Half Adder :

Half adder is a basic digital circuit used for adding two single bit binary numbers.

→ It is one of the simplest forms of an adder.

→ A half adder takes two inputs bits and produces two outputs.

→ Sum -

The result of adding the two input bits.

Carry - The carry bit which generated if the sum exceeds the value of a single bit.

(i.e when both inputs are 1).

May
Su Mo Tu We Th Fr Sa
. 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31 . . .

April 202

Thursday 27

(117 - 248) Wk

Half adder:

A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

$S = Sum = \overline{A}B + A\overline{B} = A \oplus B$

$C = Carry = AB$

Gate level
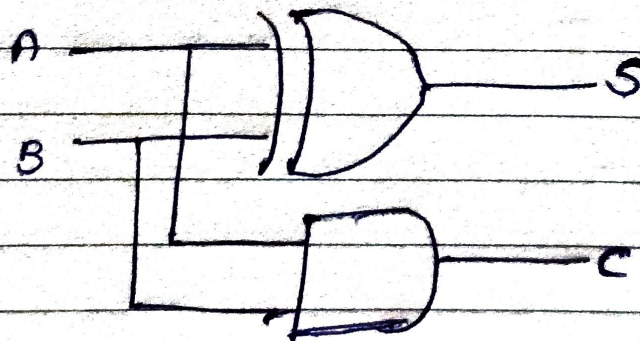
→ A half adder can only add two-single bit binary numbers and doesn't account for carry input from a previous addition.

→ Therefore to add multiple bits, a full adder is required, which holds carry input as well.