Problem

Three employees E1 ,E2 ,E3 of a software company try for the post of Team Leader. Their chances of succeeding are 4:3:3. The Probability that a certain employee E4 will be given pink slip when E1 ,E2 ,E3 is made Team Leader are 0.3,0.2,0.1 respectively. What is the Probability that E4 will not be given pink slip.

Solution

The probability that E1 will become a Team Leader equals $P(H_1) = \frac{4}{4+3+3} = 0.4$.

The probability that E2 will become a Team Leader equals $P(H_2) = \frac{3}{4+3+3} = 0.3$.

The probability that E2 will become a Team Leader equals $P(H_3) = \frac{3}{4+3+3} = 0.3$.

Conditional probabilities $P(E_4|H_1) = 0.3, P(E_4|H_2) = 0.2, P(E_4|H_3) = 0.1$.

By the formula of total probability, the probability that E4 will be given pink slip equals
$P(E_4) = P(H_1)P(E_4|H_1) + P(H_2)P(E_4|H_2) + P(H_3)P(E_4|H_3) =$
$=0.4 \cdot 0.3 + 0.3 \cdot 0.2 + 0.3 \cdot 0.1 = 0.12 + 0.06 + 0.03 = 0.21$.

Therefore, by opposite event rule, the probability that E4 will not be given pink slip equals
$$P(\overline{E_4}) = 1 - 0.21 = 0.79.$$

Answer: 0.79.