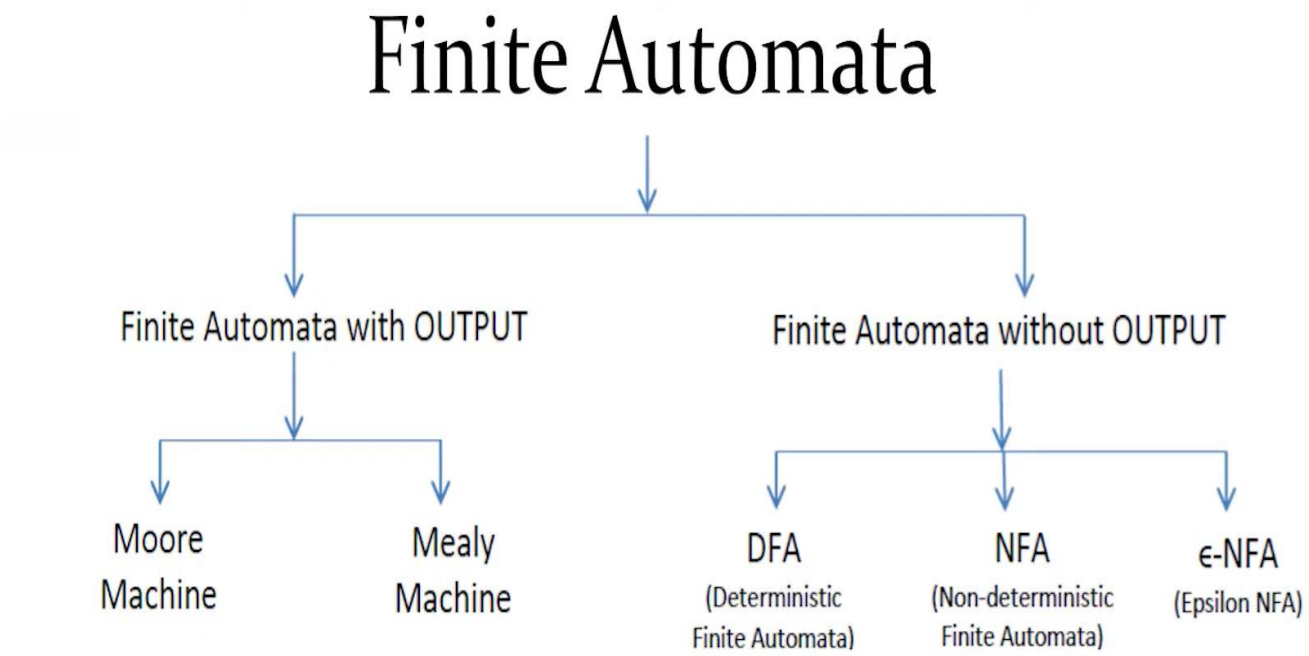



# DFA

## *(Deterministic finite automata)*

A **deterministic finite automaton** (**DFA**)—also known as **deterministic finite acceptor** (**DFA**), **deterministic finite-state machine** (**DFSM**), or **deterministic finite-state automaton** (**DFSA**)—is a finite-state machine that accepts or rejects a given string of symbols, by running through a state sequence uniquely determined by the string.

**DFA = {Q, ∑, q0, F, δ}**

Q: finite set of states

∑: finite set of the input symbol

q0: initial state

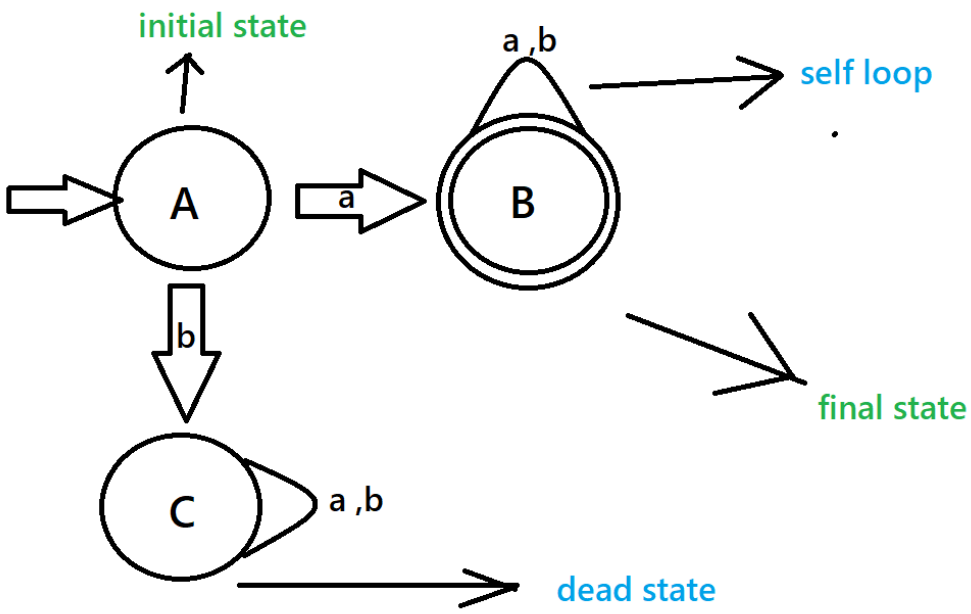
F: final state

δ: Transition function

**δ: Q x ∑→Q**

***Means from a state if we apply some inputs we will go to another state**

**L1. Set of all strings which starts with a over alphabet set ∑ = {a, b}**




**Q = {A, B, C}**

**Σ = {a, b}**

**Q0 = {A}**

**F = {B}**

*String should end in final state to get accepted.

***Dead state** is a state from where we can't go to final state.

For string "ab"

A -> B -> B (accepted)

For string "ba"

A -> C -> C (rejected)

Transition represents in 3 ways

a) Transition diagram
b) Function
c) Table

*All the strings that are not in are rejected

*For every state and every input there is exactly one transaction