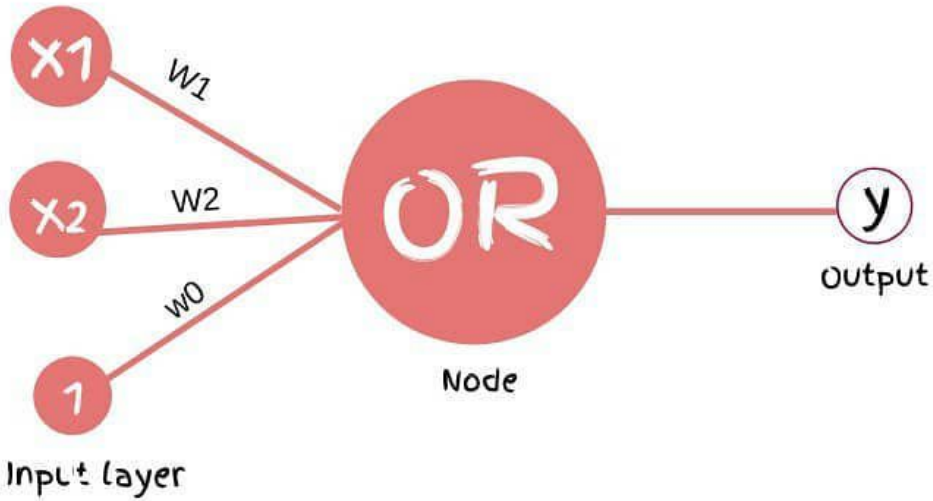
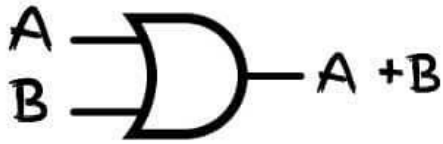
Limitations of a Perceptron?

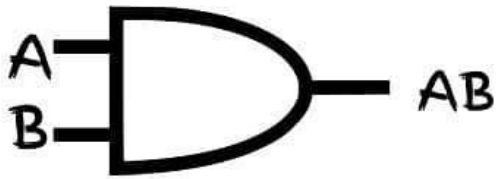




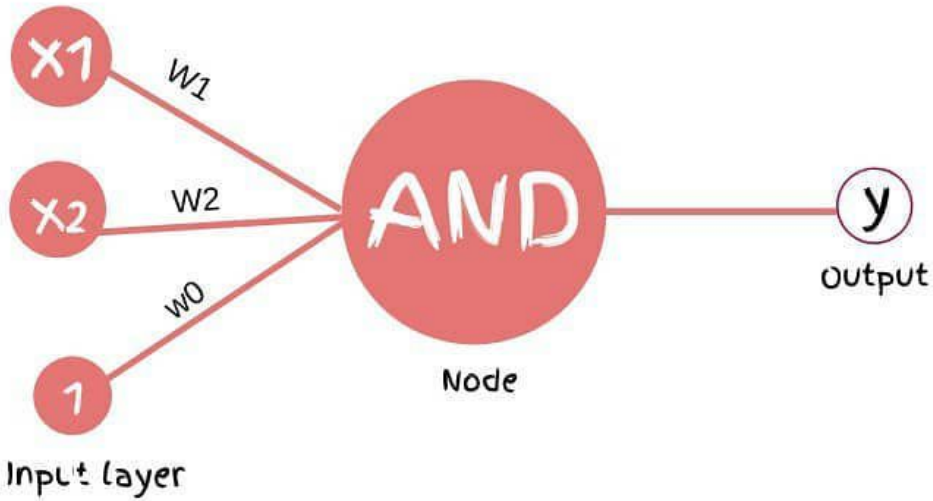
A	B	OUT
0	0	0
0	1	1
1	0	1
1	1	1

Equation = W0 + W1*X1 + W2*X2

- We can create or function model with single layer perceptron.
- We train the model to find the best weights using any optimization algorithm.
- For example check whether the model works with
- W1 = 1, W2 = 1 and W0 = -1

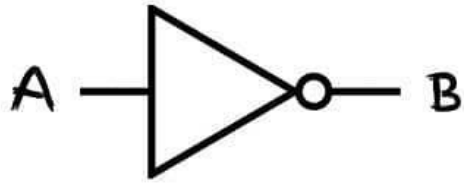


A	B	out
0	0	0
0	1	0
1	0	0
1	1	1

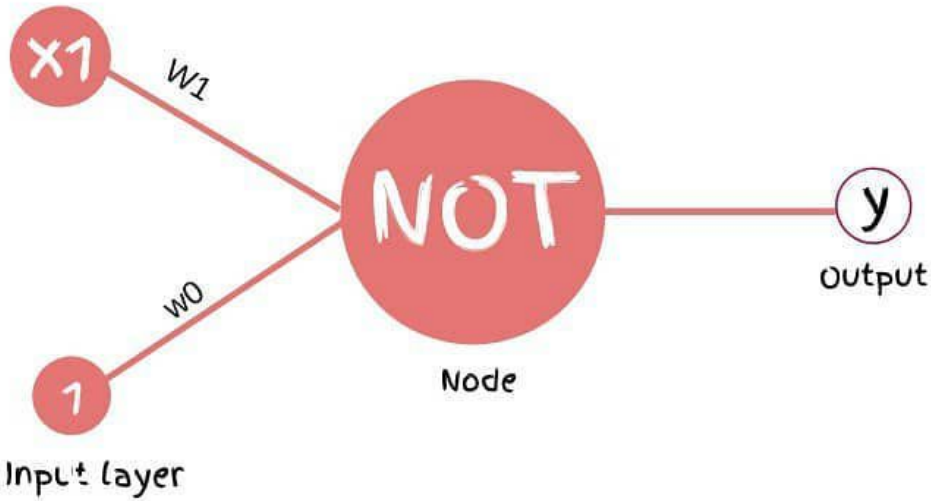


Equation = W0 + W1*X1 + W2*X2

- We can create **AND** function model with single layer perceptron.
- We train the model to find the best weights using any optimization algorithm.
- For example check whether the model works with
- W1 = 1, W2 = 1 and W0 = -1.5

