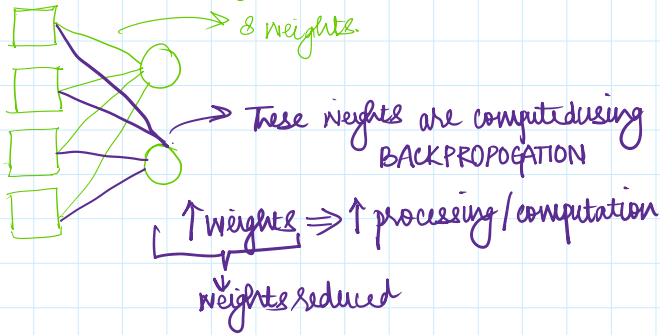
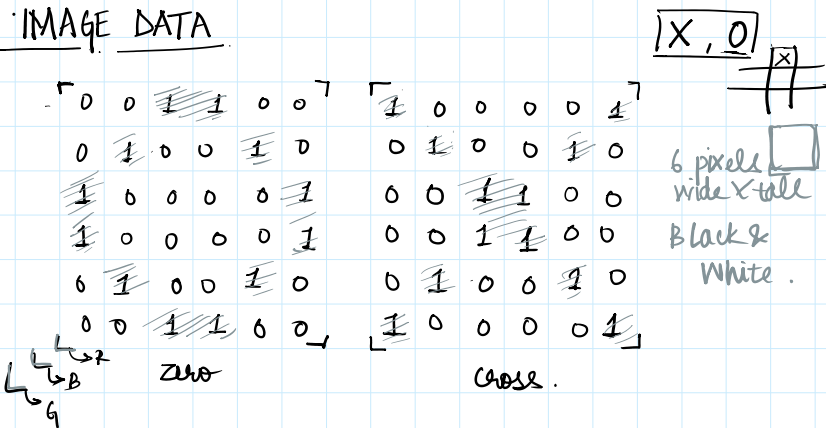


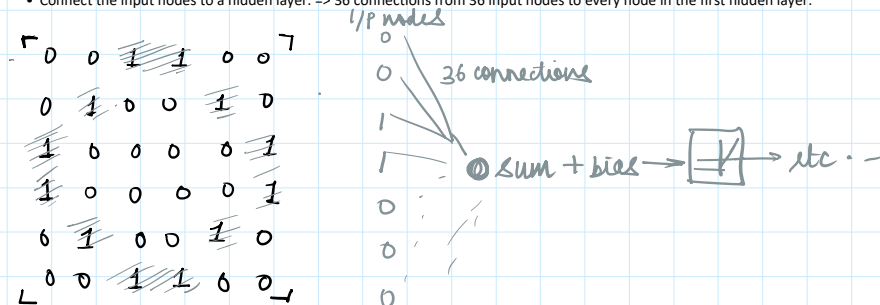
## A simple NN processing



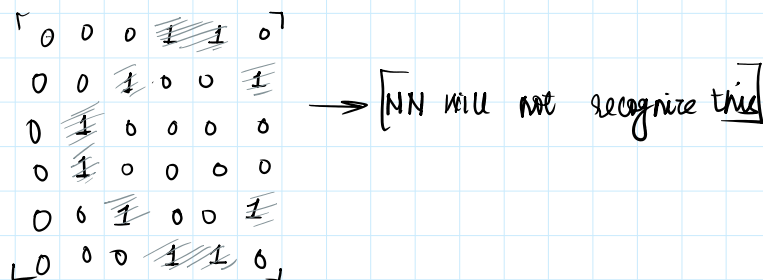
## IMAGE DATA

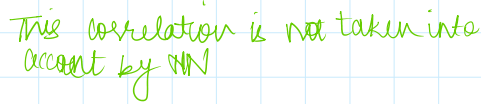


- A image of size 6\*6 pixels is extremely small.
- This kind of image can easily be classified or processed using a normal everyday NN.
- Simply convert the grid of 6\*6 pixels into a continuous input and pass as 36 input nodes.
- Connect the input nodes to a hidden layer.  $\Rightarrow$  36 connections from 36 input nodes to every node in the first hidden layer.

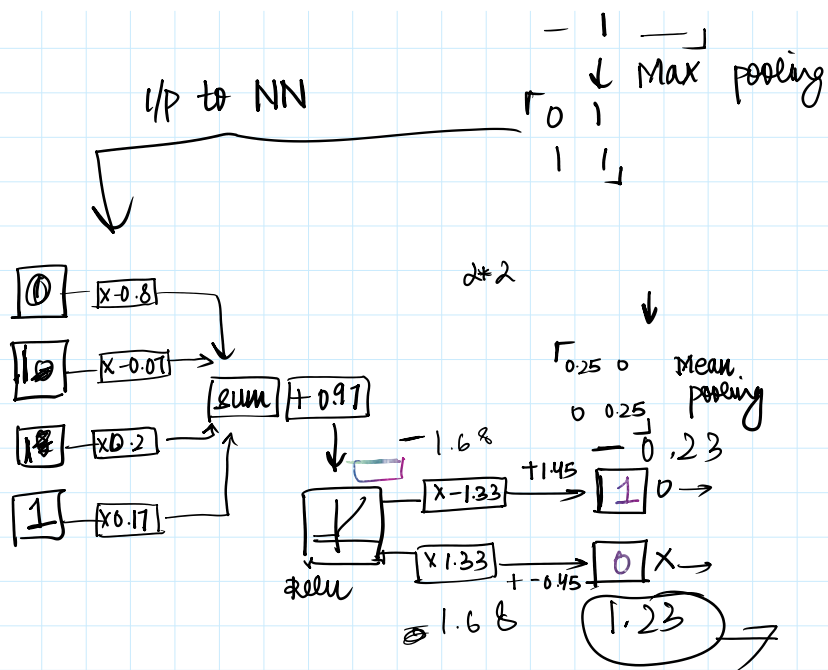


- Each connection has a weight that will have to be estimated using **backpropagation**.
- This means 36 weights need to be estimated when our image is as small as 6\*6 pixel.
- Implies that if we have an image with 100\*100 pixels, then processing will take 10000 weights to be estimated.
- Further, if the hidden layer has more than 1 nodes say 10: 100000 weights need to be estimated.
- Also the 6\*6 calculation is only true for Black and White images. In case of coloured images, the actual calculation will be 6\*6\*3





Class 16 - Session 1 Page 2



$$\begin{aligned}
 & -0.07 + 0.2 + 0.17 + 0.97 \\
 & = 1.27 \\
 & \quad \downarrow \\
 & \times 1.33 \\
 & = 1.68
 \end{aligned}$$

Even in case of shifting