

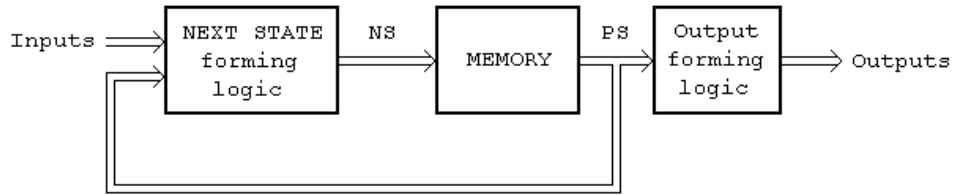
CS 2420 Lab 9

Topics: Finite State Machine Design – Moore Machine

Pre Lab: Attempt to complete T2 and T3 to find the state diagram truth table and k-maps for the machine.

T1. Overview of Moore machine

A Moore machine is a finite state machine (FSM) whose output depends only on the current state without depending on the current input. A Moore machine design fits the model shown below.



T2. State Diagram

Complete the Moore FSM diagram that defines the following machine: A serial device that takes in a binary number and outputs (serially) the same number with every third '1' converted to a '0'. For example, if the number is 10011000101010 then the output is 00011000001010. The data input is low order bits first. Your instructor will help you get started.

T3. Build a Circuit

Now implement this machine using positive edge triggered D flipflops. Set up a transition table, identify each state with an encoding and use excitation tables and Karnaugh maps to computer the input and output circuits of the two flipflops. Now build the device in DSCH, test it, have your instructor verify it, take screen shots for your report.

T4. Build another Moore Machine

Build a Moore machine that counts 3,4,8,9,3,4,8,9,... if the input x is a 0. The sequence will be reversed if the input x is a 1. Follow the previous task steps by creating a diagram, truth table, and using K-maps to find the combinational logic needed. After building and testing have your instructor verify your design and capture screen shots for your report.

T5. Comparison of Mealy and Moore Machines

Write briefly about the difference of Mealy and Moore machines by comparing labs 8 and 9.