

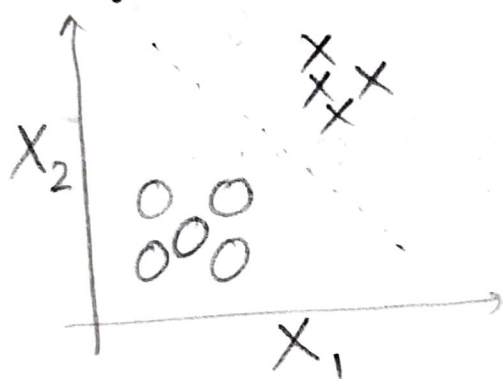
# Logistic Regression for Multiclass Classification

① Email foldering  $\Rightarrow$  Work, Friends, Family, Hobby  
 $y=1$   $y=2$   $y=3$   $y=4$

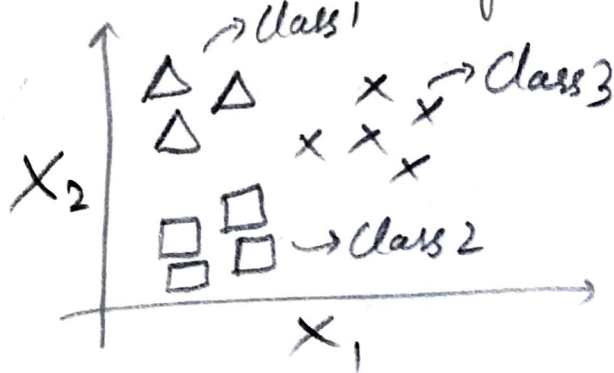
② Medical diagnosis  $\Rightarrow$  Not ill, Cold, Flu  
 $y=1$   $y=2$   $y=3$

③ Weather  $\Rightarrow$  Sunny, Cloudy, Rain, Snow  
 $y=1$   $y=2$   $y=3$   $y=4$

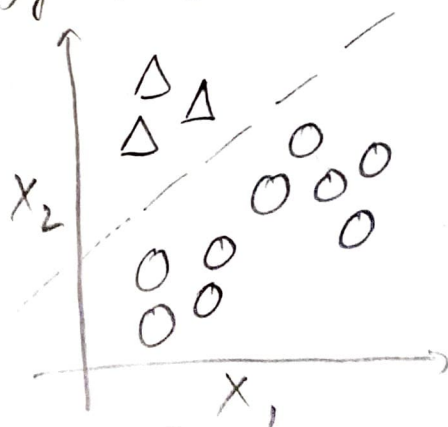
## Binary Classification



## Multiclass Classification

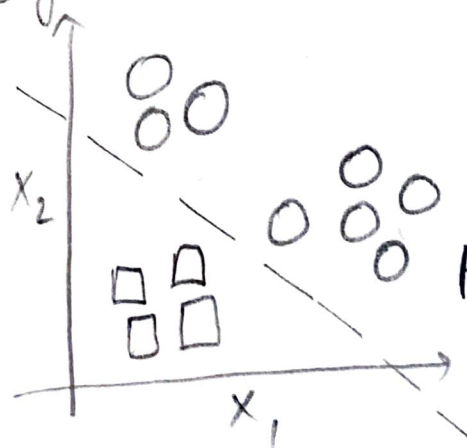


one v/s All (or, one v/s rest)  
 ① for Class 1



$$h_{\theta}^{(1)}(x) = P(y=1|x;\theta)$$

② for Class 2



$$h_{\theta}^{(2)}(x)$$

$$P(y=2|x;\theta)$$