**Finite Automata with output**

Mealy machine

A Mealy machine is a [6-tuple](https://en.wikipedia.org/wiki/N-tuple) (Q,Ʃ,Δ,δ,λ,q0) {\displaystyle (S,S\_{0},\Sigma ,\Lambda ,T,G)}

* Q - a [finite set](https://en.wikipedia.org/wiki/Finite_set) of [states](https://en.wikipedia.org/wiki/State_(computer_science)) {\displaystyle S}
* Ʃ – finite non empty set of input alphabets{\displaystyle S\_{0}}{\displaystyle S}{\displaystyle \Sigma }
* Δ -set of output [alphabet](https://en.wikipedia.org/wiki/Alphabet_(computer_science)) {\displaystyle \Lambda }
* δ - a transition [function](https://en.wikipedia.org/wiki/Function_(mathematics)) {\displaystyle T:S\times \Sigma \rightarrow S}mapping pairs of a state and an input symbol to the corresponding next state.
* λ - an output function{\displaystyle G:S\times \Sigma \rightarrow \Lambda }. Ʃ X Q-> Δ(delta).{\displaystyle T:S\times \Sigma \rightarrow S\times \Lambda }
* q0- initial state/start state

EX: 1010

Pass the string to MM

1 0 1 0

(SS)A->A->B->B->A

b a a b

the length of input string is n then length of output string is also n