A chartered accountant applies for a job in two firms X and Y. He estimates that the probability of his being selected in firm X is 0.7 and beig rejected in Y is 0.5 and the probability that atleast one of his applications rejected is 0.6. What is the probability that he will be selected in one of the firms?

	Rejected	Accepted
Firm X	1-0.7=0.3	0.7
Firm Y	0.5	1-0.5=0.5
	0.6	0.4

A=" selected in firm X ", B="selected in firm Y", C="selected at least in one of the firms",

$D = (\bar{A} \cap B) \cup (A \cap \bar{B}) \cup (\bar{A} \cap \bar{B})$ ="at least one of his applications is rejected".

By assignment statement, $\Pr(D) = 0.6$. Then

Pr($A \cap B$)=1-Pr(D)=1-0.6=0.4

Probability that at least one of applications will be selected:

Pr(C)=Pr($A \cup B$)= Pr(A) + Pr(B) − Pr($A \cap B$)=0.7+0.5-0.4=0.8

Probability that exactly one of application will be selected

Pr(E)=Pr(($A \cap \bar{B}$)$\cup$($\bar{A} \cap B$))=Pr($A \cap \bar{B}$)+Pr($\bar{A} \cap B$)=Pr($A/\bar{B}$)Pr($\bar{B}$)+ Pr($\bar{A}/B$)Pr(B)

We cannot calculate this probability without additional assumptions. If we assume that events A and B are independent, then Pr($A/\bar{B}$) =Pr(A) , Pr($\bar{A}/B$) =Pr($\bar{A}$).

Finally, with additional assumption we have that probability that exactly one of application will be selected

Pr(E)=Pr($A/\bar{B}$)Pr($\bar{B}$)+ Pr($\bar{A}/B$)Pr(B) = Pr(A) $\cdot$ Pr($\bar{B}$)+ Pr($\bar{A}$) $\cdot$ Pr(B) = $0.7 \cdot 0.5 + 0.3 \cdot 0.5 = 0.5$