SOLUTION QUESTION 7.15:

Julie Myers, a graduating senior in accounting, is preparing for an interview with a Big Eight accounting firm. Before the interview, **she sets her chances of eventually getting an offer at 50%.** Then, on thinking about her friends who have interviewed and gotten offers from this firm, she realizes that **of the people who have interviewed and gotten offers** from this firm, **95%** had good interviews. On the other hand, **of those who did not receive offers**, **75%** said they had good interviews. If Julie Myers has a good interview, what are her chances of receiving an offer?

SOLUTION: From the text we conclude:

$$\Pr(\text{Offer}) = 0.50,$$

$$\Pr(\text{Good Interview}|\ \text{Offer}) = 0.95,\ \Pr(\text{Good Interview}|\ \text{No Offer}) = 0.75$$

We want to know: **Pr(Offer| Good Interview).** The solution uses **Bayes Theorem.** We will split the solution in two steps by first calculating **Pr(Good Interview)** by using the **Law of Total Probability** and second use the calculation rule for conditional probabilities to calculate **Pr(Offer| Good Interview)**.

STEP 1: Apply Law of Total Probability

$$\Pr(\text{Good Interview}) = \Pr(\text{Good Interview} \mid \text{Offer})\Pr(\text{Offer}) + \Pr(\text{Good Interview} \mid \text{No Offer})\Pr(\text{No Offer})$$

Hence

$$\Pr(\text{Good Interview}) = 0.95 \cdot 0.50 + 0.75 \cdot 0.50 = 0.85$$

STEP 2: Apply calculation rule for conditional probability

$$\Pr(\text{Offer} \mid \text{Good Interview}) = \frac{\Pr(\text{Good Interview} \mid \text{Offer})\Pr(\text{Offer})}{\Pr(\text{Good Interview})}$$

Hence,

$$\Pr(\text{Offer} \mid \text{Good Interview}) = \frac{0.95 \cdot 0.50}{0.85} = 0.559$$

Conclusion: Only a slight increase is observed in our beliefs in getting an offer after we had a good job interview (from 0.500 to 0.559). The reason is that the people's judgement regarding "Good Interviews" is not very informative. Indeed,

Pr(Good Interview| Offer) = 0.95, Pr(Good Interview| No Offer) = 0.75.