AI LAB- 7

Buy Computer Dataset

RID	age	income	student	C_rating	class
1	junior	high	no	fair	no
2	junior	high	no	excellent	no
3	middle	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle	low	yes	excellent	yes
8	junior	medium	no	fair	no
9	junior	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	junior	medium	yes	excellent	yes
12	middle	medium	no	excellent	yes
13	middle	high	yes	fair	yes
14	senior	medium	no	excellent	no

Que) junior, medium, yes, fair

formula) $P(A/B) = P(B/A) * \frac{P(A)}{P(B)}$

Total yes = 9
Total no = 5

⇒ To find $P(yes|X) = P(X|yes)\frac{P(yes)}{P(X)}$

$X = \{junior, medium, yes, fair\}$

⇒ $P(yes|junior, medium, yes, fair)$

$= \frac{P(junior|yes)P(medium|yes)P(yes|yes)P(fair|yes)\cdot P(}{P(junior)P(medium)P(yes)P(fair)}$

⇒ Can remove denominator.... {∵ constant}

age

	yes	no	P(yes)	P(no)
junior	2	3	2/9	3/5
middle	4	0	4/9	0/5
senior	3	2	3/9	2/5

income

	yes	no	P(yes)	P(no)
low	3	1	3/9	1/5
medium	4	2	4/9	2/5
high	2	2	2/9	2/5

Student

	yes	no	P(yes)	P(no)
yes	6	1	6/9	1/5
no	3	4	3/9	4/5

Credit_rating

	yes	no	P(yes)	P(no)
fair	6	2	6/9	2/5
excellent	3	3	3/9	3/5

	Total	
yes	9	9/14
no	5	5/14

$$\text{Ans}_{(\text{Yes})} = P\left(\frac{\text{junior}}{\text{Yes}}\right) * P\left(\frac{\text{medium}}{\text{Yes}}\right) * P\left(\frac{\text{Yes}}{\text{Yes}}\right) * P\left(\frac{\text{fair}}{\text{Yes}}\right) * P(\text{Yes})$$

$$= \frac{2}{9} * \frac{4}{9} * \frac{6}{9} * \frac{6}{9} * \frac{9}{14}$$

$$= \frac{2592}{91,854}$$

$$= 0.028$$

$$\boxed{P(\text{Yes} \mid \{x--\}) = 0.028}$$

$$\text{Ans}_{(\text{NO})} = P\left(\frac{\text{junior}}{\text{no}}\right) * P\left(\frac{\text{medium}}{\text{no}}\right) * \left(\frac{\text{yes}}{\text{no}}\right) * P\left(\frac{\text{fair}}{\text{no}}\right) * P(\text{no})$$

$$= \frac{3}{5} * \frac{2}{5} * \frac{1}{5} * \frac{2}{5} * \frac{5}{14}$$

$$= \frac{60}{8750}$$

$$= 0.0068$$

$$\boxed{P(\text{NO} \mid \{x-\}) = 0.006}$$