Homework Set 8

DUE: MONDAY March 6, 2000, 12:30 pm

Please show *all* of your work. In certain problems, you may be asked to use Design Works. Otherwise, solutions do not have to be typeset, but may be if desired. In any case, your solutions must be legible. Please staple all the pages together. Make it clear which problem is which (especially important for the printouts from Design Works).

1. Katx 9.1 (p.487). After doing the minimization, make it clear which states are being combined, and then draw a new (complete) state diagram.

2. In a round of the popular game nogginball, a team gets two points for each goal scored until that team's score is 10. After that, the team must get two goals *in a row* to win (the score remains at 10).

Design a scorekeeping system for the nogginball scorekeeper to use. There would be two buttons to press, one to indicate a goal scored by each team. There will be outputs to drive a status display. The status display shows the score, whether or not each team is in "overtime", whether or not the game is over, and if the game is over, who won. You do *not* have to design the status display, but you do have to generate the inputs for it. Develop the FSM diagram, the state transition table, decide on encodings, and derive logic. Be sure to document your output encodings carefully (the designers of the status display will need to understand them).

3. Katz 8.27 (p.444). Assume that a reasonable amount of money can be held in the repository (naturally, there would be a limit, but ignore that for this problem, or if you need to, assume some large upper limit). On the other hand, there can only be a finite (and hopefully small) number of signals N1, N2, etc.

In your internal logic for problems 2 and 3, you may use simple commercial parts of the type we have used before, if appropriate. Be sure to attach a pin diagram and documentation for each such device used.