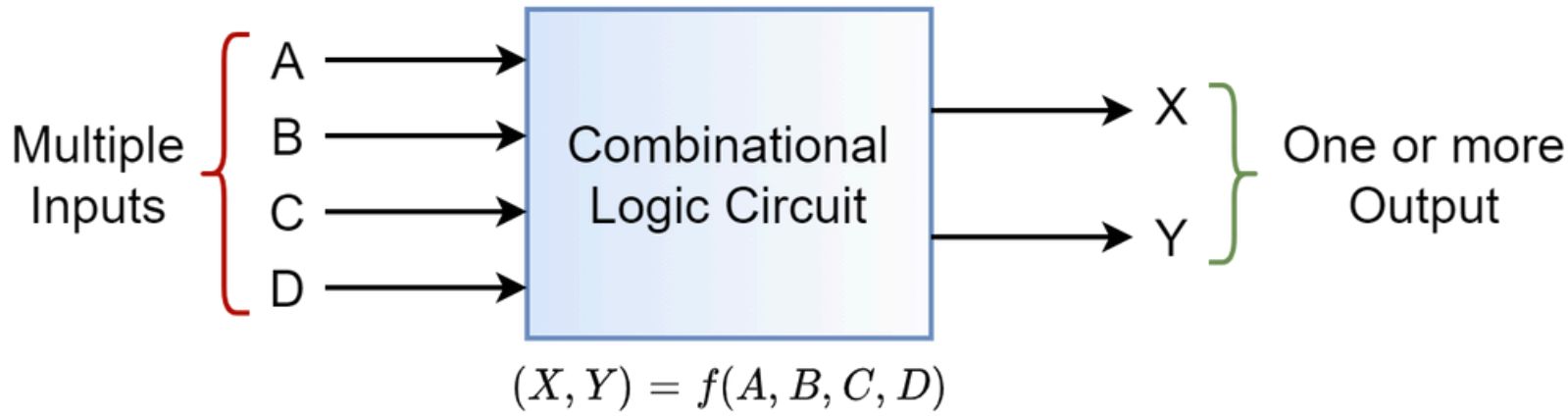
@Sree Vishnu Varthini

Day - 4

Embedded Systems Programming

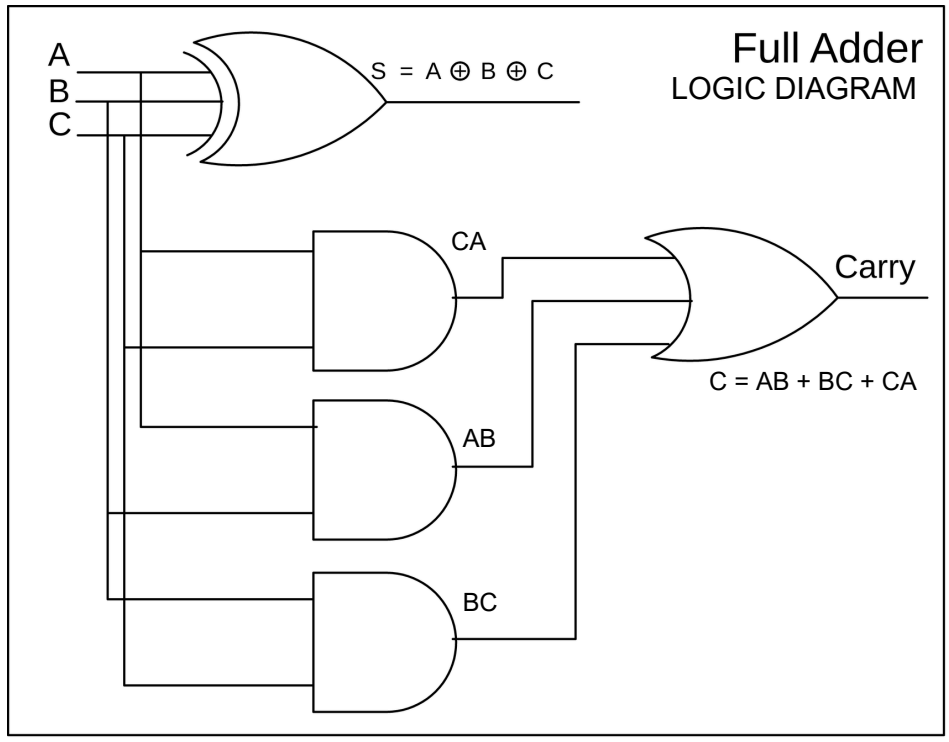
COMBINATIONAL LOGIC



Applications:

- Adder
- Subtractor
- Encoder
- Decoder
- Multiplexer
- Demultiplexer

FULL ADDER



- A full adder adds three 1-bit binary inputs: **A, B and C** (Carry-in).
- It has two outputs: **Sum** and **Carry** (Carry-out).