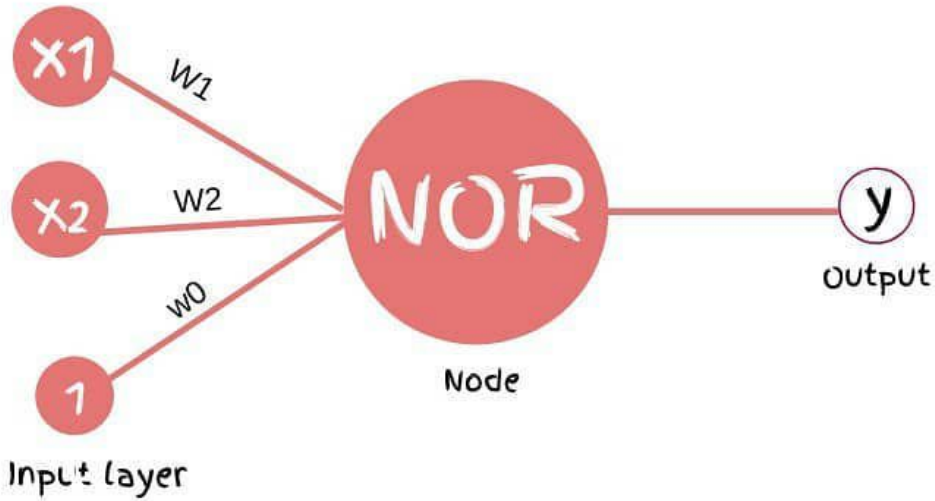


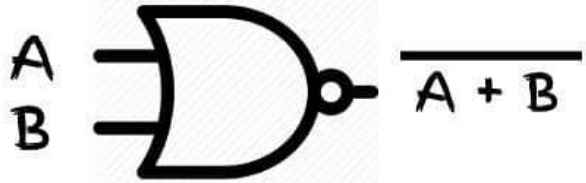
A	B
0	1
1	0



Equation = W0 + W1*X1

- We can create **NOT** function model with single layer perceptron.
- We train the model to find the best weights using any optimization algorithm.
- For example check whether the model works with
- W1 = -1 and W0 = 0.5

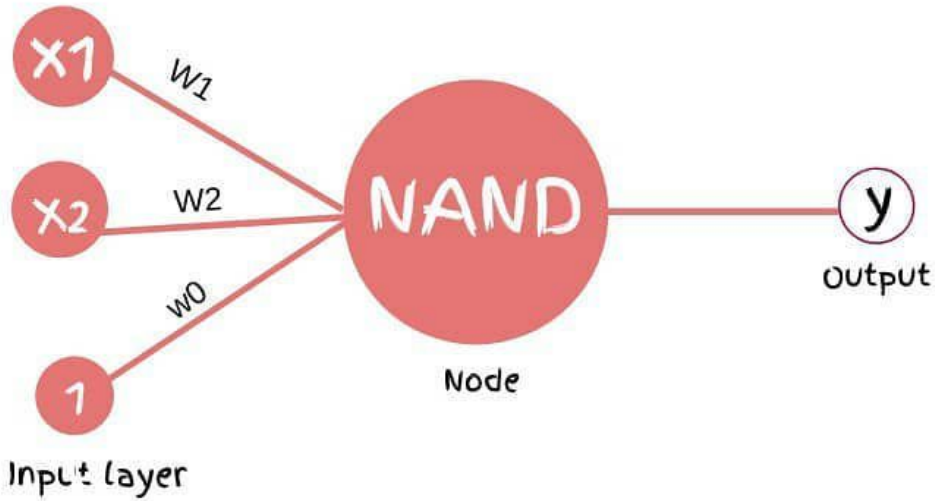


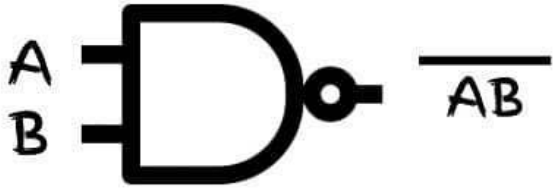


A	B	out
0	0	1
0	1	0
1	0	0
1	1	0

Equation = W0 + W1*X1 + W2*X2

- We can create **NOR** function model with single layer perceptron.
- We train the model to find the best weights using any optimization algorithm.
- For example check whether the model works with
- W1 = -1, W2 = -1 and W0 = 0.5





A	B	out
0	0	1
0	1	1
1	0	1
1	1	0

Equation = W0 + W1*X1 + W2*X2

- We can create **NAND** function model with single layer perceptron.
- We train the model to find the best weights using any optimization algorithm.
- For example check whether the model works with
- W1 = -1, W2 = -1 and W0 = 1

- For XOR and XNOR We cannot form a model with single perceptron.
- To create a XOR model we require 1 OR, 1 NAND and 1 AND
- To create a XNOR model we require 1 OR, 1 AND and 1 NOR