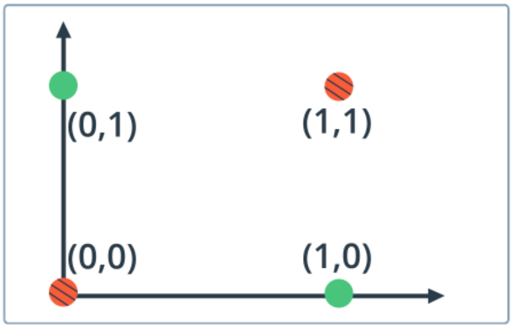
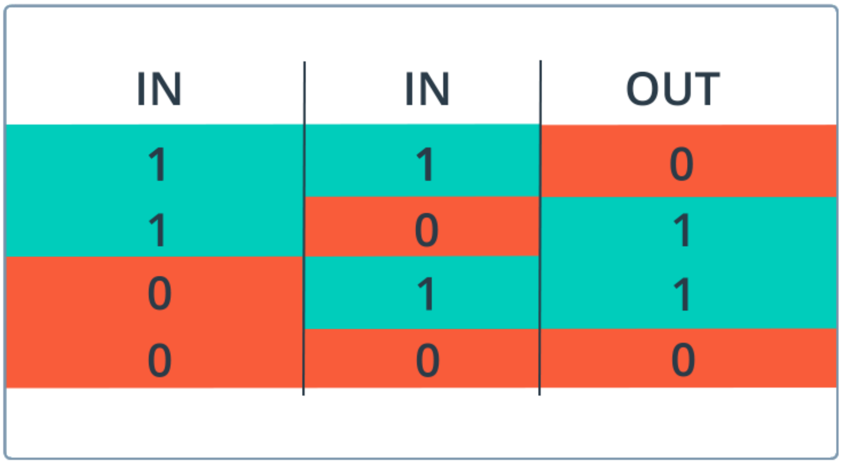
XOR Perceptron

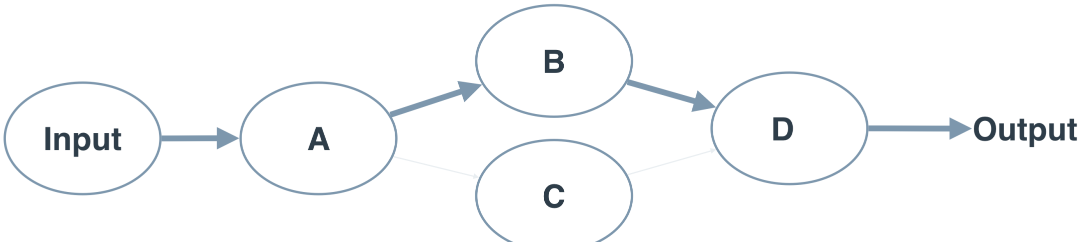




IN	IN	OUT
1	1	0
1	0	1
0	1	1
0	0	0

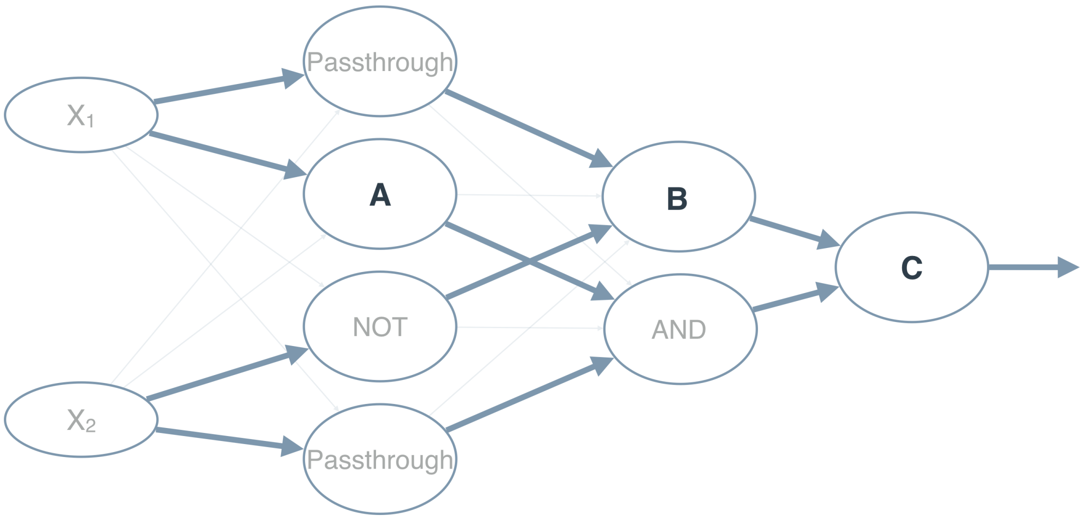
An XOR perceptron is a logic gate that outputs 0 if the inputs are the same and 1 if the inputs are different. Unlike previous perceptrons, this graph isn't linearly separable. To handle more complex problems like this, we can chain perceptrons together.

Let's build a neural network from the AND, NOT, and OR perceptrons to create XOR logic. Let's first go over what a neural network looks like.



between the perceptrons. Any link between perceptrons with a low weight, like A to C, you can ignore. For perceptron C, you can ignore all input to and from it. For simplicity we wont be showing bias, but it's still in the neural network.

Quiz



A

IN	OUT
1	0
0	1

B

IN	IN	OUT
1	1	1
1	0	0
0	1	0
0	0	0

C

IN	IN	OUT
1	1	1
1	0	1
0	1	1
0	0	0

The neural network above calculates XOR. Each perceptron is a logic operation of OR, AND, Passthrough, or NOT. The **Passthrough** operation just passes it's input to the output. However, the perceptrons A , B, and C don't indicate their operation. In the following quiz, set the correct operations for the three perceptrons to calculate XOR.

Note: Any line with a low weight can be ignored.

QUIZ QUESTION

Set the operations for the perceptrons in the XOR neural network?

Submit to check your answer choices!

	NOT
B	AND
C	OR

You've seen that a perceptron can solve linearly separable problems. Solving more complex problems, you use more perceptrons. You saw this by calculating AND, OR, NOT, and XOR operations using perceptrons. These operations can be used to create any computer program. With enough data and time, a neural network can solve any problem that a computer can calculate. However, you don't build a Twitter using a neural network. A neural network is like any tool, you have to know when to use it.

The power of a neural network isn't building it by hand, like we were doing. It's the ability to learn from examples. In the next few sections, you'll learn how a neural networks sets it's own weights and biases.