Problem set-1 : Taxi problem (Example-1)

Sol^n :-

P(the witness see blue | the car is blue)

P(the car is blue | the witness see blue)

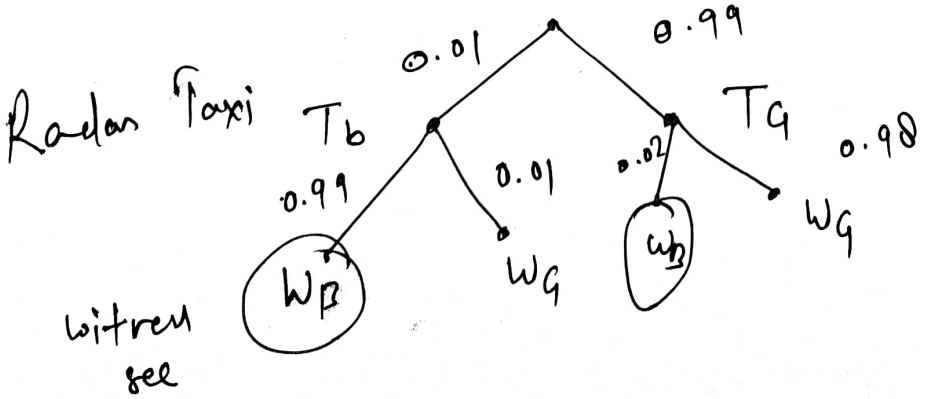
Let W_b = "witness see a blue taxi"

W_g = "witness see a green car"

T_b = "Taxi is blue"

T_g = "Taxi is green"

$$P(T_b|W_b) = \frac{P(W_b|T_b) \cdot P(T_b)}{T(W_b)}$$



$P(T_b) = 0.01$ $\quad P(T_g) = 0.99$

$P(W_b|T_b) = 0.99$ $\quad P(W_b|T_g) = 0.02$

$P(W_b) = P(W_b|T_b) \cdot P(T_b) + P(W_b|T_b) P(T_g)$

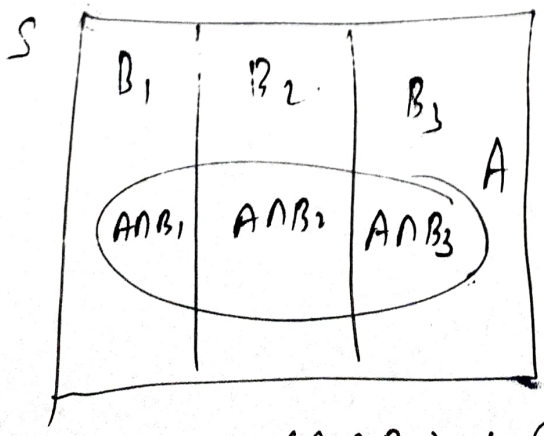
$= 0.99 \times 0.01 + 0.02 \times 0.99$

$= .99 \times 0.03$

$$P(T_b|W_b) = \frac{0.99 \times 0.01}{0.99 \times 0.03} = 1/3$$

Total probability:-

mutually Exclusive



$A = (A \cap B_1) \cup (A \cap B_2) \cup (A \cap B_3)$

$P(T_b) = 0.01$ $\quad P(T_g) = 0.99$

$P(W_b|T_b) = 0.99$ $\quad P(W_b|T_g) = 0.02$

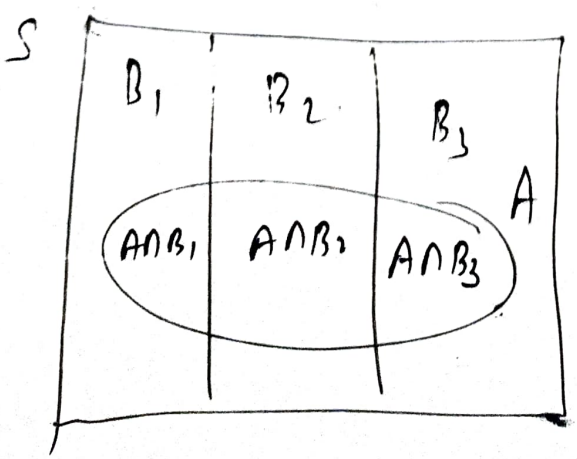
$P(W_b) = P(W_b|T_b) \cdot P(T_b) + P(W_b|T_b) P(T_g)$

$= 0.99 \times 0.01 + 0.02 * 0.99$

$= .99 \times 0.03$

$$P(T_b|W_b) = \frac{0.99 \times 0.01}{0.99 \times 0.03} = 1/3$$

Total probability:-



mutually exclusive

$A = (A \cap B_1) \cup (A \cap B_2) \cup (A \cap B_3)$