

AI1103: Assignment 4

Chitneedi Geetha Sowmya
CS20BTECH11011

Download all latex codes from

<https://github.com/Geetha495/Assignment2/blob/main/Assignment4.tex>

Download all python codes from

<https://github.com/Geetha495/Assignment2/blob/main/Assignment4.py>

1 PROBLEM

The probability that a given positive integer lying between 1 and 100 (both inclusive) and is NOT divisible by 2 or 3 or 5 is _____

2 SOLUTION

Let A, B, C are events where a positive integer between 1 and 100 (both inclusive) is divisible by 2, 3, 5 respectively.

$$\begin{aligned}\Pr(A) &= \frac{1}{2} \\ \Pr(B) &= \frac{33}{100} \\ \Pr(C) &= \frac{1}{5} \\ \Pr(AB) &= \frac{16}{100} \\ \Pr(BC) &= \frac{6}{100} \\ \Pr(AC) &= \frac{1}{10} \\ \Pr(ABC) &= \frac{3}{100}\end{aligned}$$

Required probability : $\Pr(A + B + C)'$

$$\begin{aligned}\Pr(A + B + C)' &= 1 - \Pr(A + B + C) \\ &= 1 - \Pr(A) - \Pr(B) - \Pr(C) + \Pr(AB) + \Pr(BC) + \Pr(AC) - \Pr(ABC) \\ &= 0.26\end{aligned}$$