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CCOM 3030 - Introducción a la Ciencia de Cómputos
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Booleans, circuits, and binary

Question 1. Your name:

Question 2. Complete the truth table for the following Boolean formula:

```
out = A and not(B)
```

Input		Output
A	B	out
F	F	
F	T	
T	F	
T	T	

Question 3. Make a Boolean formula that computes the function defined by the following truth table:

Input		Output
A	B	C
F	F	T
F	T	F
T	F	T
T	T	F

Question 4. What is the decimal value of the binary number 1011_2?

Question 5. What is the sum of the following binary numbers? Show your work.

$$1010_2 + 11_2$$

Question 6. What is the product of the following binary numbers? Show your work.

$$1001_2 \times 101_2$$

Question 7. In class we built a full-adder with two half-adders and an 'or' gate (see your notes, or full-adder.circ in moodle).

Write two pyret functions `fa-s(A, B, Cin)` and `fa-cout(A, B, Cin)` that compute the S and Cout columns for a full-adder. We built `ha-s()` and `ha-c()` functions in class, and there is a copy in https://ccom.uprrp.edu/~humberto/pages/teaching/ccom3030-f2025/booleans-and-logic.html.

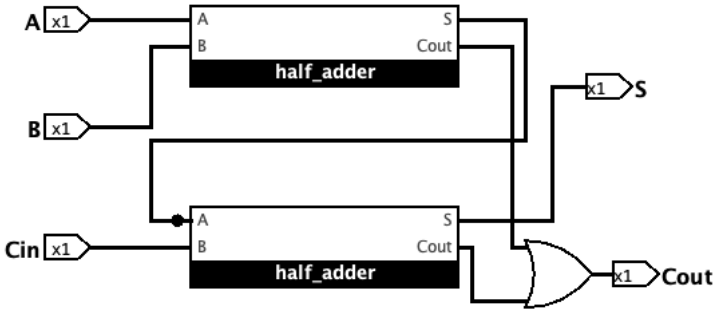

FIGURE 1. Full adder.