Digital Systems Design and Laboratory Final

2017-05-18

- Characteristic equations of flip-flops:
  - SR flip-flop: $Q^+ = S + R'Q$
  - JK flip-flop: $Q^+ = JQ' + K'Q$
  - D flip-flop: $Q^+ = D$
  - T flip-flop: $Q^+ = TQ' + T'Q = T \oplus Q$
- Moore and Mealy machine:
  - Consturcted from truth tables to state tables and state diagrams.
  - **Regular expression** is generated for a desired output.

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- Reverse engineering
- State reduction:
  - Method of successive partitions.
  - Implication chart method.

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- Excitation table:

Q	Q^+	SR	JK	D	T
0	0	0-	0-	0	0
0	1	10	1-	1	1
1	0	01	-1	0	1
1	1	-0	-0	1	0

2017-06-08

- Six step process for forward design:
    - Understand the statement of the specification
    - Obtain an abstract specification of the FSM
    - Perform a state mininimization
    - Perform state assignment
    - Choose FF types to implement FSM state register
    - Implement the FSM