MEALY & MOORE MACHINE

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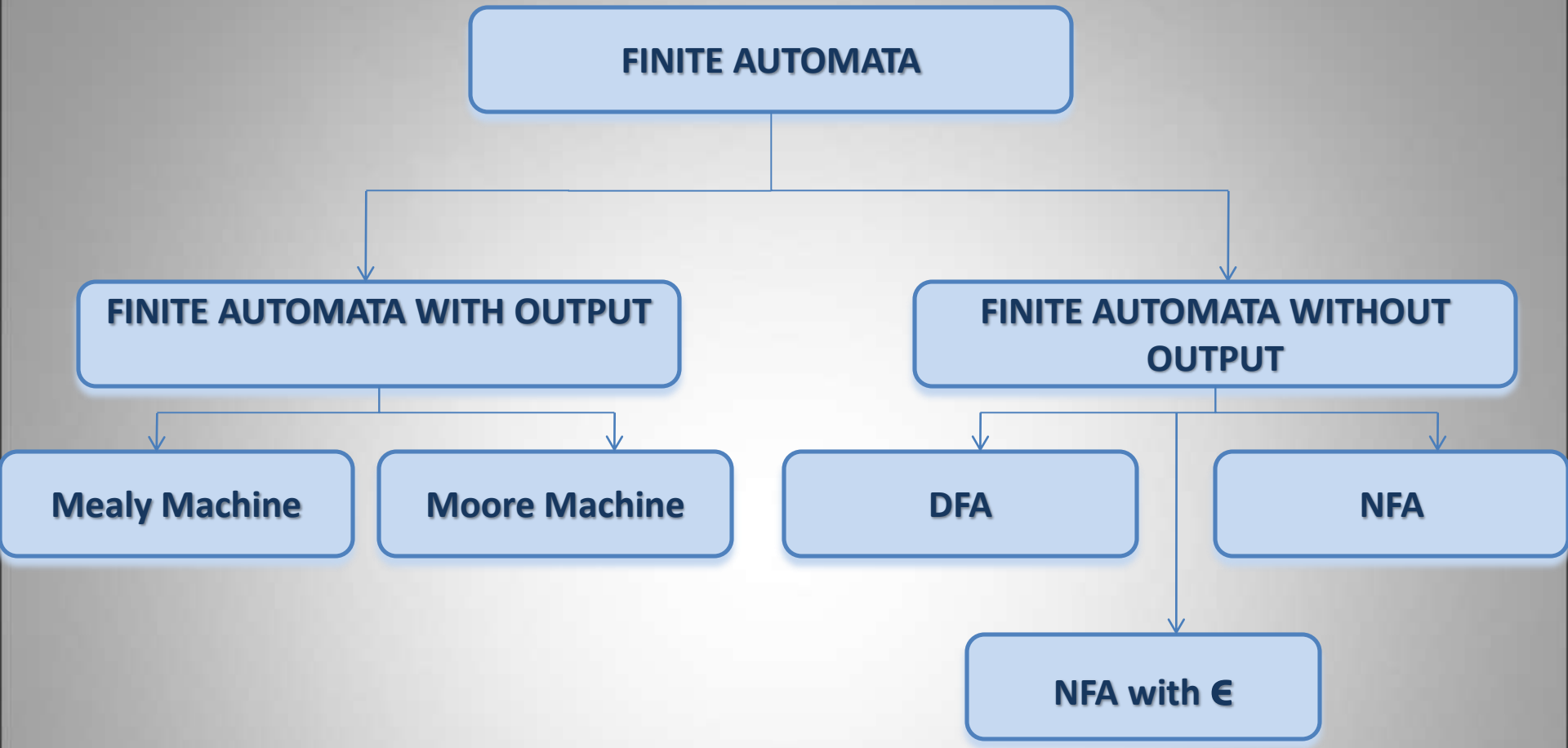

FINITE AUTOMATA
FINITE AUTOMATA WITH OUTPUT
FINITE AUTOMATA WITHOUT OUTPUT
Mealy Machine
Moore Machine
DFA
NFA
NFA with ϵ

Mealy and Moore machine consist of **SIX TUPLE:**

$$(Q, \Sigma, \delta, q_o, \Delta, \lambda)$$

Q= Set of State

Σ= Set of Alphabet

δ= Transition

q0= Initial State

Δ= Set of Output alphabet (Output Symbol)

λ= Output Mapping Function

Conversion of Mealy Machine to Moore Machine

1. Find out different output generated with qí in the next state column of Mealy Machine.
2. Then split qí into different states depending upon output generated with it.

   For example: If output generated by qí is ‘1’ in the first next state column & ‘0’ in the second next state column, then split q1 into q10 & q11.

   Follow the above steps for all the states.
3. Now copy all the present states & next states in Moore machine format and output of the next state are common.

