Homework #11

due: Thursday, May 5, 2011

- Write your name at the top of each page of your solutions.
- Clearly indicate the start of the solution for each problem.
- Properly order and staple all pages of your solution.
- Show all of your work!
- A solution that requires physical units is incorrect without them.
- Clearly identify your result (e.g. box or circle the result).
- Always write neatly! If it cannot be read, it will not be graded!

- Always read the associated sections of the textbook before attempting the homework problems!

1. Roth & Kinney – problem 15.2

2. Roth & Kinney – READ problem 15.3 (to get a laugh), but don't actually do it!!

3. Roth & Kinney – problem 15.11

4. Roth & Kinney – problem 15.7

5. Roth & Kinney – problem 15.25 – do parts (a) – (e) given below:

   (a) Reduce the state table (given in the problem) to a minimum number of states using an Implication Chart. *(minimum number of states = 5).*

   (b) Use the *binary* state assignment.

   (c) Derive the FF input equations assuming that the FSM is realized using D Flip-Flops.

   (d) Derive the FF input equations assuming that the FSM is realized using JK Flip-Flops.

   (e) Derive the output (Z) equation for the FSM.
6. Roth & Kinney – problem 15.27 – do parts (a) – (d) given below:

(a) Use the gray-code state assignment. (*the 3-bit gray-code is given below*).

(b) Derive the FF input equations assuming that the FSM is realized using T Flip-Flops.

(c) Derive the FF input equations assuming that the FSM is realized using SR Flip-Flops.

(d) Derive the output (Z) equation for the FSM.

**3-bit Gray Code:**

- 000
- 001
- 011
- 010
- 110
- 111
- 101
- 100