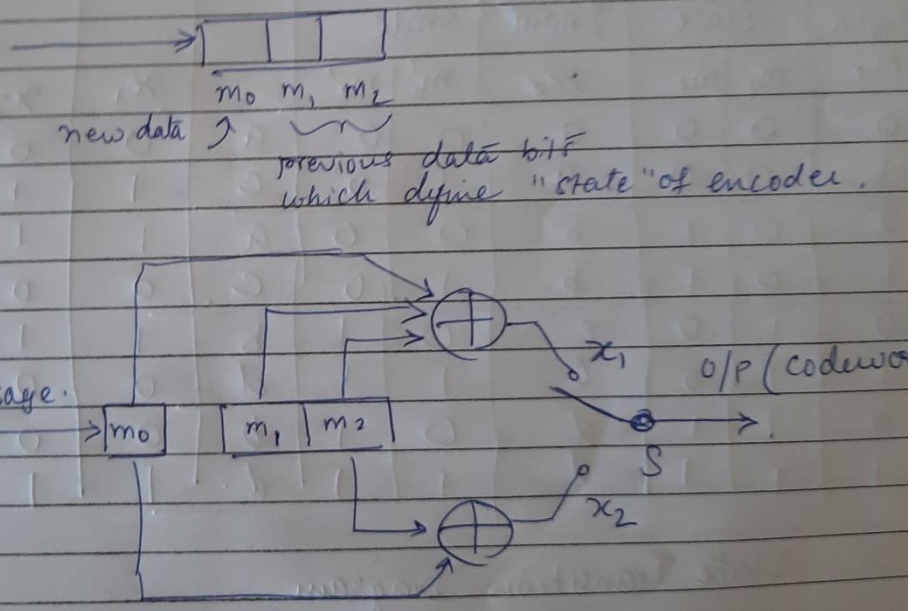
Convolutional codes

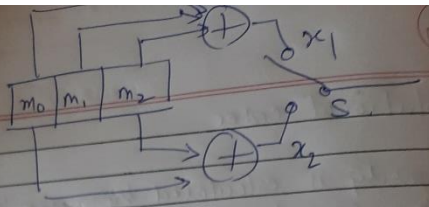
- The parity is calculated by using 'm' blocks of data. Each block may contain 1 or more bits
- (n, k, m) convolution code eq is defined by
  - n = output bits.
  - k = input bit (incoming bit)
  - m = m bit used as memory.

eg A (2, 1, 2) conv. encoder is shown below:-
The incoming data stream is 1001.



