①

$y_1 = \frac{1}{1+e^{-(0)}} = \frac{1}{2}$

$y_2 = \frac{1}{1+e^{-(0+(-0.1))}} = 0.4750$

$y_3 = \frac{1}{1+e^{-(-0.2)}} = 0.4502$

$(\frac{1}{2} \times -0.3) + (0.4750 \times 0.1) + (0.4502 \times 0.1) +$
$0 + 0.2 = 0.1425 = \text{Out}$

$\text{Error} = 1 - 0.1425 = 0.8575 = \text{Beta}$

$\text{bperr}_9 = w_9 \times \text{beta} = -0.2572$
$\text{bperr}_8 = w_8 \times \text{beta} = 0.0858$
$\text{bperr}_7 = w_7 \times \text{beta} = 0.0858$

$dw_9 = \text{beta} \times y_1 = 0.4287$
$\text{delta } w_9 = \text{learnrate} \times dw_9 = 0.0857$

$dw_8 = \text{beta} \times y_2 = 0.4073$
$\text{delta } w_8 = \text{learnrate} \times dw_9 = 0.0815$

$dw_7 = \text{beta} \times y_3 = 0.3860$
$\text{delta } w_7 = \text{learnrate} \times dw_7 = 0.0772$

$\text{hiddenbeta}_1 = y_1 \times (1 - y_1) \times \text{bperr}_9 = -0.0643$
$\text{hiddenbeta}_2 = y_2 \times (1 - y_2) \times \text{bperr}_8 = 0.0214$
$\text{hiddenbeta}_3 = y_3 \times (1 - y_3) \times \text{bperr}_7 = 0.0212$

$dw_1 = \text{hiddenbeta}_1 \times x_1 = 0$
$\text{delta } w_1 = \text{learnrate} \times dw_1 = 0$

$dw_3 = \text{hiddenrate}_2 \times x_1 = 0$
$\text{deltadw}_3 = \text{learnrate} \times dw_3 = 0$

(2)

$dw_4 = \text{hidden beta}_2 \times X_2 = 0.0214$
$\text{delta } w_4 = \text{learn rate} \times dw_4 = 0.0043$

$dw_6 = \text{hidden beta}_3 \times X_2 = 0.0212$
$\text{delta } w_6 = \text{learn rate} \times dw_6 = 0.0043$

$W_1 = W_1 + \text{delta } w_1 = -0.2$
$W_3 = W_3 + \text{delta } w_3 = 0.1$
$W_4 = W_4 + \text{delta } w_4 = -0.0957$
$W_6 = W_6 + \text{delta } w_6 = -0.1957$

$W_9 = W_9 + \text{delta } w_9 = -0.2143$
$W_8 = W_8 + \text{delta } w_8 = 0.1815$
$W_7 = W_7 + \text{delta } w_7 = 0.1772$
$W_2 = W_2 + \text{learn rate (Error)} X_1 = 0.1$
$W_5 = W_5 + \text{learn rate (Error)} X_2 = 0.3715$

$y_1 = \frac{1}{1+e^{-(-0.2)}} = 0.4502$
$y_2 = \frac{1}{1+e^{-(0.1-0.0957)}} = 0.5011$
$y_3 = \frac{1}{1+e^{-(-0.1957)}} = 0.4512$

$(0.4502 \times -0.2143) + (0.5011 \times 0.1815) + (0.4512 \times 0.1772) + 0.1 + 0.3715 = 0.5459$

$\text{Error} = 0 - 0.5459 = -0.5459 = \text{beta}$

$\text{bperr}_9 = W_9 \times \text{beta} = 0.1170$
$\text{bperr}_8 = W_8 \times \text{beta} = -0.0991$
$\text{bperr}_7 = W_7 \times \text{beta} = -0.0967$

$dw_9 = \text{beta} \times y_1 = -0.2458$
$\text{delta } w_9 = \text{learn rate} \times dw_9 = -0.0492$

(3)

$dw_8 = \text{beta} \times y_2 = -0.2736$
$\text{deltaw}_8 = \text{learnrate} \times dw_8 = -0.0547$

$dw_7 = \text{beta} \times y_3 = -0.2463$
$\text{deltaw}_7 = \text{learnrate} \times dw_7 = -0.0493$

$\text{hiddenbeta}_1 = y_1 \times (1 - y_1) \times \text{bperr}_9 = 0.0290$
$\text{hiddenbeta}_2 = y_2 \times (1 - y_2) \times \text{bperr}_8 = -0.0248$
$\text{hiddenbeta}_3 = y_3 \times (1 - y_3) \times \text{bperr}_7 = -0.0239$

$dw_1 = \text{hiddenbeta}_1 \times x_1 = 0.0290$
$\text{deltaw}_1 = \text{learnrate} \times dw_1 = 0.0058$

$dw_3 = \text{hiddenbeta}_2 \times x_1 = -0.0248$
$\text{deltaw}_3 = \text{learnrate} \times dw_3 = -0.0050$

$dw_4 = \text{hiddenbeta}_2 \times x_2 = -0.0248$
$\text{deltaw}_4 = \text{Learnrate} \times dw_4 = -0.0050$

$dw_6 = \text{hiddenbeta}_3 \times x_2 = -0.0239$
$\text{deltaw}_6 = \text{learnrate} \times dw_6 = -0.0048$

$w_1 = w_1 + \text{deltaw}_1 = -0.1942$
$w_3 = w_3 + \text{deltaw}_3 = 0.0950$
$w_4 = w_4 + \text{deltaw}_4 = -0.1007$
$w_6 = w_6 + \text{deltaw}_6 = -0.2005$

$w_9 = w_9 + \text{deltaw}_9 = -0.2635$
$w_8 = w_8 + \text{deltaw}_8 = 0.1268$
$w_7 = w_7 + \text{deltaw}_7 = 0.1279$
$w_2 = w_2 + \text{learnrate (Error)} \times 1 = -0.0092$
$w_5 = w_5 + \text{learnrate (Error)} \times 2 = 0.2623$