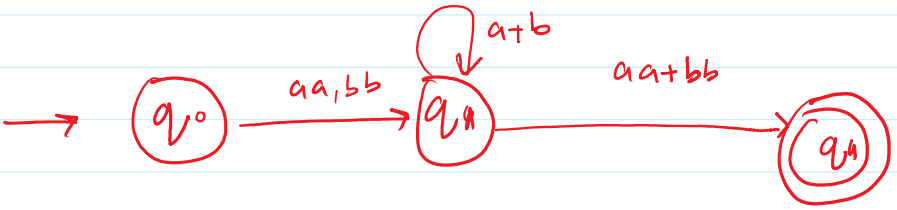


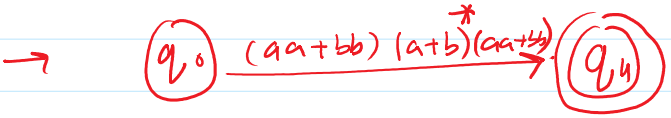
Example :-



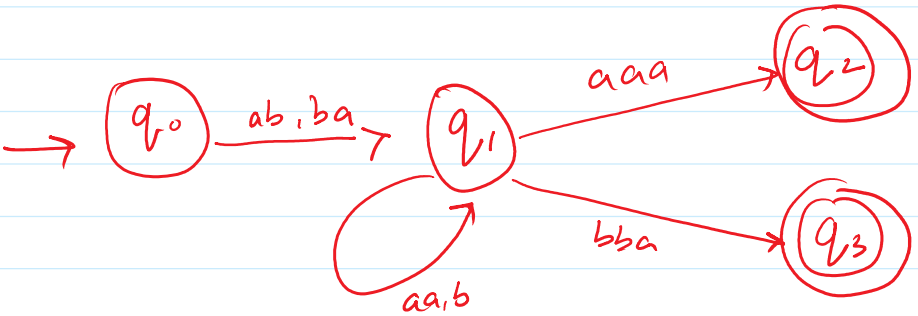


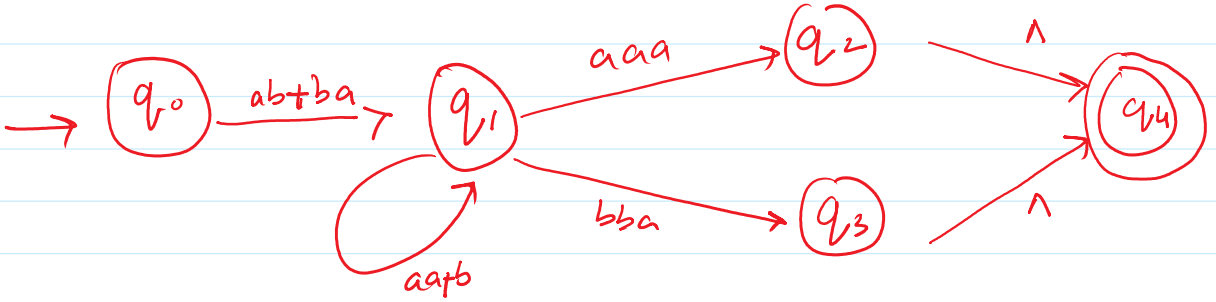






Example 2:-

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q1
aaa
q2
bba
q3
aa+b
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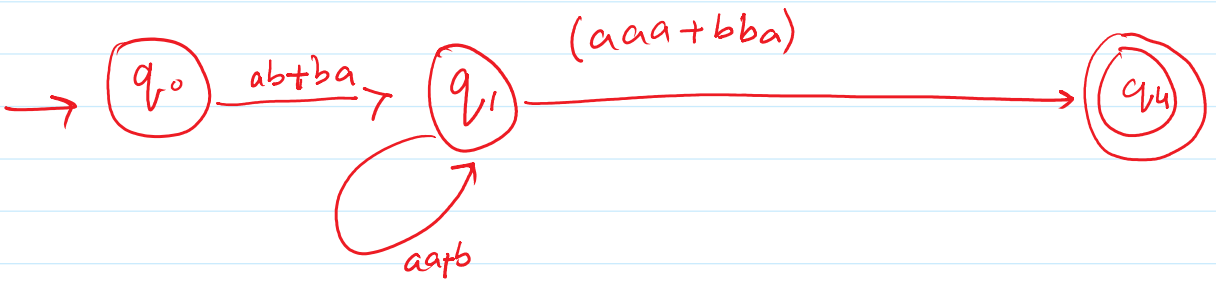
q4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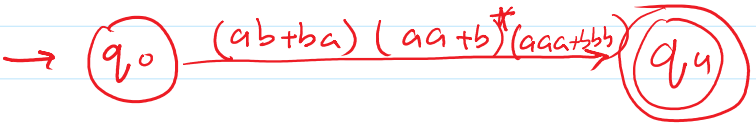
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