Difference Between Mealy Machine and Moore Machine

The major difference between Mealy Machine and Moore Machine is that a Mealy machine is a machine whose current output is decided by its current state. The current external input and output symbol is connected to the transition and input states. Whereas Moore machine is a machine whose current output is solely decided by its current state, and each state of a machine has an output symbol. These machines are an important part of the GATE CSE syllabus, and over the years, various questions related to these concepts can be seen in the exam.

Mealy Machine	Moore Machine
This machine needs fewer states for the same functions' implementation.	This machine has a more significant number of states for the same functions' implementation.
This machine isn't straightforward to design as a Mealy machine.	This is easy to design Moore's machine.
These machines react to changes more quickly, and all seem to respond in the same direction.	Decoding the output requires more logic, the outcome in longer circuit delays. These machines usually react after one clock cycle.
This machine requires less hardware for design.	This machine requires more hardware for design.
In a mealy machine, a counter can't be referred	In the Moore machine, A counter can be referred
The output values become a function of transitions and change when the input logic is created in the present state.	The output value becomes the function of its current state with the changes at the edges of the clock every time a change occurs in the state.

What is a Mealy Machine?

A mealy machine can be defined as a final state machine in the theory of computation whose output results are determined by its current state and inputs. In this type of machine, at most, one transition is possible. This transition is important for the GATE exam. A Mealy machine can be described by a 6 tuple of Q, δ, Σ, O, X, and q_0. Here:

q_0 – Very initial state, where (q_0, ϵQ)

X – The transition function for output. Here, X: Q x Σ—>O

δ – The transition function for input. Here, δ:Q x Σ —>Q

Σ – The set of finite symbols called input alphabets.

O – It is a set of finite symbols called output alphabets.

Q – is a finite set of states.

What is the Moore Machine?

A Moore machine can be defined as a final state machine in the theory of computation, which carries a good marks weightage in the GATE question paper, whose output results are determined only by its current state. Every state of this finite state machine has its output symbol, and its current state & input symbol is totally responsible for the next state. One can describe a Moore Machine by a 6 tuple of Q, δ, Σ, O, X, and q_0. Here:

q_0 – Very initial state, where (q_0, ϵQ)

X – The transition function for output. Here, X: Q x Σ—>O

δ – The transition function for input. Here, δ:Q x Σ —>Q

Σ – The set of finite symbols called input alphabets.

O – It is a set of finite symbols called output alphabets.

Q – is a finite set of states.