Lab - 8

☆ Naive Bayesian Excample :-

X' = (Outlook = sunny, Temperature = cool, Humidity = High, Wind = strong) = ?

X_1 = Outlook X_2 = Temp X_3 = Humidity

X_4 = Wind

Day	Outlook	Temp	Humidity	wind	PT
1	sunny	Hot	High	weak	No
2	sunny	Hot	High	strong	NO
3	overcast	Hot	High	weak	Yes
4	Rain	mild	High	weak	Yes
5	Rain	cool	Normal	weak	yes
6	Rain	cool	Normal	strong	No
7	overcast	cool	Normal	strong	Yes
8	sunny	mild	High	weak	NO
9	sunny	cool	Normal	weak	yes
10	Rain	mild	Normal	weak	yes
11	sunny	mild	Normal	strong	Yes
12	overcast	mild	High	strong	yes
13	overcast	Hot	Normal	weak	Yes
14	Rain	mild	High	strong	NO

Outlook	Yes	NO
Sunny	2/9	3/5
overcast	4/9	0
Rain	3/9	2/5

Temp	Yes	NO
Hot	2/9	2/5
mild	4/9	2/5
cool	3/9	1/5

Humidity	Yes	NO
High	3/9	4/5
Normal	6/9	1/5

Wind	Yes	NO
weak	6/9	2/5
strong	3/9	3/5

C_1 = yes

$$P(C_1/X') = [P(X_1/C_1) * P(X_2/C_1) * P(X_3/C_1) * P(X_4/C_1)] * P(C_1)$$

$$= \left[\left(\frac{2}{9}\right)\left(\frac{3}{9}\right)\left(\frac{3}{9}\right)\left(\frac{3}{9}\right)\right] \times \left(\frac{9}{14}\right)$$

$$= 0.0053$$

C2 = NO

$$P(C_2/X') = [P(X_1/C_2) * P(X_2/C_2) * P(X_3/C_2) * P(X_4/C_2)] * P(C_2)$$

$$= \left[\left(\frac{3}{5}\right)\left(\frac{1}{5}\right)\left(\frac{4}{5}\right)\left(\frac{3}{5}\right)\right]\left(\frac{5}{14}\right)$$

$$= 0.0206$$

$\therefore P(C_2/X') > P(C_1/X')$

$\therefore$ ANS : NO.

$\therefore$ label of x' is NO