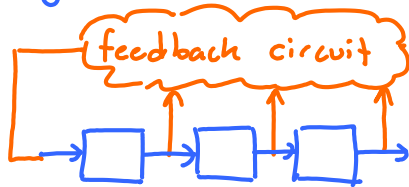


ECS455 - 4 - 5 - m-sequence ex

Thursday, March 01, 2012
1:24 PM

Example 1

Shift register



Feedback shift register

Use polynomial whose coefficients are 0, 1

Ex. $g(x) = x^3 + x^2 + 1 = 1 + x^2 + x^3 = 1 + 0x + 1x^2 + 1x^3$

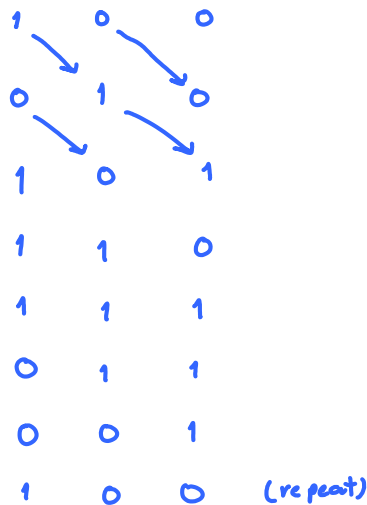
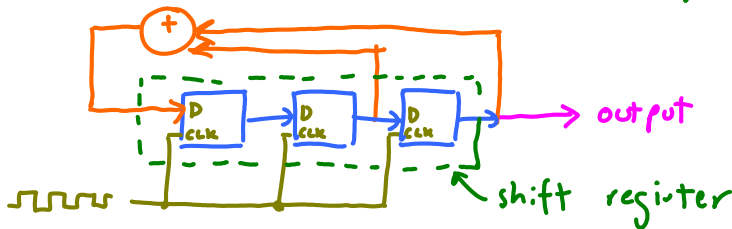
$r = \text{degree} = 3$

↑ ↑ ↑
coefficients

0 → no connection

1 → have connection

$r=3 \Rightarrow$ use 3 FF's

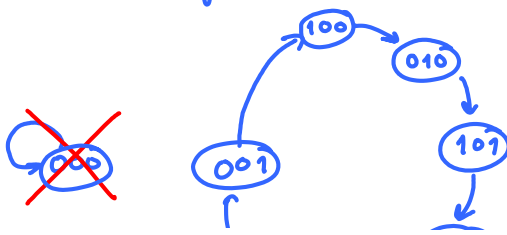


m-sequence :

001011100101110010111...

period = 7

complete state diagram

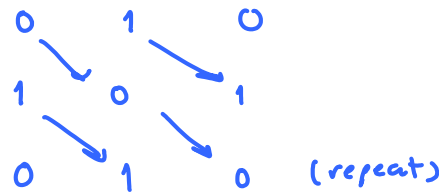
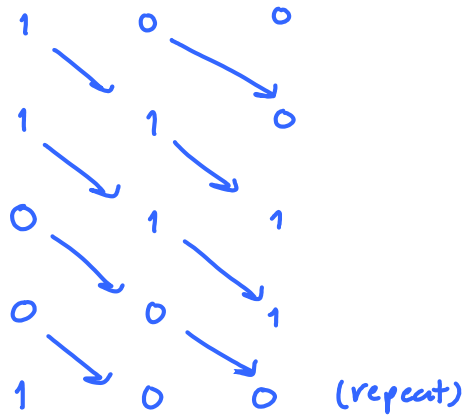
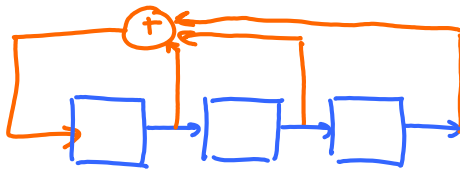




The polynomial x^3+x^2+1 corresponds to LFSR circuit that cycles/visits all possible nonzero states (in one loop).

Example 2

$$g(x) = x^3 + x^2 + x + 1 = 1 + 1x + 1x^2 + 1x^3$$



Complete state diagram:

