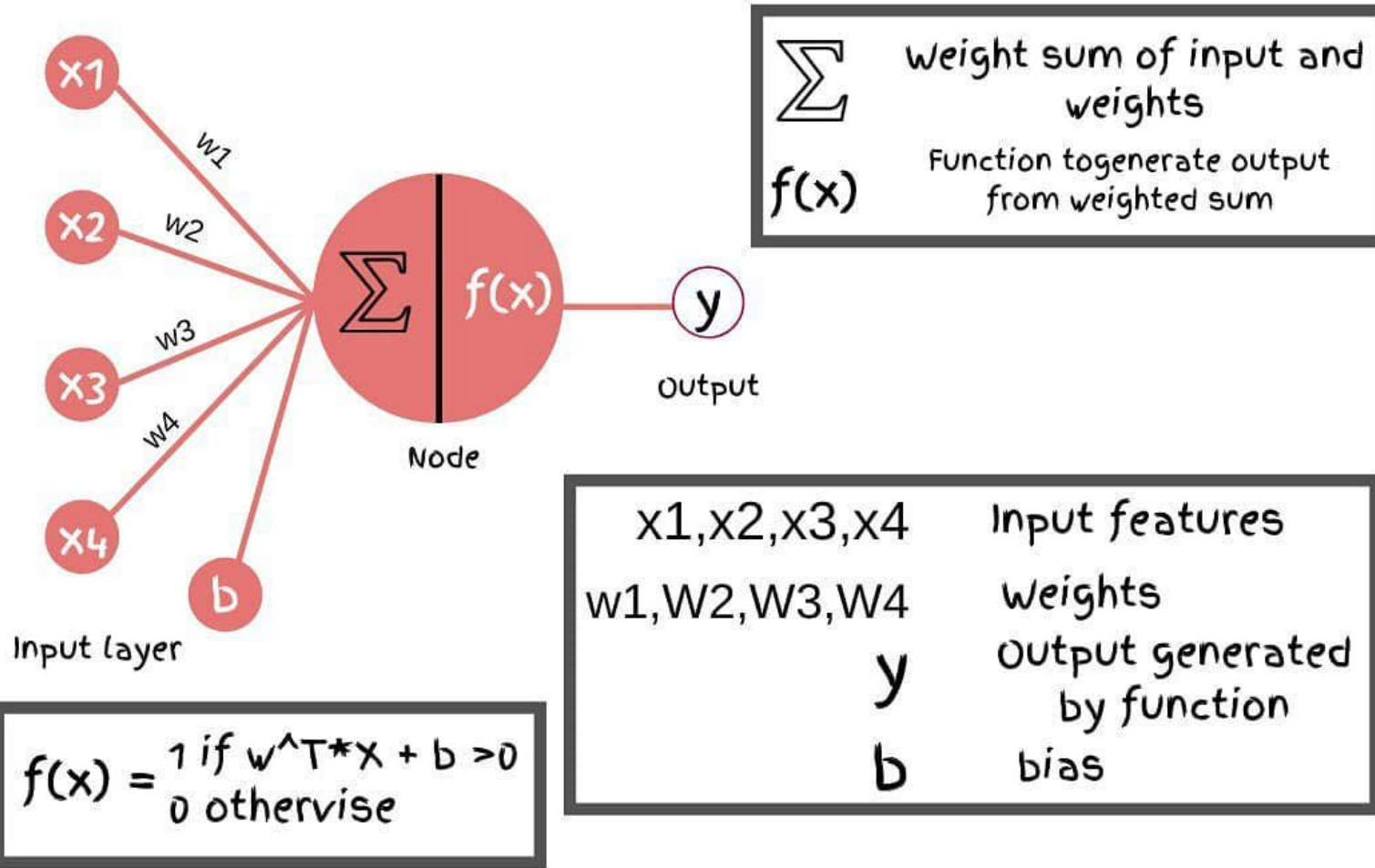
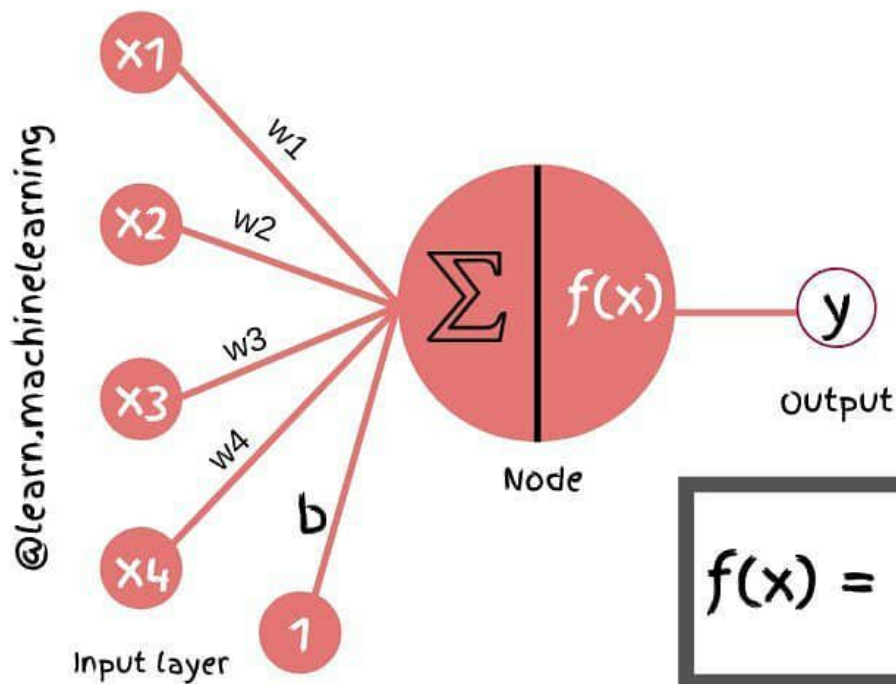


What is
a Perceptron?



