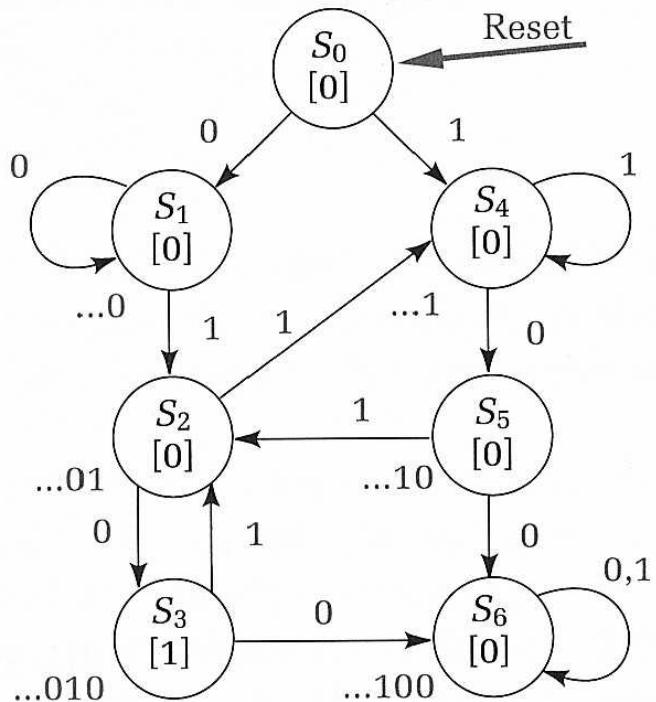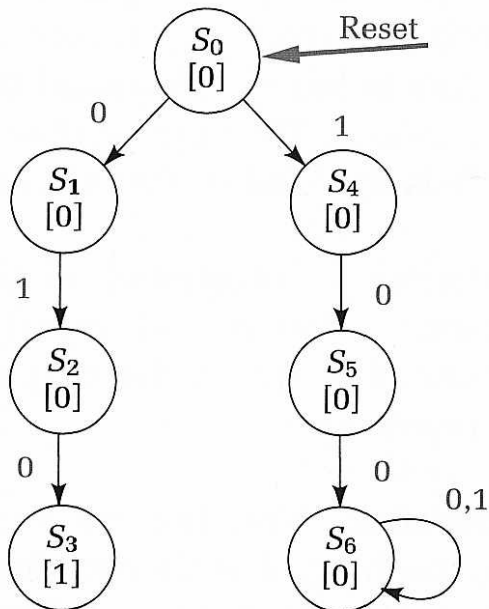# Finite String Pattern Recognizer with "End" String

A finite string recognizer has one input (X) and one output (Z). The output is asserted whenever the input sequence …010… has been observed, as long as the sequence 100 has never been seen.

Step 1. Understanding the problem statement

Sample input/output behavior:

X: 00101010010
Z: 00010101000

X: 11011010010
**Z: 00000001000**

COUNTING IN TWO SEQUENCES, BUT ONE MACHINE

A synchronous 3 bit counter has a mode control M. When M = 0, the counter counts up in the binary sequence. When M = 1, the counter advances through the Gray code sequence.

Binary: 000, 001, 010, 011, 100, 101, 110, 111
Gray: 000, 001, 011, 010, 110, 111, 101, 100

Valid I/O behavior:

Mode Input M	Current State	Next State (Z2 Z1 Z0)
0	000	001
0	001	010
1	010	110
1	110	111
1	111	101
0	101	110
0	110	111
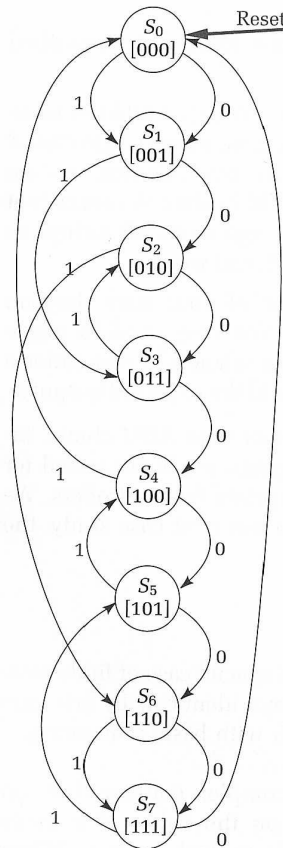
- Ant Brain (check file from S.Ward, MIT, on the website)
- Vending machine examples (one of them, very simple one, in the book – chapter 9; many of them on the net – look for a couple so you get acquainted with those).
- Make your own vending machine, for example returning change to the user.