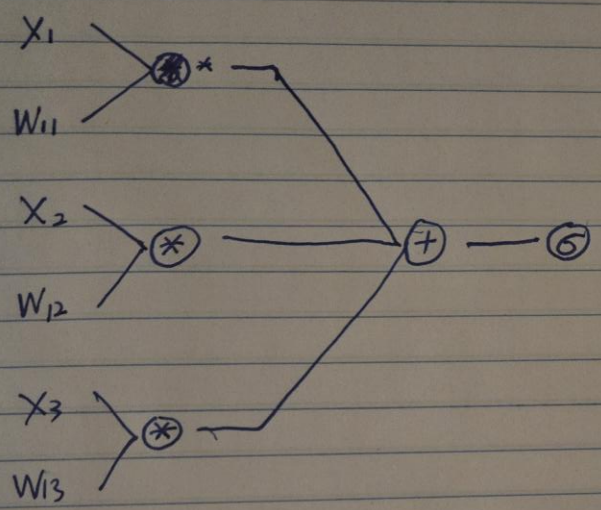
1.



the same with $W_{21}, W_{31} \cdots$

2. $Z_2^{(1)} = \sum_{j=1}^{3} W_{2j}^{(1)} X_j + b_2^{(1)}$

$a_2^{(1)} = \sigma(Z_2^{(1)})$. $\sigma(z) = \frac{1}{1+e^{-z}}$ (sigmoid)

$$\frac{\partial L}{\partial W_{23}^{(1)}} = \frac{\partial L}{\partial a_2^{(1)}} \cdot \frac{\partial a_2^{(1)}}{\partial Z_2^{(1)}} \cdot \frac{\partial Z_2^{(1)}}{\partial W_{23}^{(1)}}$$

$\frac{\partial a_2^{(1)}}{\partial Z_2^{(1)}} = a_2^{(1)}(1-a_2^{(1)})$, $\frac{\partial Z_2^{(1)}}{\partial W_{23}^{(1)}} = X_3$

$\therefore \frac{\partial L}{\partial W_{23}^{(1)}} = \delta_2^{(1)} \cdot X_3$, $\delta_2^{(1)} = \frac{\partial L}{\partial a_2^{(1)}} \cdot a_2^{(1)}(1-a_2^{(1)})$