- *It was designed in 1957 by Rosenblatt*
- *An artificial neuron (Perceptron) is a mathematical function based on a model of biological neurons, where each neuron takes inputs, weighs them separately, sums them up and passes this sum through a function to produce output.*

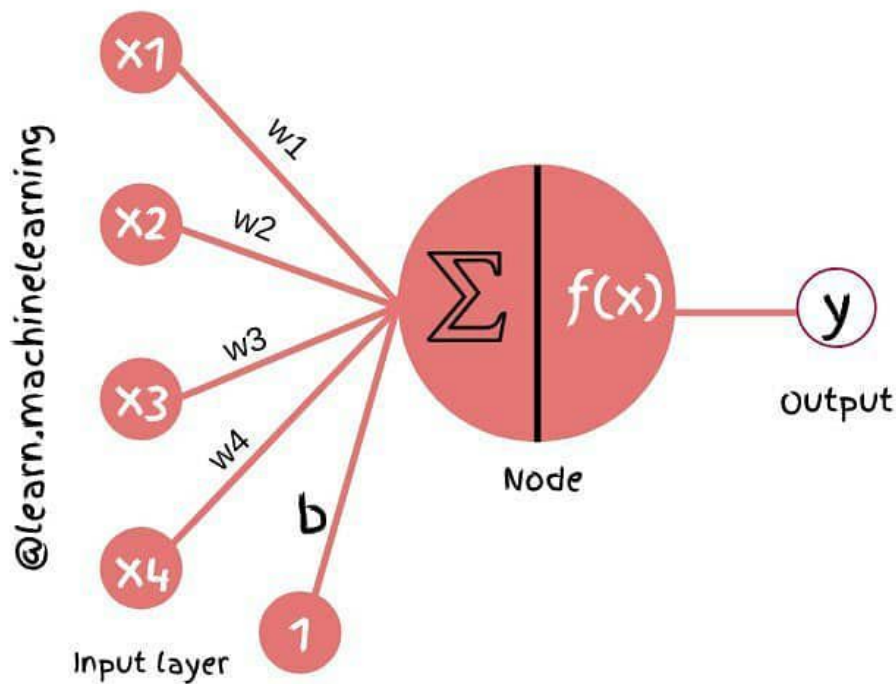


$$f(x) = \begin{cases} 1 & \text{if } w^T \cdot x + b > 0 \\ 0 & \text{otherwise} \end{cases}$$

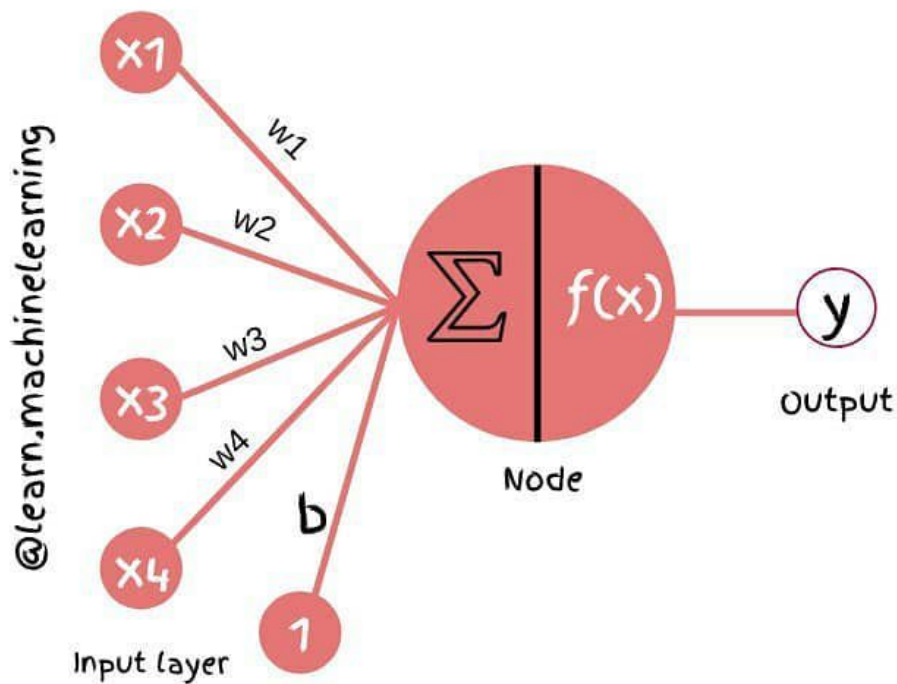
- Here $f(x)$ is called as activation function.
- In early days they used step function as activation function.
- And they used gradient descent to find the best weights which gives low error.

$$\Sigma = w_1 \cdot x_1 + w_2 \cdot x_2 + w_3 \cdot x_3 + w_4 \cdot x_5 + 1 \cdot b$$

- This is the most simplest version of biological neuron.
- These weights helps in defining which feature is important than others.



- *As i said they used step function to generate output from weighted sum.*
- *A Perceptron is an algorithm for supervised learning of binary classifiers.*
- *This algorithm enables neurons to learn and processes elements in the training set one at a time.*
- *types of Perceptrons:*
 - *Single layer*
 - *Multilayer*



- *Single layer Perceptrons (which we disucced) can learn only linearly separable patterns.*
- *Multilayer Perceptrons or feedforward neural networks with two or more layers have the greater processing power.*
- *A bias (**b**) value allows you to shift the activation function curve up or down.*
- *Perceptron is usually used to classify the data into two parts. Therefore, it is also known as a Linear Binary Classifier.*