Conversion of Mealy to Moore Machine

$$Q * \Sigma = \Delta \qquad : \qquad Q = \Delta$$

Construct the following Melay machine into its equivalent Moore machine

Present state	a=0		a=1	
	state	o/p	state	o/p
a_1	q_3	0	q_2	0
a_2	q_1	0	q_4	0
a_3	q_2	1	q_1	1
a_4	q_4	1	q_3	0

Step1: From the above table classify the next state into two state
Class1: States with similar output
Class2: States with dissimilar output

State	o/p	
q_1	0,1	Class 2
q_2	0,1	
q_3	0,1	Class 1
q_4	0,1	

Step2: For the state with different output add new state to the machine such that one state have one output.

Step3: Modify the transition table by adding new state at their output

state	o/p
q_{10}	0
q_{11}	1
q_{20}	0
q_{21}	1
q_3	0
q_{40}	0
q_{41}	1

Present state	a=0 state	a=0 o/p	a=1 state	a=1 o/p
q_{10}	q_3	0	q_{20}	0
q_{11}	q_3	0	q_{20}	0
q_{20}	q_{10}	0	q_{40}	0
q_{21}	q_{10}	0	q_{40}	0
q_3	q_{21}	1	q_{11}	1
q_{40}	q_{41}	1	q_3	0
q_{41}	q_{41}	1	q_3	0

Step4: The equivalence moore machine given as follows

Present state	Next state a=0	Next state a=1	o/p
q_{10}	q_3	q_{20}	0
q_{11}	q_3	q_{20}	0
q_{20}	q_{10}	q_{40}	1
q_{21}	q_{10}	q_{40}	0
q_3	q_{21}	q_{11}	0
q_{40}	q_{41}	q_3	1
q_{41}	q_{41}	q_3	1

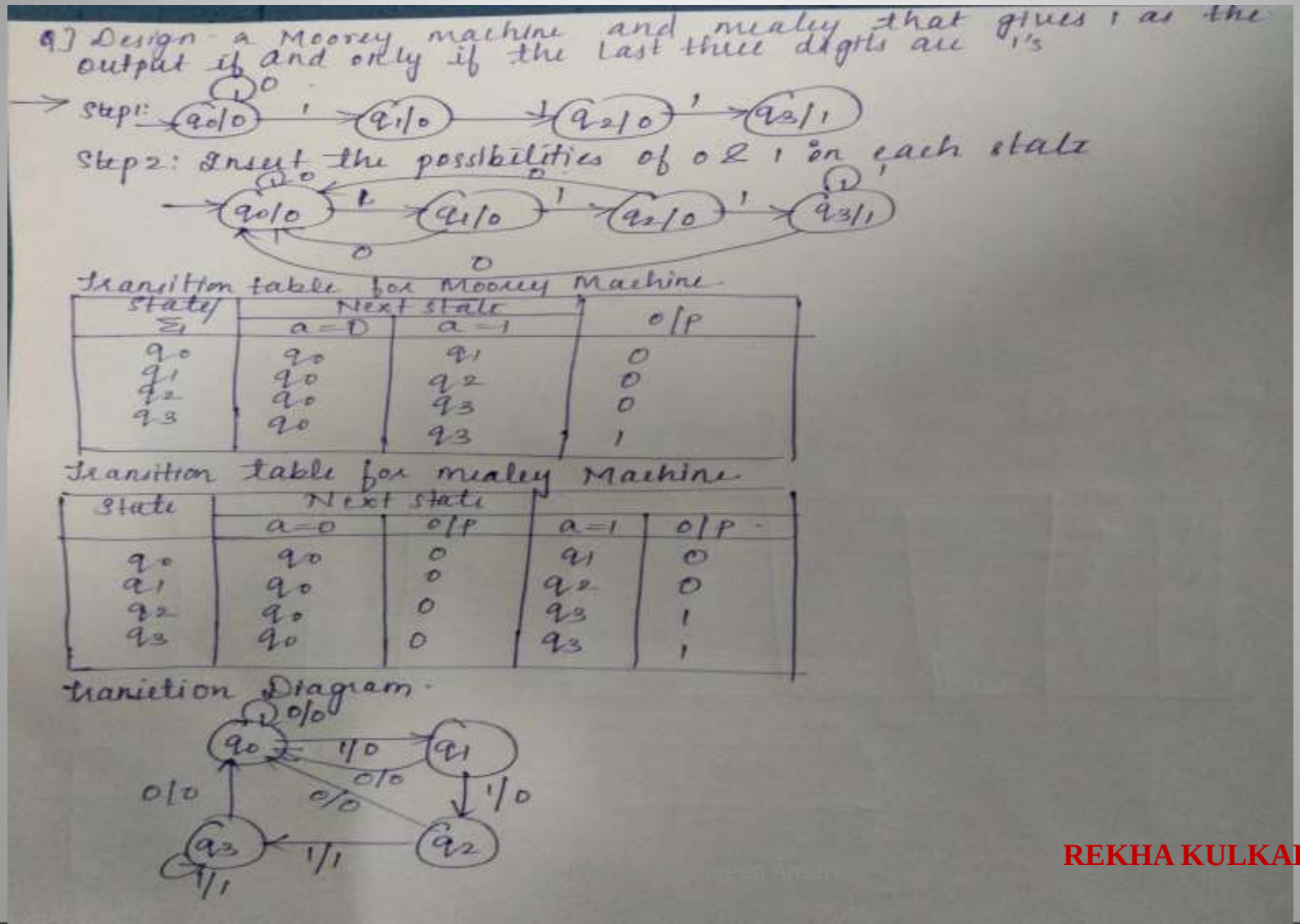
Conversion of Moore Machine to Mealy Machine

