1. Ladder Basics: Contacts, Coils, Flank Contacts, Latched Coils, Timers and Counters;
2. How a PLC process inputs and generates Outputs? The "scan time" concept.
3. Deterministic Automaton definition, ax example
4. Non-Deterministic Automaton definition, an example
5. Language Generated and Marked Language
6. Blocking Property in an Automaton
7. Accessible, Co-Accessible, Trim operations on Automaton
8. Place-Transition Petri Net Definition
9. Firing rules in a Petri Net
10. Matrix Characterization of a Petri Net
11. Reachability Properties of a Petri Net
12. Boundedness of a Petri Net
13. Liveness of a Petri Net
14. Reachability Tree and Graph
15. SFC Basics: Steps, Transitions, Update Rules
16. P Controller Properties
17. PI Controller Properties
18. PD Controller Properties
19. The Derivative kick and measurement noise filtering