ASSIGNMENT 1

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Download all python codes from

https://github.com/harithar1234/ai1103/blob/main/Assignment%201/assignment1.py

1 PROBLEM(PROB. MISC. 6.10)

Let E and F be events with $P(E) = \frac{3}{5}$, $P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

2 SOLUTION

$$\Pr(E) = \frac{3}{5} \tag{2.0.1}$$

$$\Pr(F) = \frac{3}{10} \tag{2.0.2}$$

$$\Pr(E \cap F) = \frac{1}{5} \tag{2.0.3}$$

On substituting the values of $\Pr(E)$ and $\Pr(F)$ we get

$$\Pr(E)\Pr(F) = \frac{9}{50} \tag{2.0.4}$$

If the events are independent then by definition

$$\Pr(EF) = \Pr(E)\Pr(F) \tag{2.0.5}$$

The events E and F are not independent as

$$\Pr(E)\Pr(F) = \frac{9}{50} \neq \frac{1}{5} = \Pr(E \cap F) \tag{2.0.6}$$