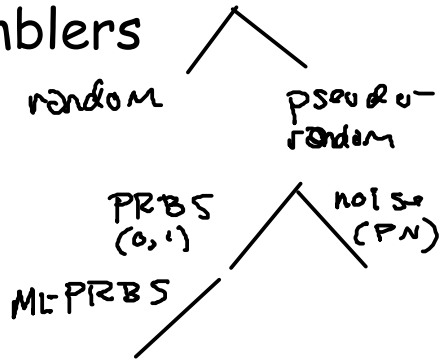
Lecture 12 - PN Sequences and Scramblers



Exercise 1: How many flip-flops would be required to generate a ML PRBS of period 16383? How many ones would the sequence have?

$2^k - 1 = 16383$

$2^k = 16384$

$k = \log_2 16384 = 14$ $(2^{10} \cdot 2^4) =$ 1024 16

$\#$ of ones $= 2^{k-1} = 2^{13} = 8192$

$\#$ of zeros $= 2^{k-1} - 1 = 2^{13} - 1 = 8191$

Exercise 2: Why not?

anybody can unscramble the signal (scrambling algorithms are well-known & published)

Exercise 3: How many errors will appear in the output of a V.34 descrambler if there is one input error?

- original error
- one error per tap (2 more)