1. Draw the Mealy machine table.
2. Copy all the Present state & Next state column of the states into the table.
3. For output column of the Next state, check Present state & its output generated in the Moore Machine table.

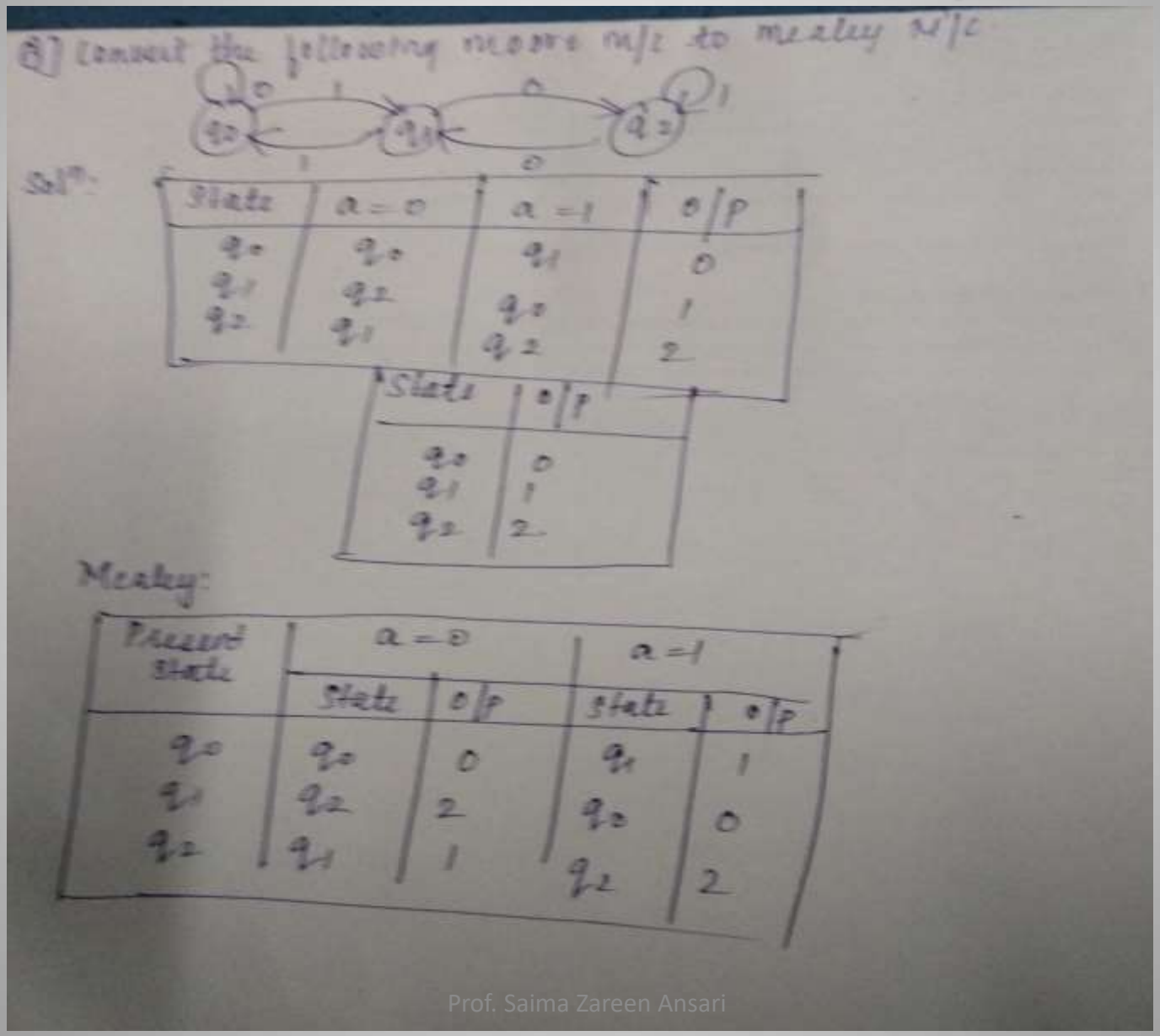
   For example: If output generated by state Qí is ‘m’, copy this output into the output column of Mealy machine table wherever Qí is present in the next state.

Conversion of Moore to Mealy Machine

$$Q = \Delta \quad : \quad Q * \Sigma = \Delta$$



Construction of Moore & Melay Machine



THANK YOU