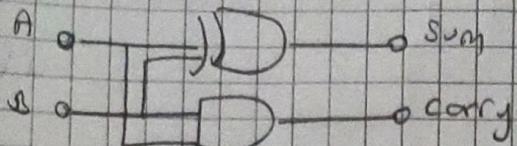


Half Adder



A	0	1
B	0	1
Sum	0	1

$$\text{Sum} = AB' + BA'$$

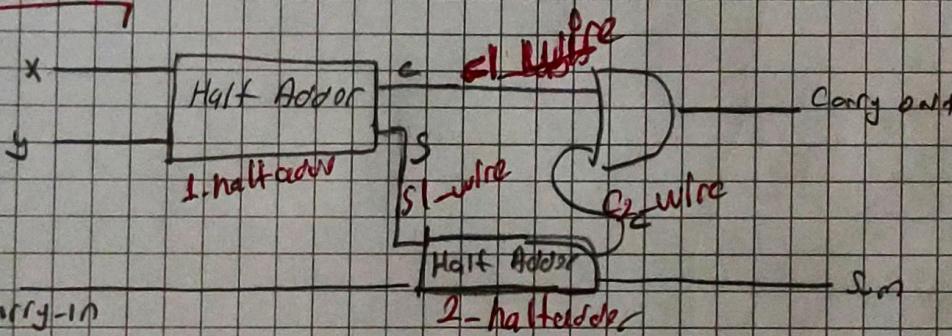
A	0	1
B	0	0
Carry	0	1

$$\text{Carry} = AB$$

A	B	Sum	Carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

} Karnaugh map

Full Adder



Carry-in

A	B	Cin	Carry	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

A _b	Cin	0	1
00	0	0	0
01	0	0	1
11	1	1	1
10	0	1	1

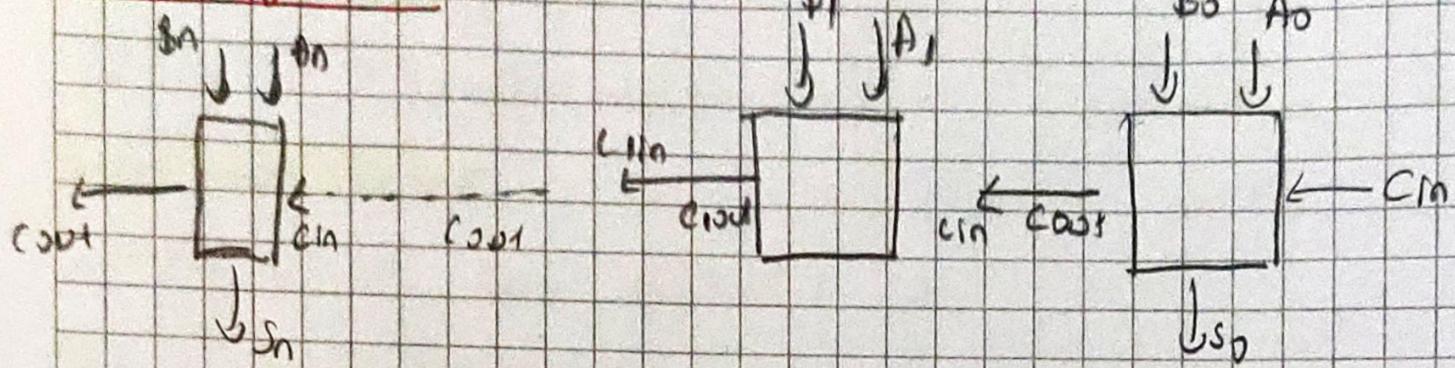
A _a	Cin	0	1
00	0	1	1
01	1	0	0
11	0	1	1
10	1	0	0

$$\text{Carry} = A'bB + C'AB + A'C'in$$

$$\text{Carry} = A'b + C(A \oplus B)$$

$$\begin{aligned} S &= A'b'Cin + A'bC'in \\ &\quad A'bCin + A'b'C'in \\ &= A \oplus B \oplus C \end{aligned}$$

N-bit adder



► In gallation adder kon kaa tanq full adder kujancagmizi bilmelijenma ron
bit boro

FULL-ADDER-GEN: for k in 0 to $N-1$ generate

full adder k ; full-adder
port map /

$$a \Rightarrow a_{-1}(k)$$

$$b \Rightarrow b_{-1}(k)$$

$$\text{carry} \Rightarrow \text{temp}(k)$$

$$\text{sum}_0 \Rightarrow \text{sum}_0(k)$$

$$\text{carry-0} \Rightarrow \text{temp}(k+1)$$

;

end generates

end Behavioral;