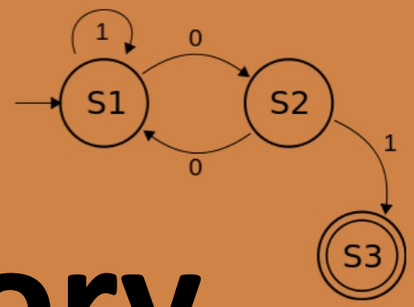
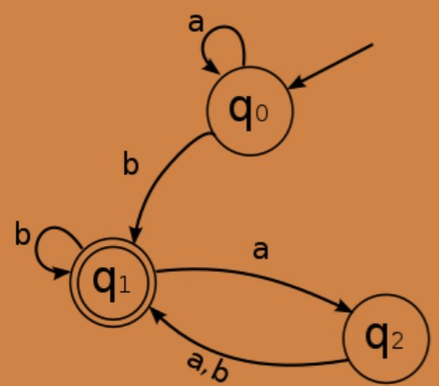
Theory of Automata





Dastgir Sabri

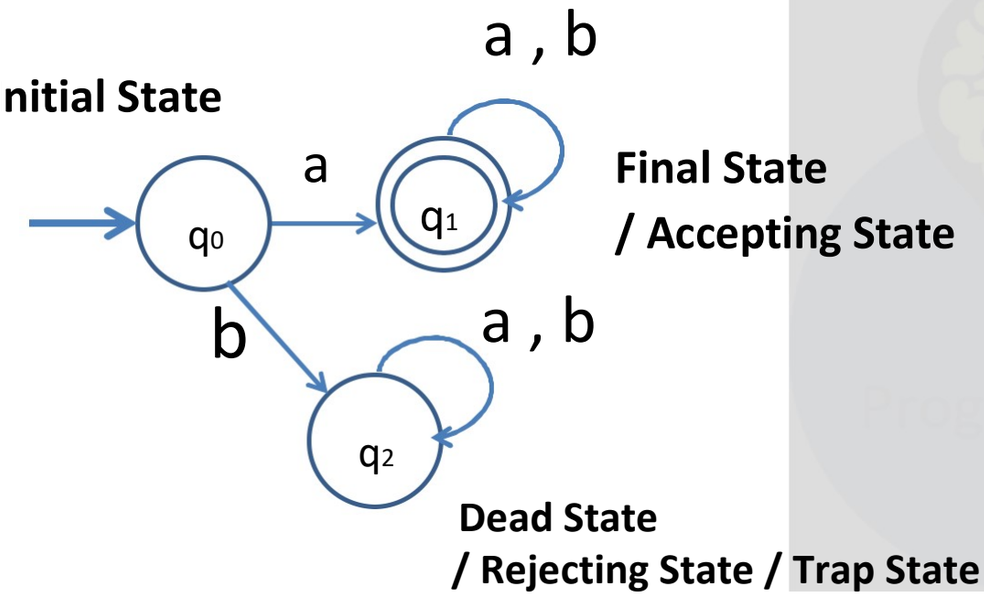
Deterministic FINITE AUTOMATA (DFA)

- Dead state
- Trap State
- Accepting State
- Rejecting State
- Jump Back

Lecture 15: DFA–Dead State, Trap State, Accepting State, Rejecting State, Jump Back

Starts with **a**

R = a(a+b)*



q_0: Initial State

q_1: final State

q_2: Dead State (Dead End State)

Initial State

It is the state that the machine naturally starts in before it reads any input. It is called as **Entry Point**.

Final State

It is the state where the machine halts when it has no input left. It is also called **Accepting State**

Dead State / Dead End State

It is also called as **Rejecting State** and **Trap State**. Once the machine enters a dead state, there is no way for it to

