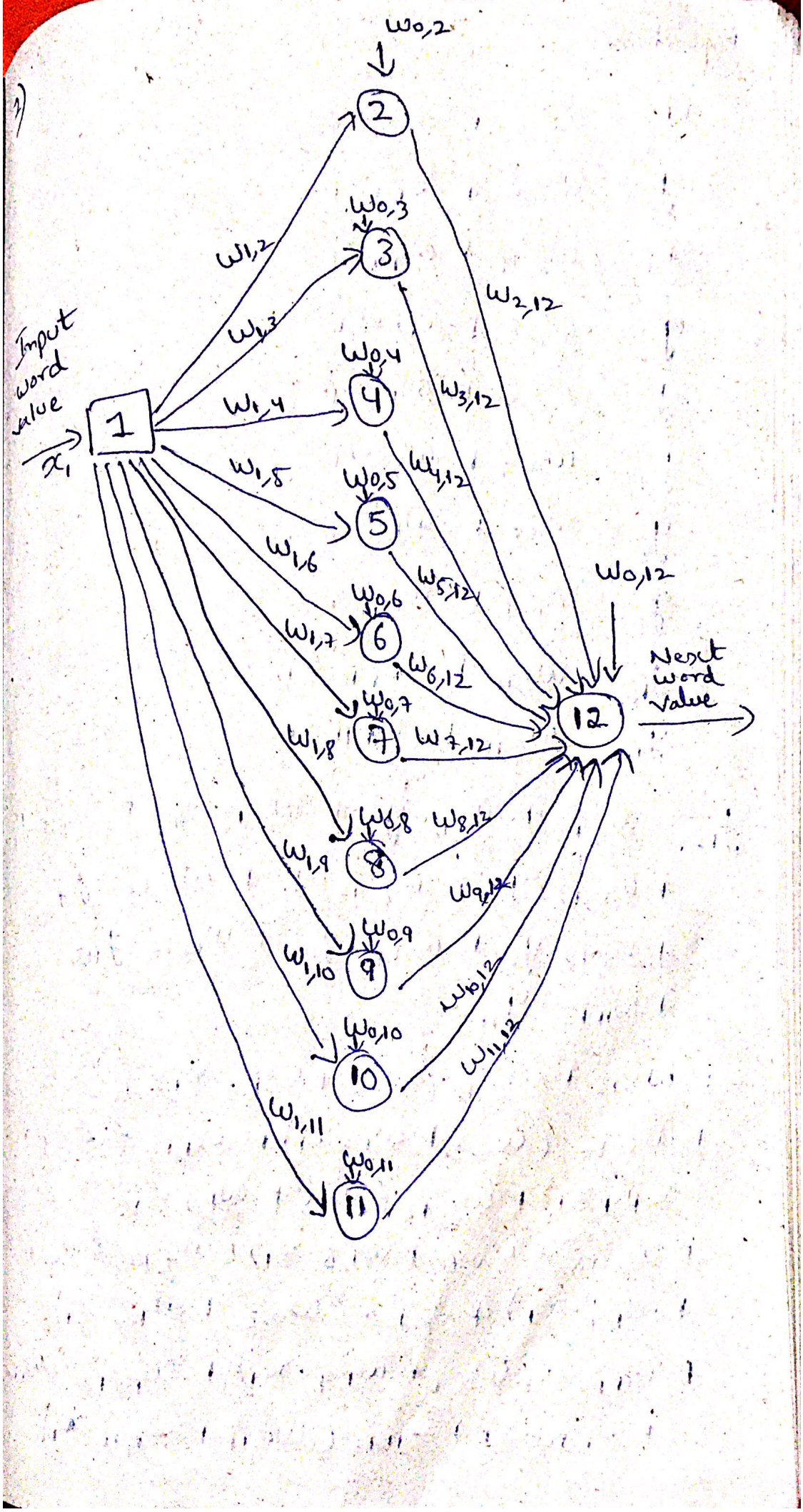

Equations:

$$y_2 = w_{0,2} + w_{1,2} \cdot x_1$$
$$y_3 = w_{0,3} + w_{1,3} \cdot x_1$$
$$y_4 = w_{0,4} + w_{1,4} \cdot x_1$$
$$y_5 = w_{0,5} + w_{1,5} \cdot x_1$$
$$y_6 = w_{0,6} + w_{1,6} \cdot x_1$$
$$y_7 = w_{0,7} + w_{1,7} \cdot x_1$$
$$y_8 = w_{0,8} + w_{1,8} \cdot x_1$$
$$y_9 = w_{0,9} + w_{1,9} \cdot x_1$$
$$y_{10} = w_{0,10} + w_{1,10} \cdot x_1$$
$$y_{11} = w_{0,11} + w_{1,11} \cdot x_1$$

