Therefore, the output y for each pattern is 1.

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repeat above question considering for: x1, w1=2 then x2 , w2=4 and x3,w3=1

Given the weights $w_1 = 2$, $w_2 = 4$, $w_3 = 1$, and assuming the bias $b = 0$ (since it is not provided), the activation v for each pattern is calculated by the weighted sum:

$$v = w_1x_1 + w_2x_2 + w_3x_3,$$

and the output y will be determined by the step function:

$$y = \varphi(v) = \varphi(w_1x_1 + w_2x_2 + w_3x_3).$$

Now, we can calculate the output y for each pattern $P1, P2, P3, P4$ using the given input values:

For $P1$ ($x_1 = 1, x_2 = 0, x_3 = 0$):

$$y_{P1} = \varphi(2 \cdot 1 + 4 \cdot 0 + 1 \cdot 0) = \varphi(2) = 1.$$

For $P2$ ($x_1 = 0, x_2 = 1, x_3 = 1$):

$$y_{P2} = \varphi(2 \cdot 0 + 4 \cdot 1 + 1 \cdot 1) = \varphi(4 + 1) = \varphi(5) = 1.$$

For $P3$ ($x_1 = 1, x_2 = 0, x_3 = 1$):

$$y_{P3} = \varphi(2 \cdot 1 + 4 \cdot 0 + 1 \cdot 1) = \varphi(2 + 1) = \varphi(3) = 1.$$

For $P4$ ($x_1 = 1, x_2 = 1, x_3 = 1$):

$$y_{P4} = \varphi(2 \cdot 1 + 4 \cdot 1 + 1 \cdot 1) = \varphi(2 + 4 + 1) = \varphi(7) = 1.$$

Thus, the output y for each pattern $P1, P2, P3, P4$ is 1.

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