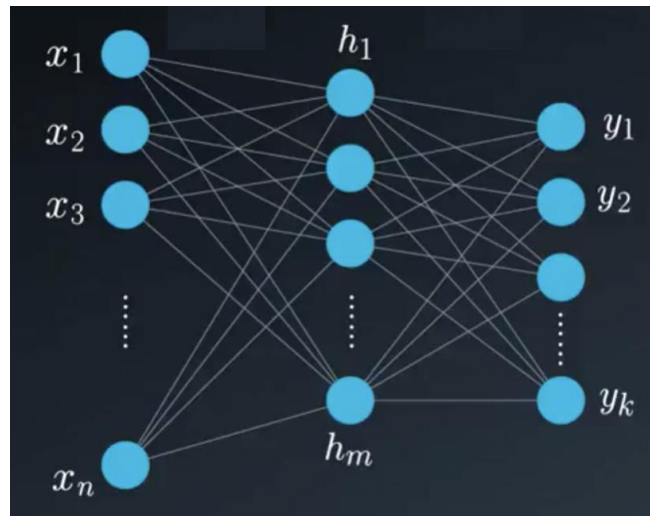


How Are The Neurons Connected?

Let's go back to the picture we just saw:

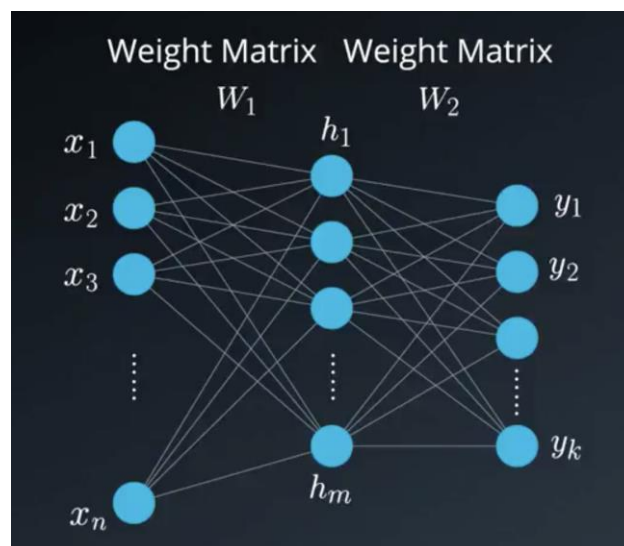


Simplified Artificial Neural Network

Notice the "lines" connecting the different neurons?

- In practice, these lines symbolize a coefficient (a scalar) that is mathematically connecting one neuron to the next. These coefficients are called **weights**.
- The "lines" connect each neuron in a specific layer to **all** of the neurons on the following. For example, in our example, you can see how each neuron in the hidden layer is connected to a neuron in the output one.

Since there are so many **weights** connecting one layer to the next, we mathematically organize those coefficients in a matrix, denoted as the **weight matrix**.



Simplified Artificial Neural Network With A Weight Matrix

Spoiler:

Later you will learn that when we train an artificial neural network, we are actually looking for the best set of weights that will give us a desired outcome. We will not focus on that here, in the context of Linear Algebra.

OK! So what does all of this have to do with Linear Algebra?! Lets see!