Serial #

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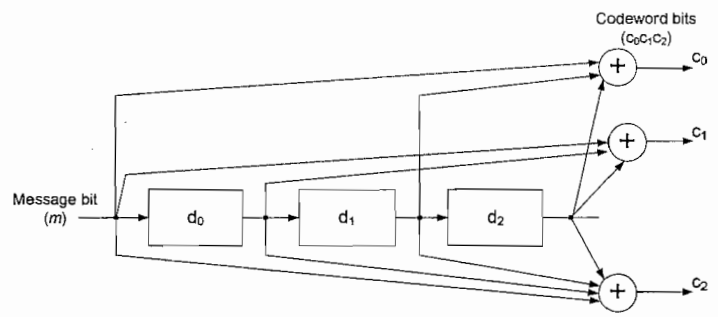- 1 points for not writing your serial number

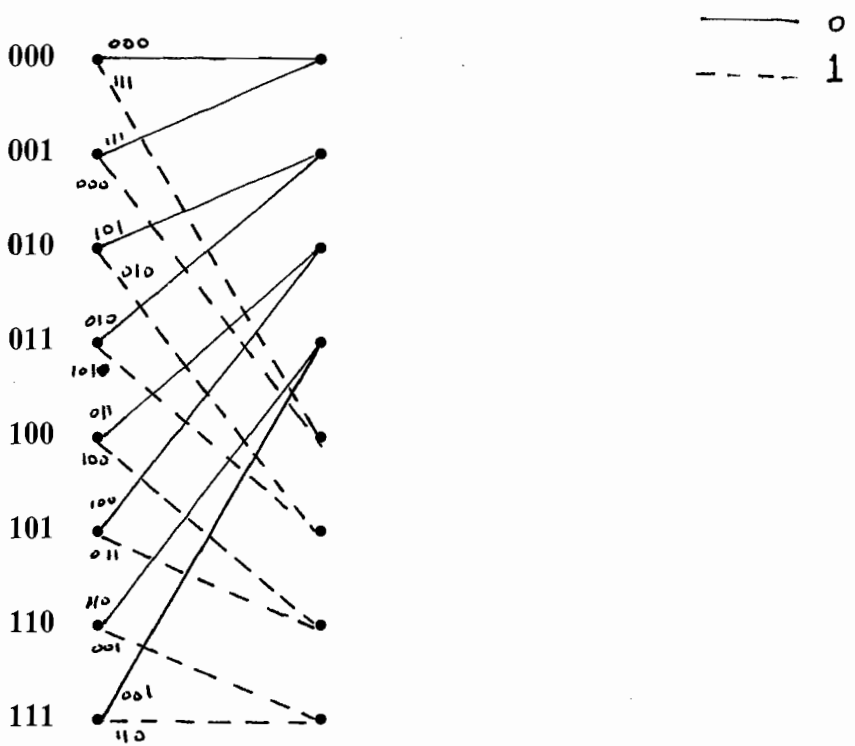Name: KEY

The following figure shows a convolutional encoder.

a) Find the code rate and the memory constrain length. **(2 points)**

$$\text{Code rate} = \frac{1}{3} \quad , \text{memory constraint length} = 3+1 = 4$$

b) Find the generator polynomial for each output bit ($g_0(x)$, $g_1(x)$, and $g_2(x)$). **(2 points)**

$$g_0(x) = 1 + x^2 + x^3 \quad , g_1(x) = 1 + x + x^3 \quad , g_2(x) = 1 + x + x^2 + x^3$$

c) Complete the Trellis diagram of the code. **(4 points)**

d) What is the codeword if the information sequence is 101 ? **(2 points)**

111 011 010 100 101 111   Trellis termination.

with flushing the register.

1   0   1   0   0   0