Forward propagation

① What? → @ forward — move ahead
propagation — related to spreading anything

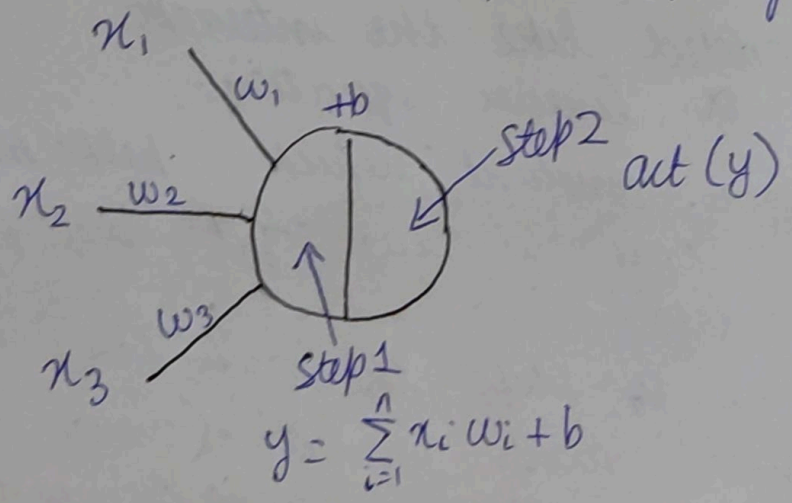
→ ⓑ forward propagation means we are moving in only 1 direction, from input to output in a NN.

② USE → concept used in generally all the NNs

③ Working → Steps → ⓐ Pre-activation
It is weighted Sum of inputs i.e. the linear transformation of weights w.r.t inputs available.

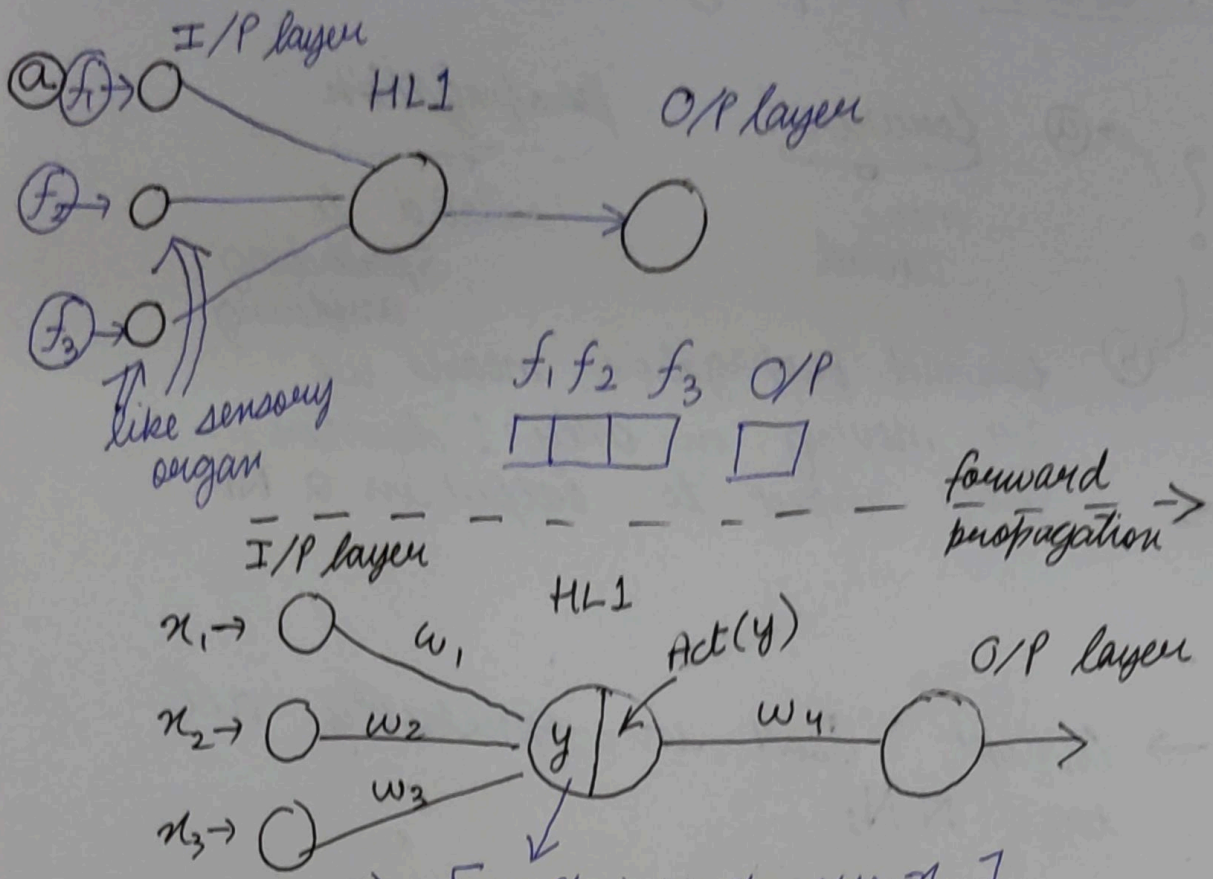
→ ⓑ Activation
Calculated weighted Sum of inputs is passed to the Activation function.

At each hidden neuron or output layer the processing happens in 2 stages



$$y = \sum_{i=1}^{n} x_i w_i + b$$

★ Concept



a) $[w_1x_1 + w_2x_2 + w_3x_3]$

$\Rightarrow \sum_{i=1}^{N} w_i x_i + b_i]$

$\Rightarrow w^T x + b \Rightarrow$ Linear Regression

b) activation function

a) Why bias added?

Ans ∵ if weights are 0

$\Rightarrow y = 0$

∴ Bias is added like the intercept added in a linear equation.

It acts as a constant which helps the model in a way it can fit best for the given data.

Also it allows to shift the activation function to either right or left. (changes in weights simply change gradient / steepness of output)