

Construction of FA equivalent to a Regular Expression $\rightarrow$

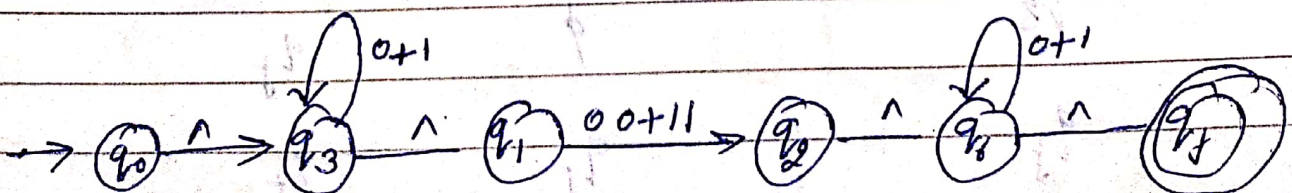
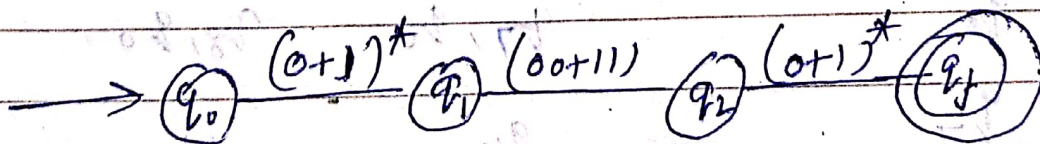
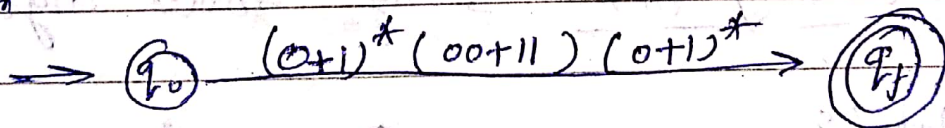
In this construction we used two steps.

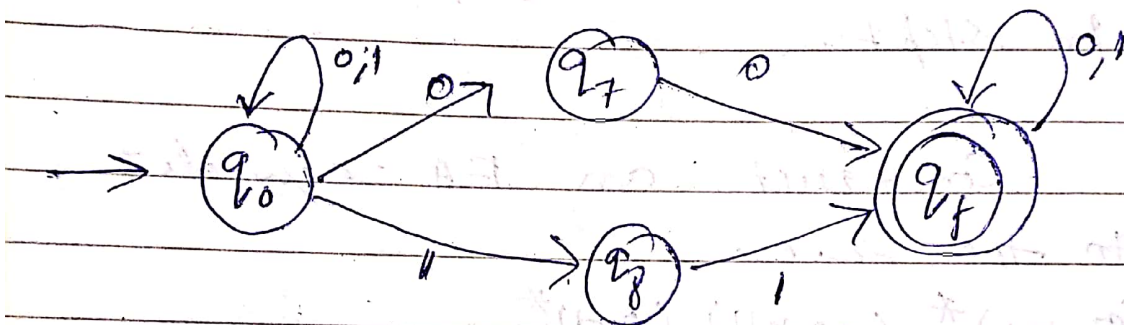
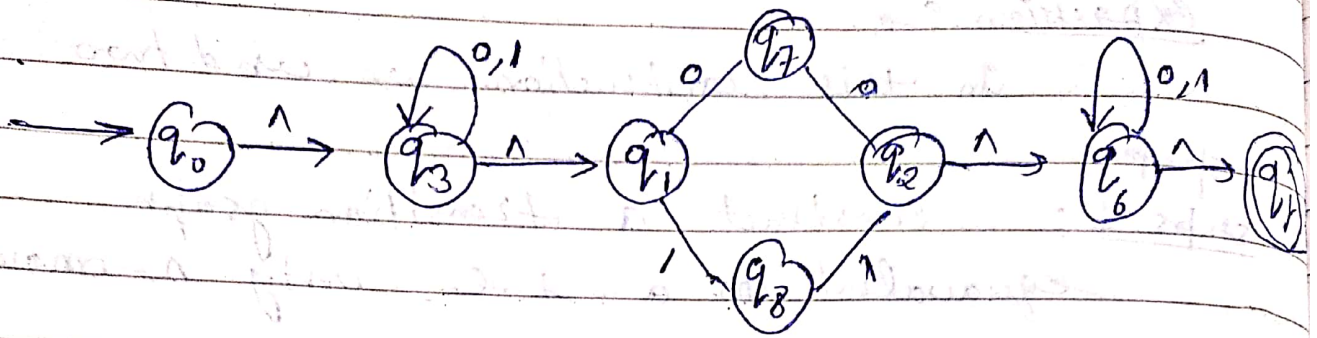
Step 1: Construct a transition graph equivalent to a r.e using $\wedge$ -moves.

Step-2: Construct a transition table for the transition graph obtained in Step 1.

