

Assignment 1

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Download all python codes from

https://github.com/Sushma-AI1103/Assignment-1/blob/main/assingment_1code.py

Now , Probability of E and F would be

$$\begin{aligned}
 \Pr(EF) &= \Pr(X_1 = 6, X_2 = 5, X_3 = 4) \\
 &= \Pr(X_1 = 6) \Pr(X_2 = 5) \Pr(X_3 = 4) \\
 &= \frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} \\
 &= \frac{1}{216}
 \end{aligned}
 \tag{2.0.3}$$

1 PROBLEM

(4.12) Determine $P(E|F)$, if a die is thrown three times,

E : 4 appears on third toss

F : 6 and 5 appears on respectively on first and second toss.

Probability $P(E|F)$,

$$\begin{aligned}
 P(E | F) &= \frac{\Pr EF}{\Pr F} \\
 &= \frac{\frac{1}{216}}{\frac{1}{36}} \\
 &= \frac{1}{6}
 \end{aligned}$$

2 SOLUTION

Throwing a die three times is similar to throw three die simultaneously as every trial is independent.

Let $X_i = \{1, 2, 3, 4, 5, 6\}$ where $i = 1, 2, 3$

Now , for a fair die , all events are equally likely.

Therefore ,

$$\begin{aligned}
 \Pr(X_i = n) &= \frac{1}{6} \quad 1 \leq n \leq 6 \\
 &= 0 \quad \text{otherwise}
 \end{aligned}
 \tag{2.0.1}$$

probability of event E ,

$$\Pr(E) = \Pr(X_3 = 4) = \frac{1}{6}$$

(2.0.2)

similarly, Probability of event F would be ,

$$\begin{aligned}
 \Pr(F) &= \Pr(X_1 = 6, X_2 = 5) \\
 &= \Pr(X_1 = 6) \Pr(X_2 = 5) \\
 &= \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}
 \end{aligned}$$

since events are independent .