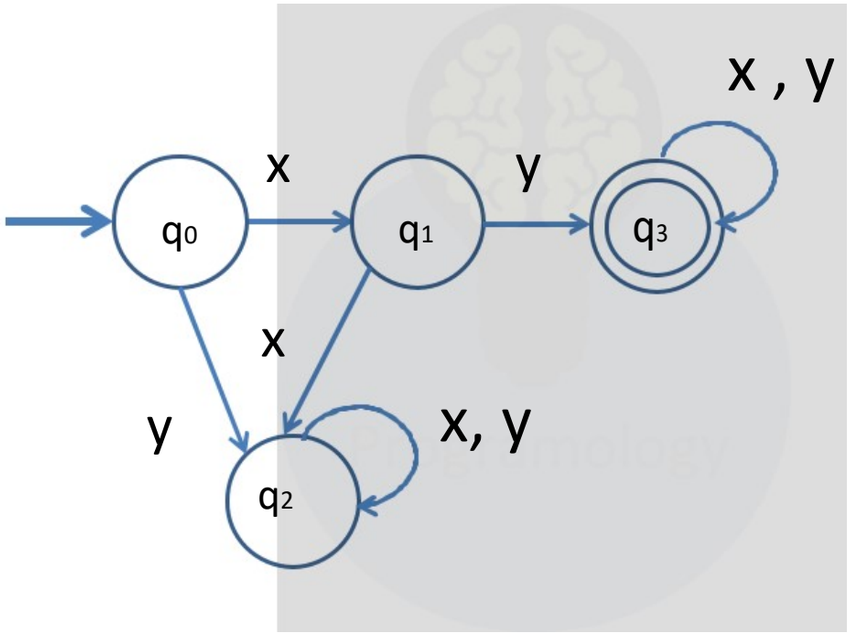
reach an accepting state

Lecture 15: DFA–Dead State, Trap State, Accepting State, Rejecting State, Jump Back

Construct an FA which recognizes the set of all strings defined over

S = {x, y} starting with the prefix ‘xy’.

R = xy(x+y)*



xyxx

xyyyy

xyxxyy

yx

xx

q_0: Initial State

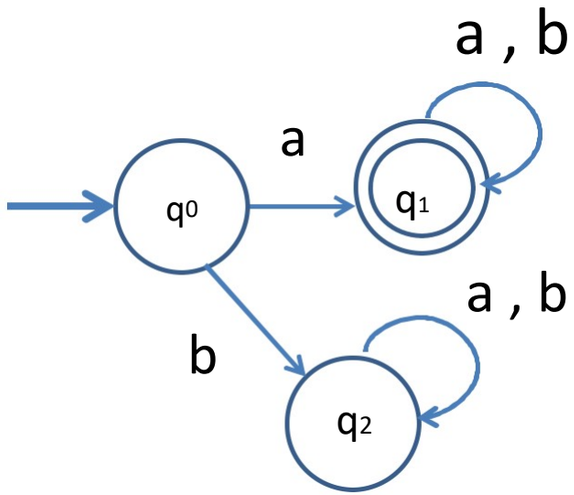
q_3: Final State (Accepting State)

q_2: Dead State (Dead End State/Trap State/Rejecting State)

Lecture 15: DFA–Dead State, Trap State, Accepting State, Rejecting State, Jump Back

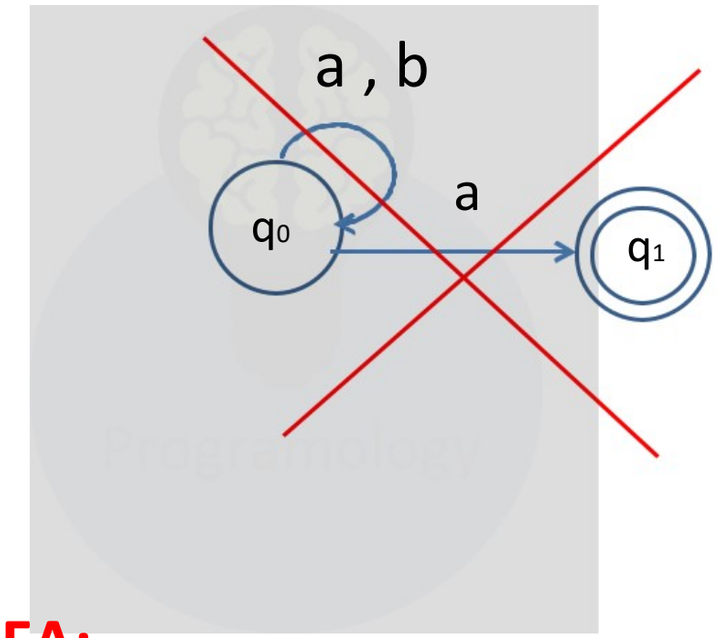
Starts with **a**

R = a(a+b)*



Ends with **a**

R = (a+b)*a



a
aa
aaa
ba
baa
bbaa
aba
abba
babbaa

DFA:

One letter can not go to many state from one state.

(i.e., Only one output)