Que: Construct an FA equivalent to the r.e $(0+1)^* (00+11) (0+1)^*$

Sol:

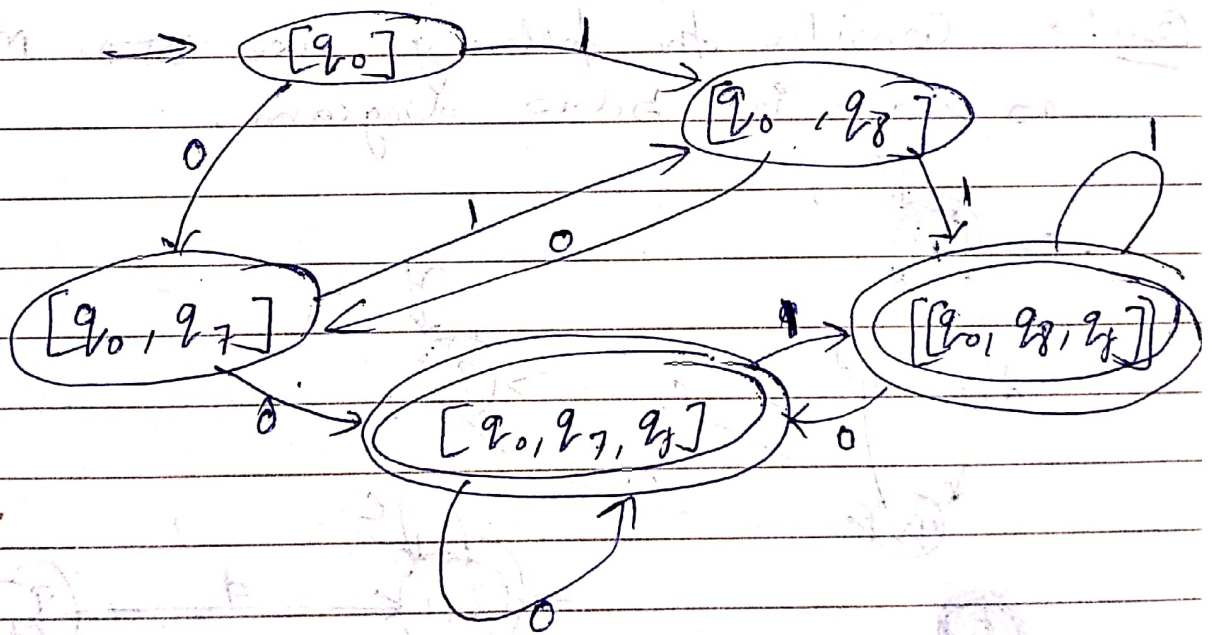




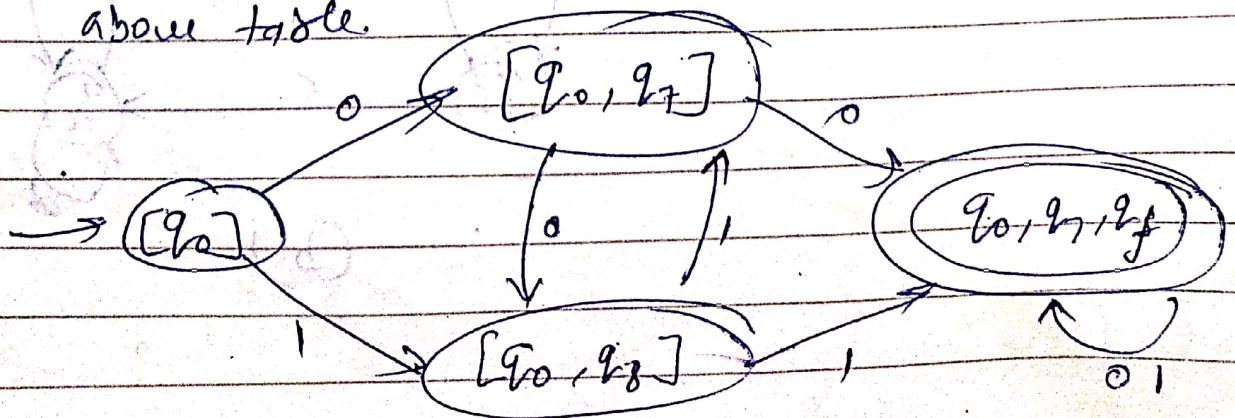
Construction of DFA $\Rightarrow$ of above diagram

State / Σ	0	1
$\rightarrow q_0$	q_7, q_0	q_8, q_0
q_7	q_f	ϕ
q_8	ϕ	q_f
q_f	q_f	q_f

State / Σ	0	1
$\rightarrow [q_0]$	$[q_0, q_7]$	$[q_0, q_8]$
$[q_0, q_7]$	$[q_0, q_7, q_f]$	$[q_0, q_8]$
$[q_0, q_8]$	$[q_0, q_7]$	$[q_0, q_8, q_f]$
$[q_0, q_7, q_f]$	$[q_0, q_7, q_f]$	$[q_0, q_8, q_f]$
$[q_0, q_8, q_f]$	$[q_0, q_7, q_f]$	$[q_0, q_8, q_f]$



Now we remove one row in the above table.



Note: Constructing the transition graph equivalent to a given r.e. the operation (Concatenation, $*$, $+$) that is eliminated first, dependent on the regular expression.

Equivalence of two FA's

Ques: Consider the following two DFAs M & M' as shown in below diagram.