Sum:

$(A \oplus B) \oplus C$

Carry:

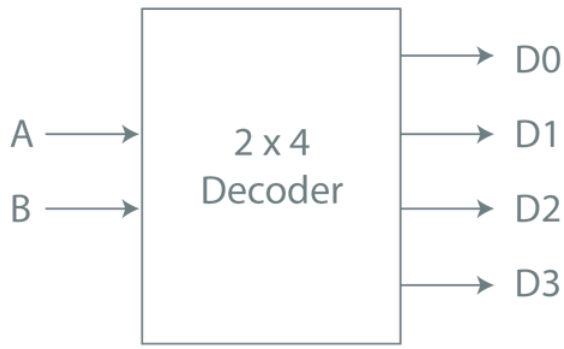
AB + BC + CA

Truth Table

Inputs			Outputs	
A	B	C_{in}	Sum	Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

DECODER

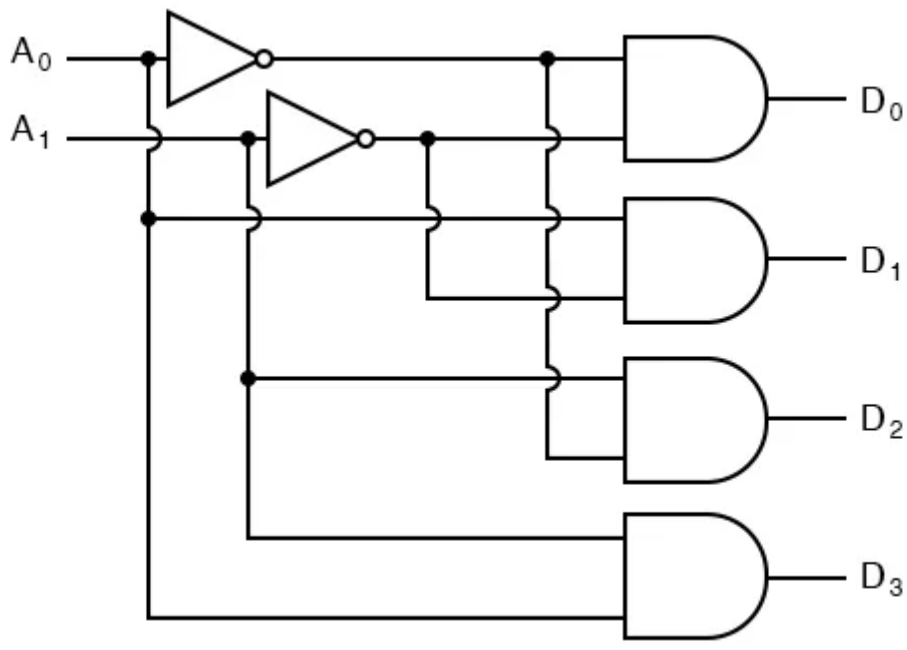
Block Diagram



Truth Table

Enable	INPUTS		OUTPUTS			
E	A_1	A_0	Y_3	Y_2	Y_1	Y_0
0	X	X	0	0	0	0
1	0	0	0	0	0	1
1	0	1	0	0	1	0
1	1	0	0	1	0	0
1	1	1	1	0	0	0

Logic Diagram



A decoder is a combinational circuit that converts binary data from N input lines into 2^N output lines.

In the 2 to 4 line decoder, there is a total of two inputs, i.e., A0, and A1 and four outputs, i.e., Y0, Y1, Y2, and Y3.

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Was it helpful?

follow for more!

P.S. You can access the **Embedded Systems Programming** course by contacting **Balajee Seshadri** Sir through the WhatsApp number provided on his profile.