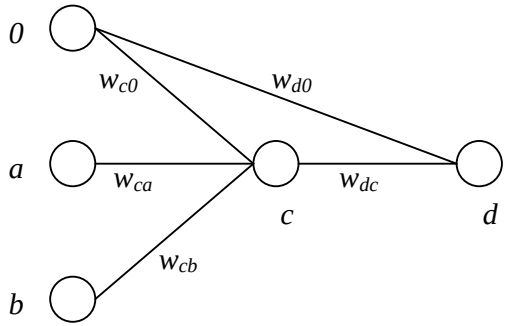
The network and the sigmoid activation function sigmoid function are as follows:

$$\sigma(y) = \frac{1}{1+e^{-y}}$$



Training example 1:

The outputs of the two neurons, noting that a=1and b=0:

$$o_c = \sigma(0.1\times1 + 0.1\times0 + 0.1\times1) = \sigma(0.2) = 0.5498$$
$$o_d = \sigma(0.1\times0.5498 + 0.1\times1) = \sigma(0.15498) = 0.53867$$

The error terms for the two neurons, noting that d=1:

$$\delta_d = 0.53867\times(1-0.53867)\times(1-0.53867) = 0.1146$$
$$\delta_c = 0.5498\times(1-0.5498)\times0.1\times0.1146 = 0.002836$$

Compute the correction terms as follows, noting that a=1, b=0 and η=0.3:

$$\Delta w_{d0} = 0.3\times0.1146\times1 = 0.0342$$
$$\Delta w_{dc} = 0.3\times0.1146\times0.5498 = 0.0189$$
$$\Delta w_{c0} = 0.3\times0.002836\times1 = 0.000849$$
$$\Delta w_{ca} = 0.3\times0.002836\times1 = 0.000849$$
$$\Delta w_{cb} = 0.3\times0.002836\times0 = 0$$

and the new weights become:

$$w_{d0} = 0.1 + 0.0342 = 0.1342$$
$$w_{dc} = 0.1 + 0.0189 = 0.1189$$
$$w_{c0} = 0.1 + 0.000849 = 0.100849$$
$$w_{ca} = 0.1 + 0.000849 = 0.100849$$
$$w_{cb} = 0.1 + 0 = 0.1$$

Training example 2:

The outputs of the two neurons, noting that a=0 and b=1:

$$o_c = \sigma(0.100849\times0 + 0.1\times1 + 0.100849\times1) = \sigma(0.200849) = 0.55$$
$$o_d = \sigma(0.1189\times0.55 + 0.1342\times1) = \sigma(0.1996) = 0.5497$$

The error terms for the two neurons, noting that d=0:

$$\delta_d = 0.5497\times(1-0.5497)\times(0-0.5497) = -0.1361$$
$$\delta_c = 0.55\times(1-0.55)\times0.1189\times(-0.1361) = -0.004$$

Compute the correction terms as follows, noting that a=0, b=1, η=0.3 and α=0.9:

$$\Delta w_{d0} = 0.3\times(-0.1361)\times1 + 0.9\times0.0342 = -0.01$$
$$\Delta w_{dc} = 0.3\times(-0.1361)\times0.55 + 0.9\times0.0189 = -0.0055$$
$$\Delta w_{c0} = 0.3\times(-0.004)\times1 + 0.9\times0.000849 = -0.0004$$
$$\Delta w_{ca} = 0.3\times(-0.004)\times0 + 0.9\times0.000849 = 0.00086$$
$$\Delta w_{cb} = 0.3\times(-0.004)\times1 + 0.9\times0 = -0.0012$$

and the new weights become:

$$w_{d0} = 0.1342 - 0.01 = 0.1242$$
$$w_{dc} = 0.1189 - 0.0055 = 0.1134$$
$$w_{c0} = 0.100849 - 0.0004 = 0.100849$$
$$w_{ca} = 0.100849 + 0.00086 = 0.1016$$
$$w_{cb} = 0.1 - 0.0012 = 0.0988$$