$x_1 = m_0 \oplus m_1 \oplus m_2$

$x_2 = m_0 \oplus m_2$

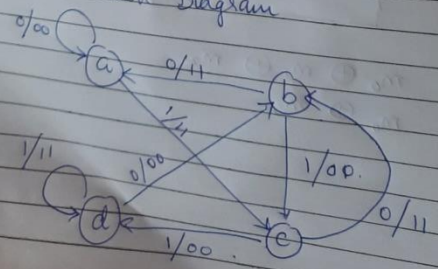


State of the encoder

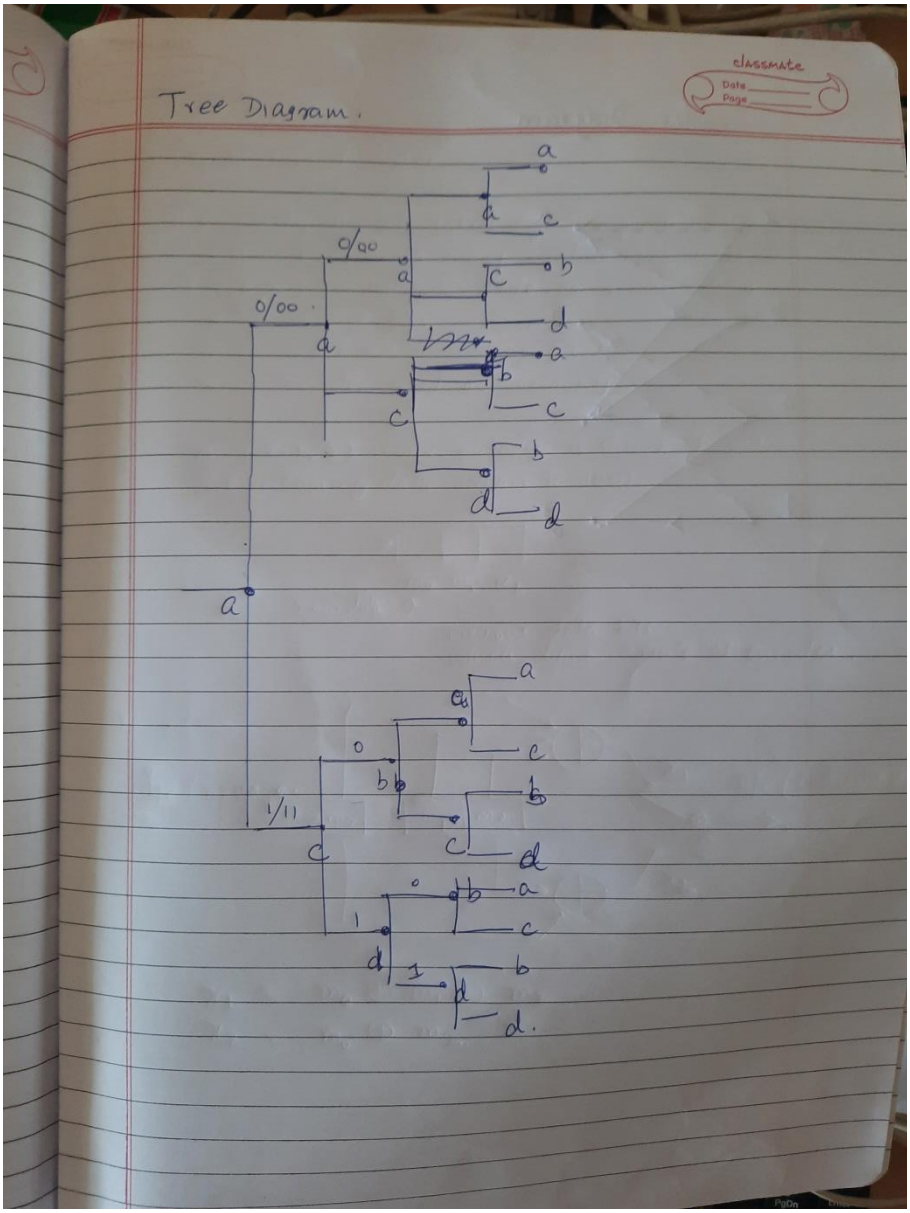
m_1	m_2	
0	0	a
0	1	b
1	0	c
1	1	d

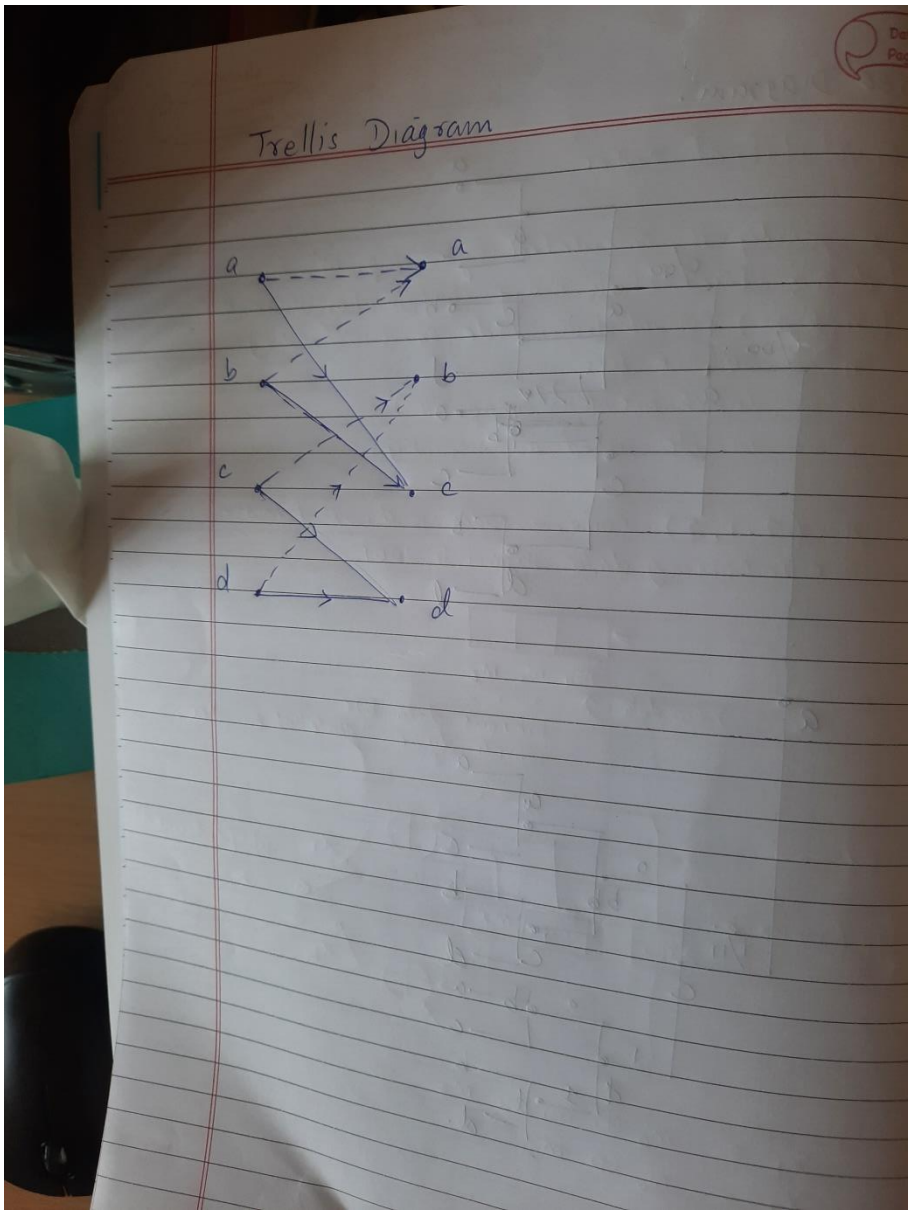
Next Input m_0	Present State m_1	m_2	Next Input	Next State m_1'	m_2'		x_1	x_2
0	0	0	a	0	0	a	0	0
1	0	0	a	1	0	c	1	1
0	0	1	b	0	0	a	1	1
1	0	1	b	1	0	c	0	0
0	1	0	c	0	1	b	1	1
1	1	0	c	1	1	d	0	0
0	1	1	d	0	1	b	0	0
1	1	1	d	1	1	d	1	1

State Transition Diagram



Tree Diagram.




Trellis Diagram
a
b
c
d
a
b
c
d