$$P(C) = P(C,M) + P(C,B)$$
$$= P(C|M)P(M) + P(C|B)P(B)$$
$$= 0.9 \times \underline{P(M)} + 0.4 \times \underbrace{P(B)}_{1-P(M)} = 0.9 \times 0.317 + 0.4 \times 0.683 =$$

$$P(M) = P(M, \overset{\text{time}}{E}, \overset{\text{weapon}}{V}) + P(M, E, S) + P(M, M, V) + P(M, M, V)$$

$$= P(M|E,V) \times P(E) \times P(V)$$
$$= 0.9 \times 0.05 \times 0.8$$

$$= 0.317$$

Bayes rule. $P(X|Y) = \dfrac{P(Y|X)\,P(X)}{P(Y)}$

$P(\text{class} \mid (f_1, f_2, f_3 \cdots))$ $\quad$ $P((X_1, X_2) \mid Y)$

last

$$= \frac{P(f_1, f_2, f_3, \cdots \mid \text{class})\,P(\text{class})}{P(f_1, f_2, \cdots)}$$

given (job = true, dep = high, fam = children)

predict $P(\text{class} = \text{app} \mid \text{job} = \text{true}, \text{dep} = \text{high}, \text{fam} = \text{children})$

$P(\text{class} = \text{rej} \mid \text{- - - - - - - - -})$

predict to the class with highest probability

	#app	# rej
total	6	6
job = true	1+4=5	3
job = false	1+1=2	4
dep = high	1+3=4	2
dep = low	1+2=3	5
fam = single	1+3 = 4	2
fam = couple	1+2 = 3	3
fam = children	1+0 = 1	3.

$P(app) = \frac{\#app}{\#app + \#rej} = \frac{6}{6+6} = \frac{1}{2}$

$P(rej) = 1/2$

$P(job = true \mid app) = \frac{5}{5+2} = 5/7$

$P(job = false \mid app) = 2/7$