RGPV 2010, 02
Q. Write short note on equivalent of DFA and NDFA ?

Ans.

1. Every DFA is an NDFA.
2. If from a regular set an NDFA is created than there may be chances of existence of DFA.

DFA is 5 tuple machine:

M = (Q, Σ, δ, q0, F)

1. Q is a finite non empty set of states.
2. Σ is a finite non empty set of input symbols.
3. δ is a transition function, QXΣ int to Q
4. q0 is an initial state belong to Q.
5. F is the set of final states belong to Q.

NDFA is 5 tuple machine:

M = (Q, Σ, δ, q0, F)

1. Q is a finite non empty set of states.
2. Σ is a finite non empty set of input symbols.

3. δ is a transition function, QXΣ int to 2^Q

4. q0 is an initial state belong to Q.

5. F is the set of final states belong to Q.

Problem 01: Convert the following Non-Deterministic Finite Automata (NDFA) to Deterministic Finite Automata (DFA).
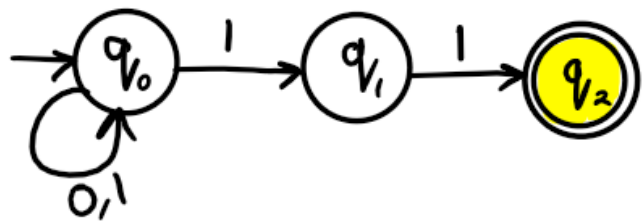
Transition table for NDFA from above NDFA transition diagram

State	Input 0	Input 1
->q0	q0	q0, q1
q1	–	*q2
q2	–	–

Transition table for DFA from above NDFA transition table

State	Input a	Input b
->q0	q0	{q0, q1}
{q0, q1}	q0	*{q0, q1, q2}
*{q0, q1, q2}	q0	*{q0, q1, q2}

Transition diagram from above DFA transition table
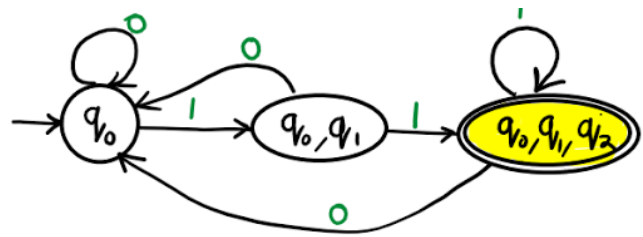
Reference:

1. Introduction to Automata Theory Language & Computation, Hopcroft& Ullman,

2. Theory of Computation, Chandrasekhar & Mishra, PHI.

Related posts:

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18. Construct DFA equivalent to NFA | RGPV TOC PYQ
19. CNF from S–>aAD;A->aB/bAB;B->b,D->d.
20. Regular expresion to CFG
21. Regular expression to Regular grammar

22. Grammar is ambiguous. S → aSbS|bSaS|∈

23. leftmost and rightmost derivations

24. Construct Moore machine for Mealy machine

25. Definition of Deterministic Finite Automata

26. Notations for DFA

27. How do a DFA Process Strings?

28. DFA solved examples

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30. Moore machine

31. Mealy Machine

32. Regular Expression Examples

33. Regular expression

34. Arden's Law

35. NFA with ∈-Moves

36. NFA with ∈ to DFA Indirect Method

37. Define Mealy and Moore Machine

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39. Equivalent of DFA and NFA

40. Properties of transition functions

41. Mealy to Moore Machine

42. Moore to Mealy machine

43. Diiference between Mealy and Moore machine

44. Pushdown Automata

45. Remove ∈ transitions from NFA

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55. Introduction to Automata Theory