→ Performance Matrices: (Model Evaluation)

→ also known as Binary classification.

Type no 3

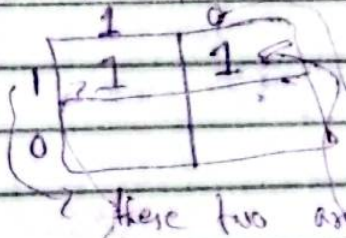
→ confusion Matrix:

Given Dataset is:

x_1	x_2	y (actual)	$\hat{y}$ (predicted)	
-	-	0	1	so in Given Data set we have two features x_1 and x_2 and y is output feature and $\hat{y}$ is predicted feature. Real output is y and $\hat{y}$ is predicted.
-	-	1	1	
-	-	0	0	
-	-	1	1	
-	-	1	1	
-	-	0	1	
-	-	1	0	

so let's discuss how we can calculate the confusion Matrix:-

Note:- whenever we discuss the confusion Matrix. it's mean 2x2 by Matrix.



Draw like this

these two are actual values.

these two are predicted values.

→ so in give data record 1, when when have output in actual is 0 and in predicted it is 1, so write 1 on this cell

Note:- 1st record prediction is wrong

next record when we have 1 in actual and 1 in predicted so write 1 on that cell.

Note:- This is the correct prediction.

Next: Record there is 0 and 0 so write 1 there and Next we have again 1 and 1 so increase there count as 2.

	1	0
1	2	1
0		1

Next again we have 1 and one so increase it as 3 on that cell

	1	0
1	3	1
0		1

Next we have 0 and 1 so increase count on that cell and write 2 there:

	1	0
1	3	2
0		1

and Next 1 and 0 so write 1 there.

	1	0
1	3	2
0	1	1

so this is called the confusion Matrix.

Means where your actual value/output is one and our predicted output is also one that means, it's predictions is correct and same for others.

7 Confusin Matrix we can represent also in other Teamonology like,

	1	0
1	TP	FP
0	FN	TN

so here if we want accurate result so we have to combine means add TP and TN, because they are our true values. correct output

$$\text{Accuracy} = \frac{TP + TN}{TP + FP + FN + TN}$$

$$\text{Accuracy} = \frac{3+1}{3+2+1+1} = \frac{4}{7} = 57\%$$

It Means the accuracy of that Model is 57%.