

	x_1 Salary	x_2 Other Income	y Property (Buy or not)
e_1	50	70	Positive ✓
e_2	20	50	Negative ✓
e_3	60	10	Positive ✓

$bias \rightarrow b$

Salary $\rightarrow w_1$

w_2

$\sum \rightarrow \Sigma$

$y = \frac{1}{1+e^{(w_1x_1 + w_2x_2 + b)}}$

$w_1 = 1, w_2 = 1, b = 1$

$w_1 = 1.5, w_2 = 1.8, b = 3$

$y = \frac{1}{1+e^{-(w_1x_1 + w_2x_2 + b)}} = \frac{1}{1+e^{-1.5}} > 0.5$

	OHE (One Hot Encoding)
b_1	Class-0 $[1, 0, 0]$
b_2	Class-1 $[0, 1, 0]$
b_3	Class-2 $[0, 0, 1]$
b_4	Class-2 $[0, 0, 1]$

Ex:-

	A	B	C	D
e_1	[1, 0, 0, 0]			
e_2	[0, 1, 0, 0]			
e_3	[0, 1, 0, 0]			
e_4	[0, 0, 1, 0]			
e_5	[0, 0, 0, 1]			
e_6	[1, 0, 0, 0]			

$$A \rightarrow 0, B \rightarrow 1, C \rightarrow 2, D \rightarrow 3$$

Softmax Function:

$$z = [3, 2, 1, 1.5, 2]$$

$$\text{Softmax}(z) = [e^3, e^2, e^1, e^{1.5}, e^2]$$

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