Logistic Regression For Multiclass Classification

① One versus Rest

② Multinomial

f1	f2	f3	O/p
—	—	—	1
—	.	—	0
—	—	—	2
—	—	—	2
—	—	—	0
—	—	—	1

OVR
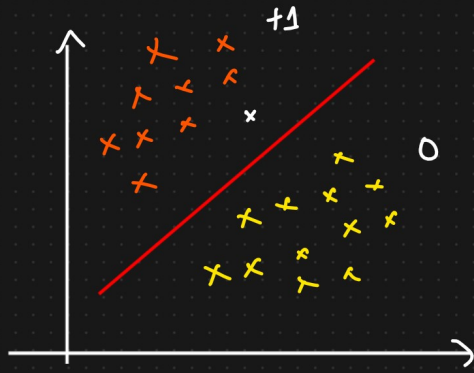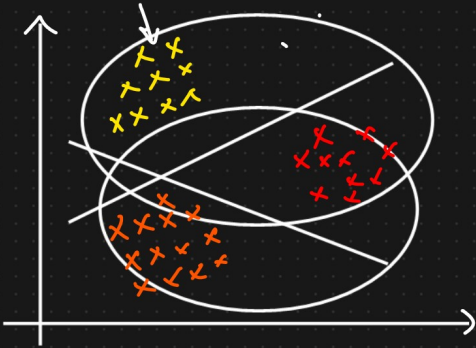
M1	M2	M3
⇓	⇓	⇓
Binary Classification	Logistic Binary Classifier	Binary Classification

f1	f2	f3	O/p	O1	O2	O3
—	—	—	1	0	1	0
—	.	—	0	1	0	0
—	—	—	2	0	0	1
—	—	—	2	0	0	1
—	—	—	0	1	0	0
—	—	—	1	0	1	0

I/p feature   O/p

$M_1 \Rightarrow f_1, f_2, f_3$ $O_1 \rightarrow$ Binary classification

$M_2 \Rightarrow f_1, f_2, f_3$ $O_2 \rightarrow$ Binary Classification

$M_3 \Rightarrow f_1 \, f_2 \, f_3$ $O_3 \rightarrow$ " "

New Data point = $\begin{bmatrix} M_1 & M_2 & M_3 \\ 0.20, & 0.35, & 0.45 \end{bmatrix} \Rightarrow \underline{1}$

Multinomial Probabilities.