UNC Charlotte, Department of Electrical and Computer Engineering
ECGR 2181, Fall 2008, Homework #10

UPDATED SPECIFICATION

Due: 12/8/2008, at the beginning of class (100 points)

Show all of your work!!!!!

1. How long did this assignment take you? (Answer truthfully!) (5 points)
2. Consider a Finite State Machine with two inputs, *y* and *z*, and three outputs, *a, b, c*. *abc* should always follow the following sequence when *y*=0 and *z* = 0: 000, 001, 011, 111, 101, 100, 110, 010, repeat. *abc* should go to the previous value (i.e. 011 to 010) when *y*=0 and *z*=1. When *y*=1, then the sequence stops (stays at the current state). When *y*=0, then the direction of the sequence depends on the value of *z*.

Implement this FSM by following the five steps of designing a Controller:

1. Create FSM (25 points)
2. Create the architecture (10 points)
3. Encode the states (10 points) – you can do this step smartly and save yourself a lot of work in step 5.
4. Create the state table (25 points)
5. Implement the combinational logic (25 points) – **make sure it is minimized!**

Ensure that you follow all of the design guidelines described in Chapter 3, including verifying correct transition properties (Slide 3-47 to 3-49 and 3-51).