Mealy and Moore Machine

Mealy Machine – A mealy machine is defined as a machine in theory of computation whose output values are determined by both its current state and current inputs
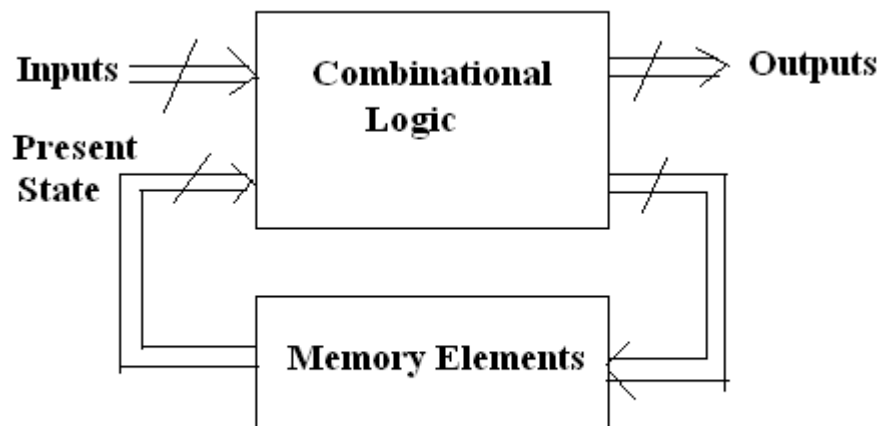

Figure 3. Mealy Type Machine

Mealy Machine –
1. Output depends on present state as well as present input.
2. If input changes, output also changes.
3. Less number of states are required.
4. There is less hardware requirement.
5. They react faster to inputs.
6. Asynchronous output generation.
7. Output is placed on transitions.
8. It is difficult to design.

Moore machine

A **moore machine** is defined as a machine in theory of computation whose output values are determined only by its current state.

Moore Machine –
1. Output depends only upon present state.
2. If input changes, output does not change.
3. More number of states are required.
4. There is more hardware requirement.
5. They react slower to inputs(One clock cycle later)
6. Synchronous output and state generation.
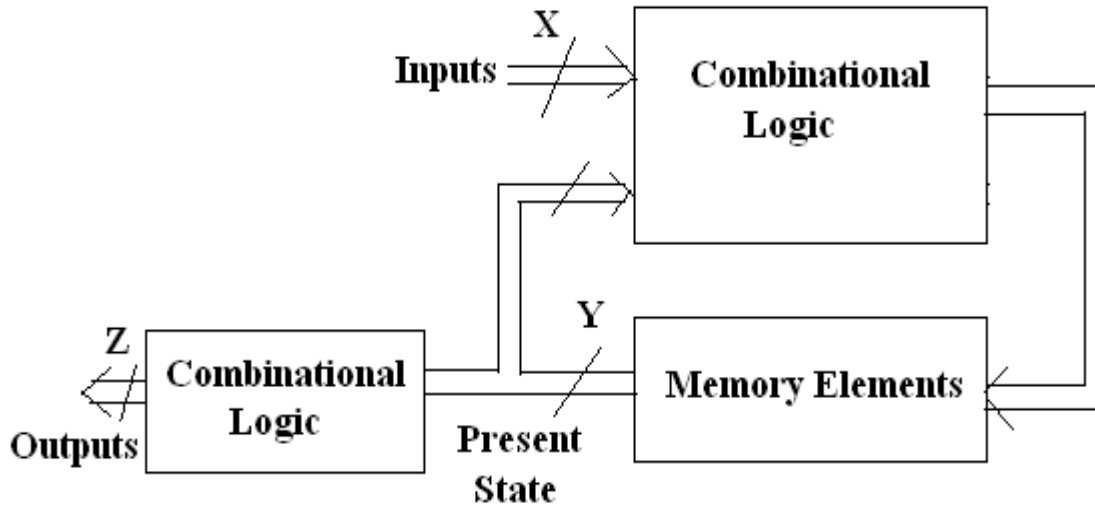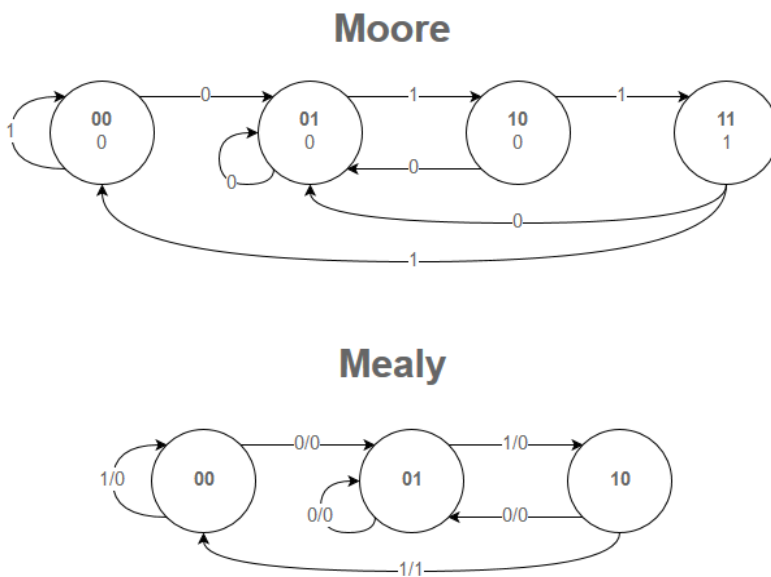7. Output is placed on states.

8. Easy to design.

Figure 4. Moore Type Machine

Example Comparing Mealy and Moore machine

his system takes in a stream of zeros and ones and outputs a 1 any time it gets the input sequence 011.

In both diagrams, the **bold** numbers in the state bubbles represent the **name of the states**. In the Moore diagram, the lower numbers in the state bubbles are the **output** while the numbers on the arrows are the **input**. In the Mealy diagram the numbers on the arrows are in the form of **input/output**.

As you can see, the Mealy machine ends up with a state less states since the Moore machine needs a seperate state where it sets the output to 1