$$y_{12} = w_{0,12} + w_{2,12} \cdot y_2 + w_{3,12} \cdot y_3 + w_{4,12} \cdot y_4 + w_{5,12} \cdot y_5 + w_{6,12} \cdot y_6 + w_{7,12} \cdot y_7 + w_{8,12} \cdot y_8 + w_{9,12} \cdot y_9 + w_{10,12} \cdot y_{10} + w_{11,12} \cdot y_{11}$$

$$\Rightarrow w_{0,12} + w_{2,12} \cdot (w_{0,2} + w_{1,2} \cdot x_1) + w_{3,12} \cdot (w_{0,3} + w_{1,3} \cdot x_1) + w_{4,12} (w_{0,4} + w_{1,4} \cdot x_1) + w_{5,12} \cdot (w_{0,5} + w_{1,5} \cdot x_1) + w_{6,12} \cdot (w_{0,6} + w_{1,6} \cdot x_1) + w_{7,12} \cdot (w_{0,7} + w_{1,7} \cdot x_1) + w_{8,12} \cdot (w_{0,8} + w_{1,8} \cdot x_1) + w_{9,12} \cdot (w_{0,9} + w_{1,9} \cdot x_1) + w_{10,12} \cdot (w_{0,10} + w_{1,10} \cdot x_1) + w_{11,12} (w_{0,11} + w_{1,11} \cdot x_1)$$

$$\Rightarrow w_{0,12} + w_{2,12} \cdot w_{0,2} + w_{2,12} \cdot w_{1,2} \cdot x_1 + w_{3,12} \cdot w_{0,3} + w_{3,12} \cdot w_{1,3} \cdot x_1 + w_{4,12} \cdot w_{0,4} + w_{4,12} \cdot w_{1,4} \cdot x_1 + w_{5,12} \cdot w_{0,5} + w_{5,12} \cdot w_{1,5} \cdot x_1 + w_{6,12} \cdot w_{0,6} + w_{6,12} \cdot w_{1,6} \cdot x_1 + w_{7,12} \cdot w_{0,7} + w_{7,12} \cdot w_{1,7} \cdot x_1 + w_{8,12} \cdot w_{0,8} + w_{8,12} \cdot w_{1,8} \cdot x_1 + w_{9,12} \cdot w_{0,9} + w_{9,12} \cdot w_{1,9} \cdot x_1 + w_{10,12} \cdot w_{0,10} + w_{10,12} \cdot w_{1,10} \cdot x_1 + w_{11,12} \cdot w_{0,11} + w_{11,12} \cdot w_{1,11} \cdot x_1$$

.. Loss function

Weight Updation Equations

$$w_{0,12} = w_{0,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{2,12} = w_{2,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,2} + w_{1,2} \cdot x_1)$$

$$w_{3,12} = w_{3,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,3} + w_{1,3} \cdot x_1)$$

$$w_{4,12} = w_{4,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,4} + w_{1,4} \cdot x_1)$$

$$w_{5,12} = w_{5,12} - 2 \alpha (y_{12} - y_{actual}) \times (w_{0,5} + w_{1,5} \cdot x_1)$$

$$w_{6,12} = w_{6,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,6} + w_{1,6} \cdot x_1)$$

$$w_{7,12} = w_{7,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,7} + w_{1,7} \cdot x_1)$$

$$w_{8,12} = w_{8,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,8} + w_{1,8} \cdot x_1)$$

$$w_{9,12} = w_{9,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,9} + w_{1,9} \cdot x_1)$$

$$w_{10,12} = w_{10,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,10} + w_{1,10} \cdot x_1)$$

$$w_{11,12} = w_{11,12} - 2 \cdot \alpha \cdot (y_{12} - y_{actual}) \times (w_{0,11} + w_{1,11} \cdot x_1)$$

$$w_{0,2} = w_{0,2} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,3} = w_{0,3} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,4} = w_{0,4} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,5} = w_{0,5} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,6} = w_{0,6} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,7} = w_{0,7} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,8} = w_{0,8} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,9} = w_{0,9} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,10} = w_{0,10} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{0,11} = w_{0,11} - 2 \cdot \alpha \cdot (y_{12} - y_{actual})$$

$$w_{1,2} = w_{1,2} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,3} = w_{1,3} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,4} = w_{1,4} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,5} = w_{1,5} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,6} = w_{1,6} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,7} = w_{1,7} - 2 \cdot \alpha \cdot x_1 (y_{12} - y_{actual})$$

$$w_{1,8} = w_{1,8} - 2 \cdot \alpha \cdot x_1 \cdot (y_{12} - y_{actual})$$

$$w_{1,9} = w_{1,9} - 2 \cdot \alpha \cdot x_1 \cdot (y_{12} - y_{actual})$$

$$w_{1,10} = w_{1,10} - 2 \cdot \alpha \cdot x_1 \cdot (y_{12} - y_{actual})$$

$$w_{1,11} = w_{1,11} - 2 \cdot \alpha \cdot x_1 \cdot (y_{12} - y_{actual})$$